Faculty of Engineering and the Built Environment

COLLABORATIVE APPROACHES IN ACHIEVING SUSTAINABLE PRIVATE-PUBLIC TRANSPORTATION SERVICES IN INNER-CITY AREAS: A CASE OF THE DURBAN MINIBUS TAXIS

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ABSTRACT

Transportation is a catalytic feature within cities and is interdependent on land use activity by means of a feedback loop that is created between the two. The most catalytic example of this is public transportation routes internal to inner-cities: they draw focus to these areas by enhancing accessibility, therefore creating spaces that are conducive for business activity, while business activity also informs public transportation routes. It is for this reason that this dissertation focuses on public transportation within inner-city areas. Durban is the chosen case study where the dominating form of public transportation within the central business district (CBD) is minibus taxis. The paradox here is that minibus taxis still form part of the informal economy even though they are the leading form of public transportation in South Africa. There have been many attempts to formalise this industry in order for it to follow more regulatory practices, but minibus taxis are privately owned and operate within the capitalist economy. The interventions put in place were aimed to better integrate minibus taxis into the urban fabric of cities for the purpose of creating a more harmonious urban environment, but to date all attempts have failed to produce the intended outcome. This research explores ways in which public and private institutions can collaborate for the intention of creating a better public service. This is critical given that an informal economic entity is dominating the public spaces of South Africa. This research is inspired by the notion of the just city which has major sway in contemporary urban thinking. A just city embraces principles such as good access and heterogeneity in public spaces, amongst others, which are hugely influenced by transportation. The argument of this study is that the application of collaborative planning through a sustainable partnership between the public and private sector will improve the social and environmental sustainability of public transportation. This process is complicated however and one of the major challenges that exist within such collaborative endeavours are power dynamics. As a result, a key focus in the study is around power relations. Practically, power relations should be observed over a period of time, specifically when the different stakeholders engage with each other, so as to reflect valid data. However, a length data collection process was not possible to observe during the data collection phase of this research. Instead interviews were conducted focusing on existing procedural planning practices between the inner-city minibus taxi association (South and North Beach Taxi Association), the eThekwini Transport Authority(ETA), and the eThekwini Town Planning Department. Conclusions and recommendations were then generated based on these data.

DECLARATION

I, Lonna Sbulele Mabandla, declare that the work presented in this dissertation is my own. Citations and references have been used to acknowledge the ideas of those whose work is relevant to the study and therefore included using the university's referencing style. Furthermore, I am aware that the work may be screened electronically for plagiarism.

This dissertation has not been submitted to any other academic institution for examination.

09/06/2022

Lonna S. Mabandla Date

ACKNOWLEDGEMENTS

"*Ungadinwa ungoyiki, akangeze akushiye, kholwa kodwa ze uqonde ukubu nto zonke kuye*" This is a song we usually sing at home. It is a reminder to be fearless and to not become weary in any pursuit, but instead to trust in God. These words have been quite instrumental in my life, especially during the last moments of this research, therefore I give praise and thanks to the creator. Throughout this journey God made provisions for me by blessing me with a mind that has enabled me to write this dissertation, the necessary resources, and the people to help me see this through.

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Thank you to my mom's side of the family for assisting me when I needed it. Thank you to my dad's side of the family for instilling the principles of education and discipline within me, and for affording me many opportunities.

I humbly thank all research participants. Those who responded timeously and professionally, those who were kind and offered assistance, and those who shared inspiring words and gave me courage.

Lastly, a special thanks to all who have loved me. Your love has given me life.

Camagu!

DEDICATION

This dissertation is dedicated to all planning practitioners who hope to cement a physical democratic legacy.

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LIST OF ABBREVIATIONS

BBBEE	Broad-based Black Economic Empowerment
BRT	Bus Rapid Transit
CBD	Central Business District
DTI	Department of Trade and Industry
DTMB	Durban Transport Management Board
ETA	EThekwini Transport Authority
GIS	Geographic Information System
HOV	High Occupancy Vehicle
ICDS	Inner-city distribution system
IDP	Integrated Development Plan
IRPTN	Integrated Rapid Public Transport Network
LAP	Local Area Plan
MSA	Municipal Systems Act
NaMATA	Nairobi Metropolitan Area Transport Authority
NDP	National Development Plan
NGP	New Growth Path
NTC	National Transport Commission
OFT	Ofiice of Fair Trading
PFI	Private finance initiatives
PHV	Private hire vehicles
PPP	Private public partnership
QBP	Quality bus partnership
ROW	Right of way

SANTACO	South African National Taxi Council
SDF	Spatial Development Framework
SDG	Sustainable Development Goals
TDM	Transport demand management
TfL	Transport for London
TOD	Transport oriented development
TRL	Transport Research Laboratory
TRP	Taxi Recapitalization Policy
UK	United Kingdom

1. Chapter one: Introduction

1.1. Background

Transportation is an important part of the built environment. It is an indication of life within a particular space through movement. It also determines how accessible the built environment is to its residents. Since the inception of mechanised transportation, a variation of transport modes have become available, such as railways, roadways, airways and waterways. These transport modes can be generally categorised as private or public. The focus of this study is on the public provision of roadway transportation services by the privately owned minibus taxi industry. According to Baloyi (2013: 343), the minibus taxi industry is a prominent public transport service provider and one of the most profitable industries in South Africa, thus it plays a vital role in the financial and social economy of the country. A supporting statement to this is made by Kerr (2018: 2) in a report that mentions that minibus taxis are, by a large margin, the most accessible form of public transportation as only 17% of households reported not to have access to taxis. Of the 83% that do have access to minibus taxis; the reported median walking distance to the nearest taxi is 10 minutes. Although this form of public transportation has high levels of accessibility, the level of satisfaction of this service was reported at 60% as compared to buses at 72% and the least satisfactory form of transportation, trains, at 53% (Kerr 2018: 2).

The formation of the minibus taxi industry in South Africa is closely related to the apartheid system and its urban planning. The urban plans formulated during this era placed non-white South African citizens on the outskirts of urban centres where the provision of infrastructure and services were poor, including the public transport system. This consequently created a high demand for affordable, convenient and reliable transportation services that would transport the marginalised population into town for work and shopping (Ingle 2009: 71-72). State-run public transportation was inflexible, time-consuming and expensive due to multiple changeovers, therefore making taxis the better option. Before 1977 there were strict regulations around taxi operation; only sedan vehicles furnished with fare meters were to be used, and taxis making their rounds were not allowed to be waved down and so were only available at ranks (Ingle 2009: 72). After the amendment of the Road Transportation Act in 1977 the use of a minibus (kombi) was permitted, and over time, 15 passengers per driver was allowed (Ingle 2009: 72). It was pressure on the state – that came from white business owners, black commuters and potential taxi operators – that finally allowed the full operation of minibus taxi's in South Africa (Ingle 2009: 72-73). It is noteworthy that the collaborative efforts of private and public stakeholders achieved the full operation of minibus taxis.

Although the taxi industry has always been a black entrepreneurial venture that has improved the lives of many, the most appropriate steps to support and improve this industry were not taken and made a

priority during the initial stages of South African democracy. This may have been a lost opportunity as the theory of change is best applied during times of transition as these periods encourage a more participatory approach.

One of the ways that the taxi industry was to be incorporated into the existing transportation system in the most recent years was through an intervention by the City of Cape Town by merging the minibus taxis into the BRT system in 2007. This process was unfortunately not successful due to resistance received from minibus taxis operators and the realisation that operator compensation was expensive. Apart from this, the required BRT subsidy was much larger than expected and the only other way to incorporate the minibus taxis into the public transportation system as expressed by the City of Cape Town was that the minibus taxis would provide feeder services to the Integrated Public Transport Network Business Plan (Plano, Behrens and Zuidgeest 2018: 647).

The majority of interventions put in place have been top-down strategies to restructure the taxi industry which have not worked to date. These top-down approaches limit knowledge of efficient ways of improving the taxi industry (Vaz and Venter 2012: 4) and also cause conflict created by mistrust.

An impediment to the improvement of the taxi industry is its informal industry status. This has been a major concern, and as a result the South African National Taxi Council (SANTACO) was formed by taxi operators after a government intensive consultative process to better manage this industry. This council has a well-structured national body with a hierarchical structure. In which members of local taxi councils are represented by members in the regional taxi councils, and they in turn are represented on the provincial taxi councils, and it is this council that reports to the national affiliates. This body held its first conference in September 2001 to officiate the taxi industry by organising routes and resolving other conflict points between taxi drivers/owners (Ingle 2009: 72).

Ingle (2009: 75) mentions how the taxi industry indirectly supports a number of economic activities such as advertising, vehicle repairs and financing, as well as maintenance of taxi rank ablutions. They also hire rank marshals, car washers and fare collectors (Ingle 2009: 75). However all these are relative to each taxi organisation, so, for example fare collectors have been phased out in the South and North Beach minibuses in Durban. This is due to many complaints about the noise encouraged by fare collectors as they consistently interacted with the drivers of the minibus taxis, passengers, potential commuters on the street and many actively engaged with the music being played in the minibuses which therefore encouraged loud volumes in the vehicle. Fare collectors who are more commonly known as conductors, were also phased out due to their questionable hygiene and manners. Although this industry is responsible for a substantial number of jobs, it still forms part of the informal economy making it difficult to measure its economic impact.

1.2. Problem statement

The taxi industry is a public transportation that is a capitalist venture which aims to serve its own interests while providing a major public service which government and local municipalities hope will serve the interest of the people and state. Specific to Durban, the eThekwini Municipality Integrated Development Plan (IDP) mentions that the role of the taxi industry is to serve the public as a major public transportation, but there is a difference of interests between public and capitalist agenda which creates tension between the two entities. The co-ordination of these two stakeholders becomes critical due to the inseparable nature of transport and land use. The relationship between the taxi industry and the municipality is one of the root issues that need to be focused on for the improvement of the public transport system. Public transportation in South Africa has been characterised by ongoing issues since the apartheid era that have been well documented including poor vehicle maintenance plans, reckless driving, security issues, limited off-peak availability as well as inefficiency issues linked to poor management and a lack of planning by cities for these systems (Schalekamp and Klopp 2018: 665).

The prominent presence of minibus taxi's in the Durban inner-city has contributed to congestion within the Central Business District (CBD). The level of public service provided by the taxi industry is not optimal in terms of economic, environmental, social sustainability and the general efficiency of this industry. This raises the industry's level of adaptation in a globalised world that is moving towards smart cities and combatting climate change.

The 17 Sustainable Development Goals (SDGs) were developed and adopted in 2015 for the purpose of moving towards unified development goals for 2030 (United Nations 2018: 5) and the National Development Plan (NDP) has been aligned with the 2030 timeline. More locally the eThekwini Integrated Development Plan (IDP) which is planned around eThekwini being the most caring and liveable city in Africa. Within the 17 SDGs, the most relevant goal that talks to this study is goal number 11 with the heading "Make cities and human settlements inclusive, safe, resilient and sustainable" and one of the targets articulated within this goal is to *provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.* Other targets that are related to this study are within goal 17 which encourage mutli-stakeholder partnerships from different sectors. These goals talk to both transport and collaboration in achieving sustainability.

The NDP is aimed at eliminating poverty and inequality. One of the strategies in the NDP identifies public transport as one of the entities that benefits low-income households, improves internal trade and attract investment. Public transportation is identified in the NDP as an enabling milestone in achieving its main objectives because by providing public transport that is effective, safe and affordable, it grants citizens

access. The document further lists transport as a basic necessity in providing citizens a decent standard of living and this point over laps with eThekwini's vision for 2030 of being the most liveable city in Africa. Improving relations between the eThekwini municipality and the South and North Beach Taxi Association may be a move forward and prove beneficial to the quality of private-public transportation provided within the inner-city of Durban.

1.3. Aim of the study

The taxi industry is a powerful industry that seems to operate on its own terms and the involvement of the municipality to make and enforce regulation in a fair manner to serve the needs of the people is questionable. The aim of this research is to consider possible ways of collaboration between the taxi industry and the municipality in order to create a more sustainable public transportation service with specific reference to the relationship between transport and land use.

1.3.1. Main objective:

Identifying collaborative approaches, related to land use and road design, between the eThekwini municipality and the South and North Beach Taxi Association to improve the sustainability of the minibus taxi transportation system in the Durban inner-city.

1.3.2. Sub-objectives:

- Asses the historic and current relationship between the eThekwini municipality and the South and North Beach Taxi Association.
- Asses collaborative approaches most suitable for collaboration between a privately owned public service and local government, specific to the South and North Beach Taxi Association and the eThekwini municipality.
- Analyse the spatial implications the public transport system has on the inner-city of Durban by considering the relationship between transport and land use.
- Gain perspective from the South and North Beach Taxi Association as to what their vision is for themselves within the city of Durban.

1.4. Research question

How can the South and North Beach taxi association work together with the eThekwini municipality to produce a more sustainable transportation?

1.5.Justification for study

The South African public transportation system in many ways does not meet the needs of its commuters because it is a non-integrated, dispersed and unco-ordinated system (Baloyi 2013: 344). There is also a lack of information available to the public about the transportation services available to them and how to use the transportation system to get to different destinations. So apart from the fact that the system is unco-ordinated, it also takes effort to even attempt to take public transportation, specifically minibus taxis. The study can be useful to many stakeholders who can draw from the

1.5.1. Transport developments

In recent years there has been some discourse about restructuring the public transportation system in South Africa and investment in transportation infrastructure is justified by the general belief that efficient public transportation is linked to economic growth. This study is to provide support to existing efforts to improve public transportation. Some of these ventures of improvement include the introduction of the Taxi Recapitalization Policy (TRP) in 1999 by the national Department of Transport which was aimed at upgrading the taxi industry through improving the vehicles, promoting better commuter safety and integrating the taxi industry into the public transport system (Behrens and Schalekamp 2009). It was supposed to lead to a reduced number of taxis on the road, improved economic sustainability for the industry as well as better route and rank administration (Walters 2013: 50). Although the TRP was established with the intention of improving the taxi industry, this intervention may result in undesirable outcomes such as job losses (Walters 2013: 53).

A development that is currently in progress is the Integrated Rapid Public Transport Network (IRPTN) programme in Durban, which is named Go Durban! It is headed by the eThekwini municipality and mentioned in the municipality's Local Area Plan (LAP) which also details how they plan to make Durban a more liveable city through urban design principles (eThekwini 2016: 14-20). Some of these principles include *realising the potential of the city,* and in this particular case, the CBD has been identified as an area with great potential. Another principle is *a connected city*, which means reconfiguring existing streets, a new pedestrian priority network and new local roads. Other principles include *a walkable city* and *an integrated and inclusive city*, which focuses on pedestrian and cycling movement, with designated public transport areas and land use intensity in the heart of the walkable city and along open spaces and connecting roads (eThekwini 2016: 14-20).

At the same time, the South and North Beach Taxi Association has been making the effort to run more efficiently over the years.

It is important to acknowledge the efforts previously or currently being made while considering this study's main topic of collaborative approaches. All these developments should aim to achieve one goal, which is sustainability, and sustainability cannot be attained without coordination. This study is therefore

significant for the purpose of considering different collaborative approaches that aim to create better public and private partnerships by considering the different work/projects that the stakeholders have implemented for the betterment of the public transportation system.

Within this research, sustainability is to be related through the overlapping work of the municipality, the South and North Beach Taxi Association and the principles of design.

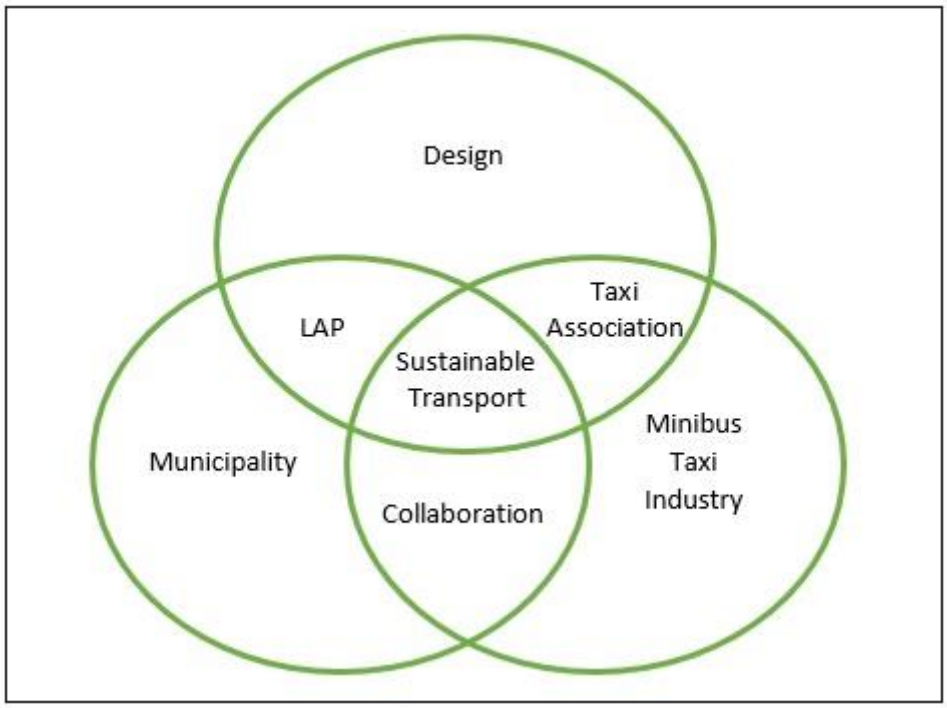

Figure 1.1: Relational diagram

1.6. Outline of dissertation

The dissertation is arranged into six chapters.

Chapter one is the introductory chapter and presents the problem statement as well as the objectives of the study. Chapter two outlines the theoretical and conceptual framework of the study. Chapter three presents the precedencies used to observe the conceptual framework in a more practical sense and give more detail about the case study. Both chapter two and three cover the literature review for this dissertation. The methodology of the study is provided in chapter four and specifies how the research was conducted. After the research had been conducted, an analysis was done and is presented in chapter five. Finally the research study is concluded in chapter six of the dissertation.

1.7. Conclusion

Chapter one has set out the background of the taxi industry in South Africa, which can be related to the research case study of the Durban inner-city minibus taxis that are run by the South and North Beach Taxi Association. The problem statement was then presented with the main and sub-objectives of achieving a sustainable public transportation system through a collaborative approach that accommodates both public and private practices of the eThekwini municipality and taxi industry respectively. Justification for the research study then followed where the issues around the taxi industry are detailed, as well as the different attempts to formalise the industry or just improve the public transportation system as a whole, which would improve the state of the public realm creating a more pleasant space for citizens. The chapter also gave the outline of the thesis. The chapter to follow is chapter two, which talks to the conceptual framework used to contextualise the research study through existing theories. Before these theories are presented, there is a brief introduction to set the scene of the case study.

2. Chapter two: conceptual and theoretical framework

2.1. Introduction

Durban is one of the eight metropolitan cities in South Africa. It is situated on the southern east coast and is bordered by the Indian Ocean. The port was the founding element of the city in the mid-1800s, and the growth of the city is linked to sugar cane farming and food processing products which were able to be transported to the Witwatersrand (Charlton and Marx 2003: 2). Therefore even from the preliminary stages, it is quite evident what a revolutionary impact transportation has had on the formation and expansion of this city. Durban went on to be developed according to apartheid planning principles that were based on racial segregation. The marginalised group – this included all non-whites – were placed on the outskirts of the city and "buffer strips" were used to separate the communities on the periphery from the inner-city where British settlers were living. The British lived in central areas that were well connected in terms of transport, and those who were part of the marginalised races lived further away from the economic opportunities and amenities provided within the core of the city (Charlton and Marx 2003: 3).

When cities are formed, they are greatly influenced by the geography and historical features of the area but at any point, the patterns of land use and city function can be changed by the alteration of the dominant transportation system (Smerk 1992: 5). The evolution of transportation systems is the catalytic force that has caused the enlargement of cities, as cities are planned on the basis of travel times. According to Newman (2015: 141) there are three main types of transport related urban fabrics within a city; namely walking cities, transit cities and automobile cities. Each of these urban fabrics is the successor of the one previously established, but all still exist simultaneously, and are continually evolving and integrating.

As a holistic entity, a city is shaped by components that feed off each other; just as there is a positive and negative feedback within a natural habitat, the same is true for a city. Smerk (1992: 4-5) states that the prominent mode of transport is influenced by the size of a city and that over a substantial period, internal transportation has the power to shape the growth of a city. When a city has a small radius it is easy for residents to make it around on foot but with increased development, vehicular transportation is needed in order to support internal markets and expand the labour pool and internal transport circulation. Other factors that influence the growth of an urban area include geography, economy, social construct and culture.

The focal point of this research is internal transportation as the study looks at inner-city areas and how private-public transportation can be improved through collaboration in order to create better

sustainability. The case I have chosen for this study is the Durban minibus taxi system that operates within the inner-city, and which is run by the South and North Beach Taxi Association.

Below is a brief breakdown of this chapter:-

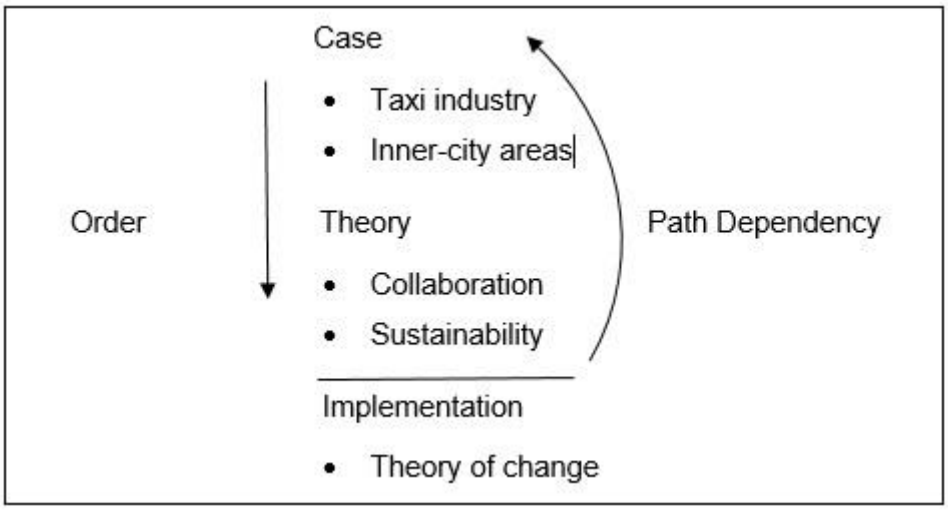

Figure 2.1: Conceptual and theoretical framework chapter breakdown

This diagram illustrates that the two main theories for this study are collaborative planning and sustainability, and that the aspects of each of the theories that I pull out are informed by the case. I have used path dependency theory as a tool to unpack the case and state some of the external factors that have an influence on the taxi industry and how that subsequently influences the quality of the inner-city. Once a clear understanding of how collaboration could potentially result in a more sustainable private-public transportation system, implementation can be put in place to improve the transportation system through theory of change. Finally, the chapter will follow the order as demonstrated in the diagram.

2.2. Path dependency

The public transportation network is determined by a range of factors, including the urban development of each city and the land uses thereof, implemented policies, and strategic plans made for the city and its transportation system (Hensley, Mateo-Babiano and Minnery 2014: 196). These all contribute to the reasons why the dominant mode of transportation in South Africa is the minibus taxi system, and this may be better understood using the Path Dependency theory (Hensley *et al.* 2014: 196). Path Dependency theory was originally an economic theory developed by Aurthur (1989) and David (1985) explaining how a certain technology received preference over another based on the context of the environment (Hensley *et al.* 2014: 196). Mahoney (2000: 507) suggests that path dependence sheds light on how past events have shaped the present and how these events will carry on into the future. Essentially path dependency is context dependency (Couch, Sykes and Borstinghaus 2011). Durand and Vergne (2010: 736) define path dependence as a rigid process that cannot easily be swayed in a

different direction. This is described by Hensley *et al.* (2014: 199) as a 'lock-in' which means that deep rooted elements make it difficult for a path with a laid foundation to change. In the case of transportation, elements such as infrastructure and sunken costs act as factors that lock the system in place. Durand and Vergne (2010: 743) explain the lock-in effect as a state of equilibrium. As mentioned path dependency is dependent on context and Atkinson and Oleson (1996: 609) note that when the path is initially 'chosen' it is by participants within a system and not by natural forces. Path dependency is cumulative causation and the natural feedback loop is self-reinforcing rather than self-correcting unless it is met by an opposing feedback to create change and new an equilibrium. If there is no opposing force, it lays down the fundamental structure of the system, and once this occurs, it is difficult to reverse.

Howlett and Rayner (2006: 5) say that path dependency represents a sort of failure to adapt to efficient techniques in the future, and instead inefficient technologies prohibit the adoption of more proficient practices. The initial conditions of a path are chance-like and although the early stages are important and the later events are inertial, history is not linear and it is beneficial to identify the contingencies in the analysis of this phenomenon. Simplified, path dependency is formed through the continuity of the collective arrangements created by these creative agencies. Creation of these paths are directly influenced by history (path dependence), but may result in a variety of outcomes depending on the path created.

A visual representation of the aforesaid would be this:

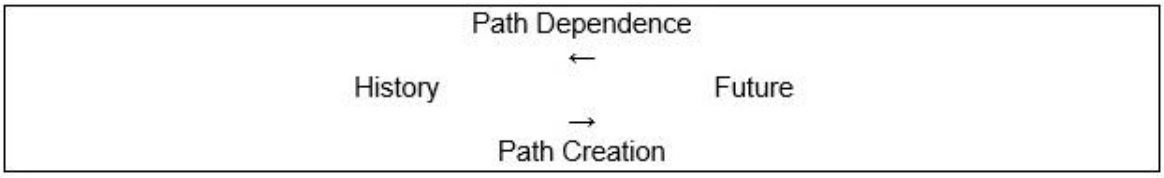

Figure 2.2: Path dependence

Garud and Karnoe (2001: 356) argue that the dismantling of a routine is achieved through the implementation of another routine and that history itself is left to interpretation in terms of how it is projected into the future because humans are species that are conscious of their past but are continually reimagining history to create a future.

There are three main types of path dependence; technical, institutional and discursive; technical path dependence focuses on the physical aspects of the city that are causing dependence on a particular form of public transport. Institutional path dependence is about the policies and legislations regarding development and transportation systems within the city, and to the steps taken by government institutions to provide quality public transportation (Hensley *et al.* 2014: 199). According to Durand and Vergne (2010: 738) institutional path dependence is history being carried into our present and dictating behavioural norms and cultural patterns. That if an economic pattern is set, it will carry on due to the

nature of path dependence. Lastly discursive path dependence is fundamentally the analysis of policies in order to clearly identify the core issue the policy is attempting to tackle and the solutions thereof. This path dependence can be used to justify why a path is taking a certain direction. (Hensley *et al.* 2014: 199). According to Atkinson and Oleson (1996: 609) policy is an important intervention in path dependency because it may change the direction of the path. Making good policy choices is difficult though, because feedback loops are not linear as they are subject to collective human behaviour.

2.2.1. Technical path dependence

To further explore technical path dependence, it is beneficial to consider the development of a city and its land uses. Looking at the transport urban fabric of the inner-city of Durban, it is evident that the most prominent mode of public transport is the minibus taxi service which is structurally informal and unregulated in terms of operation (van Tonder, Moodley and Aucamp 2005: 299).

Ideally, it takes a certain amount of time to travel from point A to B, and as public transport becomes more efficient, the travel distance available within a set timeframe increases, which allows for the expansion of cities. This is not generally true for private vehicles because of the hindrance of congestion and regulation (Edwards 2011: 7). Although minibus taxis are a form of public transport, they suffer from the same inefficiencies as private vehicles because they operate under the same conditions.

As there is increased urbanisation, it becomes necessary to increase the capacity of urban streets in order to support the urban context and quality of the public realm. Due to limited space within cities, sustainable modes of transportation become an important factor (NACTO 2016: 3).

Urbanisation in South Africa is happening at a rapid rate and is mainly caused by rural to urban migration. So those living on the outskirts are moving into the inner-city for better service provision but the inner-city is riddled with its own issues, and so as the densification of cities increases, it also becomes increasingly vital that smart solutions are implemented that support sustainability.

The definition of an inner-city as given by the Oxford dictionary is “the area near the centre of a city, especially associated with social and economic problems.” Other dictionaries such as the Cambridge and Collins dictionary give similar definitions with slightly differentiated wording that also include the characteristic of poverty.

Gentrification and revitalisation has been taking place in inner-cities to try combat the deterioration of areas and buildings within a city (National Planning Commission 2012: 282). The decline of these areas is mostly due to urban flight in countries that were typically known for segregation laws in the past such as South Africa (Visser 2002:419). Urban flight left buildings vacant and vulnerable to hijacks. These areas subsequently become less frequented as they no longer serve the general public. Public

transportation is therefore less likely to use routes that travel through such areas because they are less economically sustainable.

Segregation was not limited to space but included transportation services as well. As the options of transit became more and more expensive, transportation also became classist. Mobility is now a significant indicator of quality of life (Edwards 2011: 11). This is supported by the fact that provision of public transport in South Africa has been centred on the economical purposes of transporting labourers into the central business districts. The public transport system can hardly be likened to an alternative to motor transport but rather an inevitable choice for those who cannot afford a private car (Department of housing 2000: 1).

2.2.1.1. Urban settlement patterns

Urban settlement patterns and transportation go hand in hand. According to Zemp *et al.* (2010: 670) strategies that focus on transportation nodes within land use create a sustainable environment. The collaboration of multiple stakeholders and the integration of different interests within public spaces contribute to the optimal functionality of that space. The definite demarcation of transportation stations through strategic planning can also help direct investment. Having clear infrastructure boundaries simplifies the management of areas, in order for those responsible for the specified area to uphold the development and operation standards. In terms of spatial planning bodies, it enables performance assessments as well as the identification of sites and stakeholders involved.

This is all relevant to the taxi industry because their demarcated points within the city are not well defined. Although they can be identified through the collection of minibus taxis at a certain node, the infrastructure to support these transport interchange nodes are not specialised or well designed, and therefore require the active participation of rank managers in facilitating the movement of commuters in these areas. These ranks are usually in front of privately owned stores and the public space between the stores and on which the minibus taxis operate is managed by the municipality. The different stakeholders occupying these particular nodes do not use the opportunity to co-ordinate these spaces to create a system which merges operational boundaries created by ownership. As argued by Zemp *et al.* (2010: 670), clear boundaries do simplify the management of infrastructure but who holds these stakeholders accountable for maintaining the required standard? Who are the investors and what influence do they have over public and private entities?

Zemp *et al.* (2010: 671) go on to say that the relationship between land use and stations have been clearly defined in that the function of a station is determined by its context. This is illustrated by the South and North Beach taxi association route; the ‘workshop stop’. This is the biggest rank where association members gather, and it is right in the middle of the city where City Hall, a prominent market space and green open public space are all located. This is where many commuters get on or off taxis, therefore a functional movement system would make the biggest impact in this space.

According to van Wee and Maat (2003: 200) passenger volumes are determined by three factors: location of activities; travel resistances which are related to transport sustainability such as affordability, travel times, comfort etc.; and the needs and desires of people.

Locations create context as determined by the location of different human activities (land uses), which in turn determine the daily volume of passengers and the transportation modal split. The choice of the transport mode is dependent on the interests of the passengers, transport costs and other factors. These factors, also termed 'transport resistances' by van Wee and Maat (2003: 200) include affordability, comfort – which is later mentioned in this study as part of sustainable transport – and reliability. The interests of commuters revolve around socio-economic and cultural activities. It is not only the land uses that play a role in public transportation but also the actual spatial layout which determines the ease of access to different land use activities.

Fundamentally land uses determine whether commuters would be more likely or not to take a form of public transportation such as a train which usually travels into the inner-city or any other public transportation mode that travels into the central areas. If jobs are located on the edge of cities or in the suburbs, citizens traveling to work daily would rather use more flexible forms of transportation, which would then result in higher private car ownership, as private cars are the most flexible form of transportation. Apart from jobs, the location of houses, shops and other activities in arrangement to infrastructure network has an impact on transportation planning (van Wee and Maat 2003: 202).

Density and mixed used developments are other factors that influence travel distance and time. Since land use and transport systems are interdependent, changes in land use impact the transport system and affect certain elements of urban life such as accessibility. An example can be made that increased density in an area, may result in increased congestion, but in South Africa specifically, present day spatially issues can be traced back to segregation planning during the Apartheid era and its debilitating systems that enforced racism.

2.2.1.2. Inner-city transport design

One possible way to rectify the spatial injustices created in South Africa is through design. Design creates better functioning spaces. There are two important factors to consider in improved designs of public transport, the first is speed and fuel efficiency. The said pair of elements is directly linked to time and cost, which are prioritised factors when commuters select a form of transit. The second is the integration of vehicle types in order to cater for commuter demand and offer transport operators greater flexibility. This would create a hybrid form of transportation, which would require space design that allows for the fluidity of moving between the different forms of transportation. Transport interchanges become important in this instance (Edwards 2011: 11) and so road design will play a critical role in creating seamless interchange point within the road system. The efficient management of these spaces is crucial in helping to break down transport boundaries within the interchanges (Edwards 2011: 11) which cause

barriers to entry, and act as a psychological edge. Ensuring accessibility should be at the centre of interchange design and transport design as a whole.

When considering road design, one of the greatest inefficiencies in cities is the area demarcated to different modes of travel, which should be measured per person. In theory, pedestrians should have a little over 20 percent of surface area in relation to private cars, and cyclists – if/when they have dedicated lanes – should occupy about 25 percent of road space. There is a lack of democracy in the distribution of space in cities for vehicles that are less harmful to the environment, and are more sustainable. These forms of travel include pedestrian and cycle movement, that can sometimes match the travel time of vehicles due to congestion (Edwards 2011: 13-14).

Durban does not have demarcated cycle lanes which adjusts the demarcated percentages of road space for different modes of transport, but there is a growing trend of cyclist in the city who usually move against traffic in order to improve their visual and visibility. While this decreases their probability of being involved in an accident, it is still unsafe and makes the option of cycling – an affordable, sustainable form of independent transport – a difficult decision.

Durban inner-city streets also have to make space provision for informal traders who currently occupy pedestrian space and contribute to high levels of congestion on pavements. The inequalities in road design in terms of demarcation as mentioned by Edwards (2011: 14) also lead to congestion on roads, where buses have to wait behind parked cars. If public transport and pedestrian movement are not prioritised by design, to enable faster movement, there is less incentive for commuters to commit themselves or even try a public form of transit.

A seamless integration of different modes of transport enhances travel experience because all travel starts and ends on foot, therefore a prioritisation of foot movement is an unquestionable requirement. All different forms of transportation have policies but it is rare to find policy about the integration of transport modes and this is evident when authorities provide infrastructure for transportation, where the user is not the main focus of the design. So the challenge now is reinventing spaces to be designed for the integration of transportation modes, rather than separation (Edwards 2011: 16-17). In Durban, many existing interchanges are on the edge of the inner-city and often these interchange points are unpleasant, so a lot of urban design as well as transport design would be beneficial for these areas.

There are many factors to consider, including how costs can be divided and what role each stakeholder can play. The solution is embedded in clear cut collaboration. All mobility plans should have design guidance of the minimum standards required and intended performance that will promote walking, cycling and transit movement. Street design needs to be part of sustainability plans (NACTO 2016: 41) to contribute to a more efficient form of technical path defence within the transportation sector.

Below is a figure that demonstrates what street design can look like when all forms of movement are planned for and are provided an equitable amount of space.

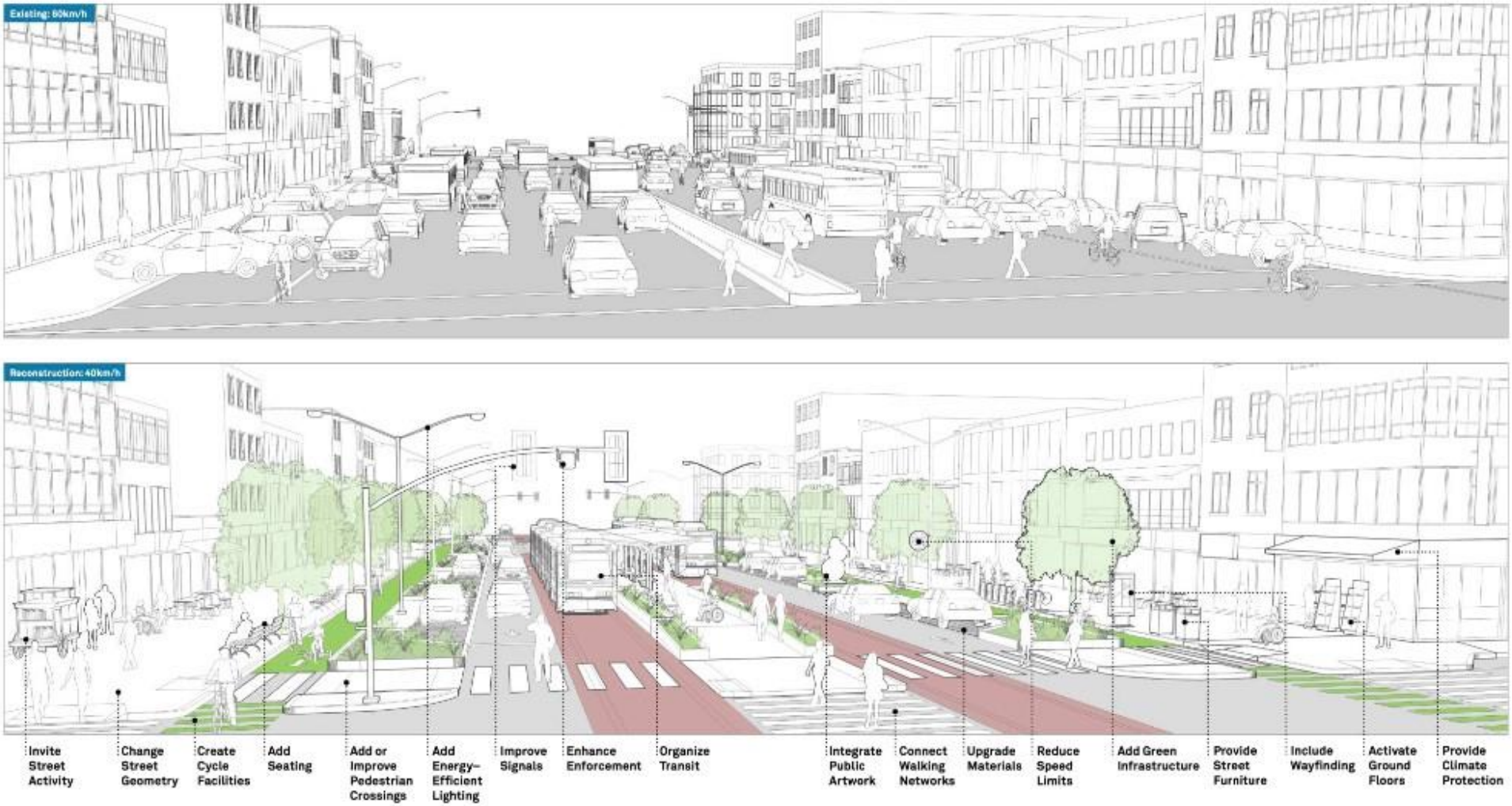

Figure 2.3: Street design (NACTO 2016: 16-17)

2.2.2. Institutional path dependence

During the apartheid era, business opportunities for the marginalised population were very limited but one of the opportunities available was in the taxi industry. This was a promising business, but it was difficult to acquire a permit from the National Transport Commission (NTC) to operate and there were strict regulations which enabled the government to control the number of legally operating kombi's (Barrett 2003: 6). Taxi operators found a loophole in the system which allowed them to operate a ten seater as a private public transport provider, rather than a bus as legally required (Barrett 2003: 6). The loophole was ensuring that one seat was always left open in order to be within the legal set boundaries (Barrett 2003: 6). Taxi owners/drivers had to operate within the ambiguities of the law from the foundation phase of the industry, which can be said to have set the standard/tone for the power struggle between government and the taxi industry. As business opportunities were limited, this was one of the few ways black South Africans could earn a living. This business is part of capitalist culture.

2.2.2.1. The capitalist city

According to Morcom (2015: 161) capitalism is the underpinning force of industrialization and colonialism, and that it is also what encourages technological innovation today.

Capitalism has germinated what has been termed 'property capital' which is responsible for the organization of land use and transportation – urban planning can only act in complementary ways or as an extension to the aims and activities of this group in the city (Foglesong 2012: 133).

Due to capitalist systems, land is treated as a commodity, but is not transportable and so is subsequently subjected to externalities. Inner-cities are a good example of this as they attract a range of activities due to the many commercial and corporate land uses that are external to the structures they occupy, such as transportation and informal activity. These externalities can enhance or depreciate the inner-city experience. State intervention is needed to mediate problems that arise from capitalism, but the system itself also limits the state's ability to meet the demanded intervention (Foglesong 2012: 133-134).

So it is private property that creates the conundrum of capitalist urbanization because there arises a contradiction between the social character of cities and the private ownership and control of properties. This constricts the ability to create harmonious spaces that meet the demands of the people who occupy the space (Foglesong 2012: 134).

Urban planning is needed to sustain capitalism in terms of creating integrated areas to promote economic activity, but capitalism also restrains the influence of urban planning because there exists the impulse to control urban space as part of the capitalist agenda (Foglesong 2012: 134).

These explorations are relevant to the taxi industry in that there is a need for control of the industry because it is based on capitalism. The impact of this industry is felt throughout the country as it

dominates public space, and specifically the Durban CBD. The taxi industry is in need of an intervention by the state to create better integration in cities but it is important that the intervention does not only benefit the state, but the taxi industry as well because of its capitalist power. Therefore, within any intervention provided by the state, it needs to prove how the taxi industry will benefit financially and create easier management for the industry with the improvement strategy proposed by the state, for commuters. This would create a circular motion of capital and service provision, with the state as a mediator to relieve pressure points within the transportation system as presented by commuters. This would serve as a form of urban acupuncture and thus promoting sustainability within the public transport sector which would be beneficial to citizens/commuters. This is to be implemented at local level, and Durban could be the pioneer city.

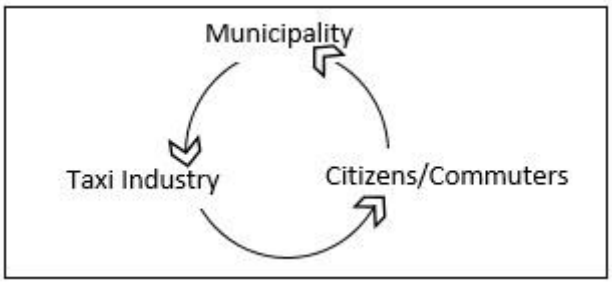

Figure 2.4: Sustainable system

Although this may seem to be an idealistic view, South Africa has announced the desire to become a developmental state which is defined by Edigheji (2010: 4) as one that promotes economic growth, industrialization, and the improvement of human capabilities. Another definition given by Gumede (2010: 2) describes the developmental state as being capable and active in pursuing development goals, and also collaborates with social partners in pursuing those goals. In order to move a step closer to becoming a developmental state, the taxi industry presents the South African state with an opportunity to improve human capabilities through collaboration. This would in turn affect the economy.

Capitalism is an economic system and according to Todaro and Smith (2009: 12), economics is a social science because it deals with humans and how they meet their needs. There are at least three different types of economics. The first is traditional economics based on economic 'rationality' which deals with "an advanced capitalist world of perfect markets" and so is materialistic, individualistic and has a self-centred approach to economic decisions. The second is the political economy which has to do with the allocation of scarce resources and how politics and power play a role in this. The third is development economics which encompasses both said types of economics as it looks at traditional economics, social, political and institutional forces in both public and private sectors (Todaro and Smith 2009: 12-13).

A developmental economy is what is most relevant to South Africa because some of the value premises of development economics include the improvement of economic and social equality, education,

elimination of poverty, achieving real democracy as well as self-reliance and modernization (Todaro and Smith 2009: 12). These are all values this country strives for and so are important to consider before any intervention is applied, because the slightest change will impact individuals and work for or against the said values.

As mentioned above both public and private sectors play a role in the development of the economy but the private sector is given preference in South Africa as written in the New Growth Path (NGP) because of the role that private companies play in economic growth. One of the projects put in place to promote economic growth was the Broad-based Black Economic Empowerment (BBBEE). It was introduced in 2003 to help balance out the injustices caused by apartheid, by insuring that a quarter of privately owned businesses are owned by the black South African population. South Africa is criticised for this project because it did not seem to have a clear strategic pattern of decision making (Ayee 2013: 272-273), which has led to a large informal economy that seems to have become unmanageable. The taxi industry falls under the informal economy and could have been part of a BBBEE strategic plan because it is a profitable business and chiefly run by black South Africans, therefore would have made the biggest impact in terms of the BBBEE project.

2.2.3. Discursive path dependence

Good governance in South Africa is guided by the 1996 Constitution which provides a legal and institutional framework for good governance. There are legal provisions within the constitution to ensure the rule of law, peace, political and civil liberties and rights, stability, transparency, accountability, combating of corruption and increased state-citizen interaction (Ayee 2013: 275-276).

A policy that was put in place to support this, is the National Development Plan 2030 (NDP). One of the aims of the NDP is to break down the apartheid geographies that still exist within the country by means of land reform that has been taking place since 1996. The breaking down of apartheid geographies will also be achieved by creating more compact cities, improving the public transport system and by developing industries and services that will make use of local resources to meet the needs of the people (National Planning Commission 2012: 233).

According to Turok (2010: 501), localities and regions play an important role in national development as they have a role in global competitiveness. Localities are where the skills, businesses, institutions and consumers are. Therefore from these statements made about localities it is demonstrated that focus needs to be specifically on localities as that is where implementation occurs once policy documents and programmes have been finalised. The interaction between land, labour markets, supply chains, and markets in these locales creates important positive and negative externalities that can affect the economy in a good or bad way (Turok 2010: 501). Some of these externalities include agglomerations in terms of land use arrangements or traffic congestion in terms of transportation.

South Africa still has dysfunctional settlement patterns, with people still living in poverty traps in the rural areas and because these settlements are so far away from the CBD, it makes it difficult to keep maintenance of the infrastructure and makes the movement of people and goods expensive (National Planning Commission 2012: 235).

It is also stated in the NDP policy document that public transport networks are key to transforming South African cities spatially and making the spaces more effective (National Planning Commission 2012: 238).

Policies inform legislation, legislation informs strategies, and one of the long standing strategies towards improving transport in SA was set in 1998 and is called Moving South Africa (Department of housing 2000: 2). It recognises the attention needed to revitalise declining CBDs. The first strategy listed in this document is to densify transportation corridors through the coordination of different institutions who play a role within urban space (Department of housing 2000: 26) which brings in the need for collaborative planning. The second strategy is about optimizing road space (Department of housing 2000: 26), which has to do with road design. The third strategy is about improving firm-level performance.

2.3.Collaborative planning

Collaborative planning is a continuation of Habermas' Theory of Communicative Action (Harris 2002: 21), and focuses on understanding and assessing governmental processes, in particular those that have to do with the development of the quality of places and territories (Murray 2005: 31). Collaborative planning was developed in 1995 as one of the countering theories to rationality.

The rational model was developed to operate like science ideally. It would only take into consideration measurable elements of planning, and then use logic and hypothesis testing to approve or reject methods of planning. The epistemology of the rational model was highly positivist, which then gave planners the role of neutral analysts (Innes and Booher 2015: 3). This made planning much easier to implement because as stated by Innes and Booher (2004: 3), politics, ambiguity and conflict lay outside the parameters of this scientific process: "The theory of change was that if you speak truth to power, the powerful will act (Wildavsky, 1987)".

Although rational planning could potentially be a good option, because in essence, public transport is a mathematical problem that could be solved through equations in terms of travel time and cost in order to provide quality transportation at the lowest possible cost for operators and commuters. It can only be applied once values and goals are established; this is not an easy process. Values and goals are determined through interactive discourse, and the communicative planning theory was introduced as a means of incorporating communication skills of listening, dialogue and deliberation to facilitate negotiations between diverse stakeholders in planning (Innes and Booher 2015: 3).

Communicative planning theory is procedural planning that is based on the Habermasian critical theory of 'communicative rationality'. In this theory, Habermas promotes the collaborative model of decision-making as a means of achieving the democratisation of wider society. When developing his theory, Habermas made use of the broad Marxist traditional perception, therefore in his theory, he proposes that the influence that the capitalist structure has on society should be reduced and replaced by collective reasoning (Murray 2005: 32-34).

In the section above on institutional path dependency I argued that capitalism has an impact on how space is used in cities. There is a growing recognition of the importance of spatial issues with a defining need to revise the conception of spaces through reimagined spatial arrangements. Stakeholders who play a role in the function of the space are usually diverse and need to come together as a community to address these spatial issues in a strategic manner (Harris 2002: 35). This is a general overview of what collaborative planning entails.

Collaborative planning is the integration of spatial and political sensibilities. It is place-focused and is definitively distinct from communicative planning because it attempts to include spatial awareness as one of the main topics. It also generally looks at public policy within its specific geography. Collaborative planning has an analytic component to it in trying to understand the complexities of socio-spatial processes through the use of communicative practises (Harris 2002: 34).

Collaborative planning is understanding that planning is an interactive process that involves the collective management of society and social group affairs in different institutional environments, which are influenced by economic, social and environmental forces (Healey 2003: 104) – sustainability model. Within collaborative planning, Healey (2003: 104-105) also looks at how planning and policy contribute to the quality of cities/towns and regions in terms of social justice and the fine grain experiences of daily life, within a context of diverse cultural values. This theory does not only look at material output but how policies are articulated and implemented in terms of resource allocation.

Collaborative planning seems to be the most suited to this study, but there are critiques which detail the boundaries of this planning model.

Collaborative planning criticised for not having a substantial social theory base and Healey (2003: 108) recognises the lack of detail of institutionalism in this regard in terms of approach. There is also neglect of power, which is another criticism that can be found of the rational model as well and is derived from Habermas' work as he does not give attention to power relations (Healey 2003: 108 - 110).

Power relations are quite an important consideration in terms of the study because the of the dynamic that exists between the eThekwini municipality and the South and North Beach taxi association as witness while taking a minibus taxi. When I have been on a minibus taxi and the driver sees police personnel, this sighting usually causes tension in the minibus. It is as though traffic police, which are

state employees, and the taxi industry run parallel to one another and the latter does not wish to meet the former. This tension, which is a common occurrence, is what sparked the initiation of this study. The question of; why is there is no social cohesion between state employees and a private entity that provides a national public service? How does this tension between these two bodies effect our society? These dynamics are a play on the power relations that exist between the two institutions. Control or management of the taxi industry through police force by the city and the taxi industry's determination to act on their own accord although they have such an impact on city infrastructure.

2.3.1. Power relation

Power dynamics amongst stakeholders are external to the urban planning issue. Innes and Booher (2015: 5) point out a number of issues related to this, one being that in order to arrive at a consensus, the discussions are likely to be influenced by peer pressure and result in the lowest common denominator. Other issues include the weaker group being marginalised and therefore legitimizing an unfair outcome because "democratised" processes have been utilised. Some argue that collaborative processes are unrealistic and could just lead to an outcome that is not right and actually results in the oppression of – more likely – a poor group (Innes and Booher 2015: 5).

A French philosopher, Descartes (2019: 5) writes that there is less perfection in works that are carried out by a number of people, than if it were done by one person. I can imagine that this is a consequence of what is stated by Innes and Booher (2015: 5), that each of the stakeholders work to achieve their own interest.

Authors have considered this power conundrum and in this regard Harris (2002: 30) mentions how "Foucauldian concepts have been imported into planning theory as both an alternative and complement to Habermasian communicative rationality", which in this case provides a working theory on power relations. The Foucauldian approach does not attempt to dissolve power relations through clear communication but rather to negotiate in whichever way suits each stakeholder, but with minimised domination of either party (Harris 2002: 31).

Foucault lists six concepts of power and describes them as circumstances of opposition (Foucault 1982: 780-781). They are:

1. Transversal struggles within and across countries.
2. Sometimes the aim is the effect of power, an example of this is a doctor in a hospital. Their exercised power over your body is hoped to result in better health.
3. People do not take well to exercised power by those closest to them.
4. There are struggles of individuality. What is different about a person is highlighted and it is asserted that individuality is right. It is then attacked and used to separate the individual from

others in a constraining way. This is not a struggle against the individual but rather the "government of individualism".

5. A struggle exists between those who have knowledge and those who do not. This is not just about knowledge but secrecy, deformation and mystifying representation as an opposition to convey knowledge. The circulation of knowledge is questioned here.
6. Power that questions our individual identity against the governing of the state economy and ideological violence.

All these concepts of power talk to collaborative planning, because when a collective comes together to have honest conversations about a topic, there are bound to be differences of opinion or conflict. When the source of conflict is understood, it gives a better chance of moving forward. From these six concepts of power, I think the most useful for stakeholders are the 1st, 5th and 6th concepts and the most useful for the separate stakeholder groups are the 3rd and 4th. Urban planners who take on the role of neutral analyst should relate to the 2nd concept.

Although there is no perfect formula, the inclusion of Foucauldian concepts into planning processes gives better perspective. Innes and Booher (2015: 6) also mention that power as a concept is not possessed by institutions or individuals, but is determined by the type of relationship, as well as time and place. According to Innes and Booher (2015: 6) Castells shares the view of Habermas of communication being an action towards changing social worlds including its power relations.

Power is not the only important critique of collaborative planning given. According to Healey (2003: 110) collaborative and communicative planning theory are also criticised for not giving enough attention to justice and sustainability of planning interventions and only focusing it on interaction. Fainstein (2009: 12) argues that planners should stress normative concepts more such as the Just City, and use this as a practical assessment tool of planning practice. In recent times there has been a reignited interest in planning for the Just City which focuses more on material redistribution and practical outcomes achieved through deliberation and participation.

2.3.2. Just City

The Just City is practical or theoretical implementation of social justice within a city, but what is real justice? Harvey (2003: 940) agrees with Thrasymachus in Plato's *The Republic* who argues that justice is whatever is decided by the ruling class. Connolly and Steil (2009: 2) mention how Socrates in *The Republic*, answers the question of justice by referring to a just city and how it is determined by the distribution of power in political matters.

According to Fainstein (2009: 12), John Rawls (1971), a North American philosopher, mentioned two principles that can lead the conversation of equality, the first being 'liberty' and the second 'difference'. He further elaborates this by saying that a free individual who acts rationally will choose a general

equality of primary goods for themselves because they do not want to be categorized as inferior. Biko (1977: 64) writes that fear stifles the feeling of being free and so I believe that is important that a Just City lacks fear, because fear restrains free movement.

Once the characteristics of a Just City are achieved, it will create safer environments in the city. Those characteristics include democracy, equity, diversity, growth and sustainability (Fainstein 2009: 3).

Although the Just city seems a hard goal to obtain, it is important to keep it as an idealistic expectation for the purpose of motivating people into action, as the principle of the right to the city in not limited to access but also includes the right to change it (Harvey 2003: 940). Connolly and Steil (2009: 1) support this by stating that the search for the Just City is about understanding the ins and outs of a city and then reimagining the reality of that city.

One of the limitations to achieving a Just City according to Harvey (2003: 940) is capitalism. Although the free market is fair to the individual, it is questioned in its relation institutionalism (refer to aforementioned 'The capitalist city'). Harvey also discusses how capitalism promotes class division which is not a virtue of the Just City.

Fainstein (2009: 11) lists some of the characteristics of what makes a good city. An important one is good access and heterogeneity in public spaces, and one of the influences of this is transportation. Other characteristics include a good built environment that has historically accurate architecture and cutting edge architecture, the participation of citizens in planning, affordable housing, harmony in the city and collective consumption, good mega-projects which are implemented in incremental stages and well maintained thereafter, economic development that supports small businesses and co-operatives, and lastly, environmentally friendly development which is supported by sustainability.

As mentioned before, collaborative and communicative planning theory are also criticised for diverting from sustainability (Healey 2003: 110). However according to Kenworthy (2006: 82), in achieving sustainable cities there needs to be interaction with a range of diverse communities and/or stakeholders, and that sustainable development requires radical thinking in planning and firm decision-making and action.

2.4. Sustainable transportation

A broad definition of sustainability is given by the Brutndland Commision, which was a sub-organization of the United Nations that focused on sustainable development, states that sustainability is meeting the needs of the present without sacrificing the needs of the future. These 'needs' may include a variety of objectives defined in the SDGs. The SDG most relevant to this study is number 11 which deals with sustainable cities and communities. One of the targets expressed is providing safe, affordable, accessible and sustainable transport systems. It is easy to relate to what is meant by safe, affordable

and accessible transportation, but it is less easy to define what *sustainable transport systems* really means.

When considering the level of urbanization and climate change, transportation presents a challenge and opportunity to promote urban sustainability (Li, Harvey and Huang 2015: 3). According to Burwell and Litman (2006: 331), sustainability is essentially recognising that human activity is integrated, and so planning should happen accordingly in order to coordinate all stakeholders involved. It is also about minimising production and consumption to reduce the amount of waste produced – this can be encouraged through policy change.

In order to achieve sustainable transportation, the image and function of it needs to be improved by making public transport as convenient as private transport through road and interchange design in inner-cities that prioritise pedestrian movement and cyclists (Edwards 2011: 20). Design plays an important role because it determines function and optimum function contributes significantly to sustainability.

Urbanisation creates more compact cities where goods, services and infrastructure are shared amongst a large group, which is good for sustainability in terms of energy and good for public transport. Urbanisation alone is not enough though, reconfiguration of movement paths around the city need to be considered (Edwards 2011: 47).

When narrowly defined, sustainability overlooks the opportunity of offering co-ordinated solutions to city problems that involve a number of relationships between sectors (Burwell and Litman 2006: 334). Taking this narrow view in transportation, it would be easy to assume that with the evolution in the modes of transportation, each would render the previous mode useless. When looking at transport sustainability in the broader context, it is important to look at all modes of transport and how they can all work well together to create a balance amongst them. Apart from the integration of transport modes, improving the sustainability of the transportation can also mean improved safety, comfort or reducing travel costs. Reducing the total need for travel at all may be even more ideal (Burwell and Litman 2006: 335).

Transportation has proven to be a complex sector for the implementation of sustainable development policy. This is due to it being interwoven with social, technical and economic systems (Goldman and Gorham 2006: 262). In the case of the minibus taxi industry there is also another layer of complexity - that such an important and prominent public service has fragmented, private ownership which subsequently creates a culture of competition within the industry itself. The taxi industry is riddled with rivalry on every level, and is infamous among South Africans for its bad service, poor vehicle quality and unsafe driving (Walters 2013: 49).

Kenworthy (2006: 80) mentions how there are ten points to consider about making transport and planning more sustainable in cities. In one of the ten points he supports Charles Laundry's (2000) statement that it is important that a city identifies its uniqueness and use it to improve itself by promoting

economic growth. Durban's CBD is unique in that it is defined mainly by two one-way streets – Dr Pixley Kaseme Street previously known as West Street, which has traffic heading to the east coast and Anton Lembede Street, previously known as Smith Street, which has traffic heading west, inland. These streets are parallel to one another and both are dominated by the minibus taxi industry, mainly the South and North Beach Taxi Association. These two streets make the inner-city legible and so easy to navigate. This ease of access legibility creates is an advantage because it makes getting acquainted with the city easier. These streets are 30.48m wide which make redesigning them, according to a more democrat distribution of space, plausible. The redesign needs to be sure to prioritise pedestrian and public transportation. Pedestrian movement is the most fundamental because all journeys start and end on foot, and so simple adjustments such as lifting all zebra crossings to the same level and using the same material on pedestrian walk ways would make it visible which movement is prioritised. Public transportation also needs to be prioritised by having dedicated lanes and clear interchange points. Improving these aspects of the city may create higher accessibility and contribute to economic growth.

The two main roads in the Durban inner-city are quite wide but still remain some of the most congested streets. Kenworthy (2006: 81) argues that traffic does not act like water, but more like a gas that contracts and expands to fill up the available space. In some cities there has been an attempt to match demand to supply, rather than supply to demand as part of Transport Demand Management (TDM).

Although there are many factors to consider when looking at a liveable city, cities that are highly motorised do not occupy a high ranking. If a city is moving towards becoming more sustainable, then its future plans for its transport system in relation to its land uses, are quite important Kenworthy (2006: 81).

Sustainability requires a paradigm shift, a different way of thinking for people. This requires more analysis and Burwell and Litman (2006: 336-339) have categorized sustainable transport indicators to further explore this phenomenon. There are three categories of indicators, as shown in the table below.

Table 2.1: Forms of transport sustainability

Conventional transport indicators	*Simple sustainability indicators*	*Comprehensive sustainable transportation indicators*
These assess vehicle traffic conditions.	These assess general/simple transport sustainability such as CO^2 emissions.	These assess a wider range of sustainability goals, and look at transport holistically.

Indicators relevant to the taxi industry fall under comprehensive sustainable transport, as shown below.

Table 2.2: Comprehensive sustainable transport indicators

comprehensive sustainable transport		
Economic	Social	Environmental
• Accessibility • Affordability • Facility costs	• Safety • Community liveability • Equity • Non-motorised transport planning • Citizen involvement	• Pollution (air and noise) • Land use impact • Resource efficiency

These indicators can be used as performance criteria to assess the sustainability of the South and North Beach taxi association operation.

2.5. Social change

Mode of transportation is linked to social class because it is understood that the wealthy can afford private vehicles and the poor cannot. The form of transport a person takes becomes a statement about social class and so the image of public transportation is a major obstacle in the mission to achieving social change because it is a negative one with regard to safety and sanitation. The role of design then becomes important in creating a more utopian image of public transportation (Edwards 2011: 7-8).

Edwards (2011: 8) also mentions that typically, those who complain about public transport are people who do not use the service, and those making polices on public transport make their way around in private vehicles.

Creating a more sustainable private-public transport system such as the minibus taxi system, which plays a role in shaping the CBD, may require a form of social change. According to Button and Nijkamp (1997: 215), social change is not something that can happen over a short period of time but rather is a result of a number of events that create social change over time. An example of this is the industrial revolution in the twentieth century. The introduction of mass production methods, which influenced the separation of work and home, and created the demand for vehicles and transport systems to get workers to work. It could even be add that a pandemic such as Covid-19 could be viewed as a social changing event that will create social change over time.

The driving forces of social change are still unclear because the feedback loop is not consistent and varies according to the specific social structure of particular society. Button and Nijkamp (1997: 215) argue that “transport is both an influence on the nature of social change and a reactor to it”. Therefore just as the organization of land use activities would change the transportation system, the

implementation of an improved sustainable transportation system will change the structure of the city, but it is unclear to what extent the change will occur. There would need to be research into the behavioural responses of a society in terms of mobility (Button and Nijkamp 1997: 217)

In the book *Predictably Irrational,* Ariely (2008: 3) explains that people do not know what they want until they see it in context because everything is relative. People need a reference to compare a new product with, in order for them to make a decision. We tend to compare things that are easily comparable and avoid those that aren't.

An example given is of a person who is given three options when shopping for a house – a contemporary style house, a colonial one and another colonial that needs roof repairing. It is more likely that the choice will be narrowed down to the two colonial options because they are easier to compare. The better colonial option would be the most common choice in this case (Ariely 2008: 8).

The comparison effect is important to consider during public participation with commuters and the presentation of a better working transportation system.

2.5.1. Theory of change

Connell and Kubisch (1998: 2) describe theory of change as a systematic and cumulative process that helps clarify the links between input, outcome and the social context of a project. The first step to this is determining the desired outcome, then deducing the activities required to produce those outcomes and finally assessing how context will influence the implementation of the activities as well as how the context may also affect the outcome. This process aims to clarify the role of each stakeholder and the desired outcome for each activity, therefore sharpening the planning and implementation of an initiative.

There are three questions to ask to ensure a good theory of change (Connell and Kubisch 1998: 3).

1. Is it logical in that the activity will produce the desired outcome?
2. Is it possible to implement in terms of the technical and political factors?
3. Is it possible to test and track progress of each activity?

During the planning stages of the implementation of theory of change, there are four important questions to be asked (Connell and Kubisch 1998: 5):-

1. What is the long-term goal to be achieved?
2. What short-term goals need to be achieved that support the end goal?
3. In terms of context, what activities need to take place in order to arrive to the earliest outcome of each goal?
4. What are the necessary resources to reach each goal and how are they obtained?

These questions should help to come to a clear logic of events that will lead to the end goal.

2.6. Conclusion

By way of concluding, it might be useful to consider Darwin's survival of the fittest theory as articulated by Edwards (2011: 10), that it is not the most intelligent or strongest infrastructure that will survive, but the elements of public transport that are most adaptable. This chapter mentions how adaptation can be hindered or made difficult, which is through path dependency. There are three different forms of path dependency mentioned in the study, namely technical, institutional and discursive. These all play a different role in cementing a particular path in how the taxi industry operates. The technical aspect of path dependency looks at the how the interdependence of transport and land use have shaped the transport operation of minibus taxis. Another factor that is mentioned under technical path dependency is how design, mainly road design, contributes to how minibus taxis operate within the inner-city. Under institutional path dependency the capitalist system is the main focus, and then policy is discussed in discursive path dependency.

Collaborative planning is presented as the theory that is to unlock the lock-in effect created by path dependency. Collaborative planning has its critiques which include power relations and the lack of consideration of the Just City which promotes sustainability. Sustainability is further discussed in relation to transportation. In the next chapter, the precedents of the study are discussed.

3. Chapter three: A look into the precedence's of transport planning in various cities

3.1. Introduction

This chapter looks at public transport precedents. Each case is illustrative of one or two of the themes presented in chapter two, which are path dependence, collaborative planning, theory of change and sustainability. The precedent's I have chosen include London, United Kingdom – which forms a significant part of the British capital – Nairobi, Kenya, and Durban, South Africa. Nairobi and Durban are both former British colonies, and therefore the common theme of these cases is British planning. This common fact might help to uncover a pattern pertaining to public transportation. Before I get into the case of the study, I will also make reference to Johannesburg because of the milestones the city has achieved in terms of transportation and also because Durban has had connections with Johannesburg, formerly known as the Witwatersrand area since its early industrial period as mentioned in the second chapter.

The London case study covers Policy and Road Design which fall under *path dependency*, as well as Private-public partnerships (PPP) which is a form of *collaborative planning*. Nairobi looks at *theory of change*. After Nairobi, Johannesburg gives the context of the South African public transportation system and then I move on to the main case study, Durban where I assess the *sustainability* issue, with a special focus on minibus taxis.

3.1.1. Background

The idea of public transportation can be dated as far back as 1662 when Pascal, a French mathematician, used a horse-drawn wagon to transport people into Paris for free, but when a fare was introduced for this service, commuters rebelled and the business fell apart (Smerk 1992: 5). With the industrial revolution in the eighteenth century came the separation of home and workplace, which promoted the use of private transportation (Smerk 1992: 5).

George Shillibeer was the first to introduce a mass transportation system in 1829 in the British capital. It was an omnibus that seated between 18 and 20 passengers and went along a regular route. The omnibus idea caught on to London, Paris and New York. According to Smerk (1992: 6) the drivers of these public transportation vehicles were known for their profane language and made mad dashes to the side walk to pick up potential commuters. The number of operating omnibuses grew and so did other transportation means, which then caused congestion in the inner-city but the presence of the omnibus operations strengthened the CBD by making it a focal point for internal travel (Smerk 1992: 6). Many of the wealthier residents moved out of the city for better housing and climate but public transit did not

extend outside of the city due to its limited speed of 5km/h, therefore it did not do much for the expanding of the city boundary (Smerk 1992:6).

There were a number of competitors in the public transit business, thus there was more than one company running the omnibuses within any given city, with each company operating only a specified area (Smerk 1992:6).

The above can be said to be true of the minibus taxi industry in Durban, as there are different associations which are responsible for certain routes in and around the city and within those associations, there are many taxi owners operating their vehicles on those routes with different drivers. A cross over of the set routes granted to the taxi owners would result in major conflict because of how highly competitive the industry is. Minibus taxi drivers are also known to be rude at times and also make mad dashes to get the next passenger(s). Moreover, the inner city minibus taxi's often play loud music and passengers have to shout their stops, as well as open and close the door of the vehicle themselves, which can be quite chaotic at times.

3.2. London, United Kingdom

3.2.1. History

According to Ball and Sunderland (2001: 3) London was the largest and richest urban agglomeration by the nineteenth century as the first capital of an industrial nation. London was also a city of inequality, with polar extremes of wealth and poverty, successful industries and declining ones, as well as new architectural and civil engineering developments alongside dilapidating buildings/areas (Ball and Sunderland 2001: 3).

It was not until the nineteenth century that whole countries, and not just cities or city states, were structured in an urban way – this was caused by the development of modern capitalist societies, in which Britain took an initial lead on (Ball and Sunderland 2001: 4). Reference can be made again to the *capitalist city* within institutional path dependency in order to relate to how a country's/city's economy can affect spatial planning. This can be further explained by Ball and Sunderland's (2001) in the five characteristics listed of what shaped London in the nineteenth century.

The first of these characteristics is that in this capitalist city, clustering did not happen through planning, but rather through market forces. In this way, cities were self-sustaining and no longer primarily linked to government. The second is that business evolved into a high competition state in order to accommodate capitalist behaviour – and this has been one of the primary flaws of the taxi industry. Third is the separation between places of work and residence for all classes and many families had freestanding property. By the end of the nineteenth century, home-working and overcrowding were condemned as social ills instead of being seen as norms as they had been before. This separation

defined many urban problems in terms of work and home and how to get between the two, making transportation an important aspect of urban life. The fourth is the specialisation of regions in the country in specific economic activities and the rapid appearance of major cities in these areas – areas that came to be known as 'conurbations' and the cities were all unique and reflected the different industrial specialisations. The fifth characteristic is the widespread technological changes in cities; transport is an example of this as it made a transition from horse all the way to the petrol engine (Ball and Sunderland 2001: 5-6).

Most of the urban technologies were provided by private companies and so rules and regulations were put in place in order to manage the operations and investments of these private companies. The organisations and institutional practices are very important in understanding the history of the metropolitan and the economy in London at this stage. There were controversial discussions about infrastructure development that were championed by private or public sectors and even private-public partnerships on rare occasions. Moreover there were discussions about what regulations were needed to avoid monopoly abuse and how to encourage change. Institutional frameworks that dealt with social policy and labour markets played a prominent role in this (Ball and Sunderland 2001: 7). Institutions involved in creating policy and regulation to manage privatisation include the Department of Trade and Industry (DTI), the Office of Fair Trading (OFT), and the Competition Commission (formerly the Monopolies and Mergers Commission). The collective effort saw the enactment of the Competition Act 1998 policy which focuses on fair competition and restrictive measures to ensure that abusive dominance does not occur (Wise 2002: 6).

Due to all these changes by the nineteenth century the city of London was divided into the West End where commercial activity took place and a central-industrial area where there were factories, workshops and low-income housing (Ball and Sunderland 2001: 8). This is reminiscent of Durban which is split at the city hall and the old train station building area. Large scale renewal occurred in London when the gains from change were great. The most short-run massive change was caused by the development of transportation facilities which destroyed and divided neighbourhoods.

The consequence of renewal in London was that older urban patterns were still present and growth was just added, causing congestion (Ball and Sunderland 2001: 8). This is also true for Durban as new ways of moving around and function have only been added to the city and not much modification has been done to accommodate a new way of living and the city's new residents post-apartheid.

3.2.2. Economies of scale

In terms of congestion, economies of scale play a role in transportation, especially in large urban areas where advantage can be taken of economies of scale. Congestion increases the cost and time of travel (Ball and Sunderland 2001: 8); so according to (Ford, Barr, Dawson and James 2015:127) calculations

using the formula C = aD + bT can be made where D is distance, T is time, a is the distance coefficient based on the number of km travelled and b is the time coefficient. This is one formula that could possibly be used to calculate the most cost effective solution to counter congestion in any city amongst others.

The problem that policy makers and planners are looking at now is extending public transportation attractiveness to car users in order to decrease congestion on the roads, as well as for the benefit of the environment (TRL Limited 2004: 1). In terms of sustainability, there are only a few routes that can be used by public transport services that create sufficient efficiencies required for this level of resource use (Vaz and Venter 2012: 624).

3.2.3. Policy

The UK White Paper in 1998 stated the importance of integrating transport with policies for education, health and wealth-creation so that transport can create a more inclusive society (Church, Frost and Sullivan 2000: 195). This is an indication of the government's concern with the relationship between mobility and social inclusion (Church, Frost and Sullivan 2000: 195), which is an issue in South Africa as a whole, where the more affluent communities make use of private cars and public transportation is used by the lower income groups.

To assess the relationship between transport and exclusion, two approaches are typically used in the UK: 'category approach' and the 'spatial approach'. The category approach focuses on categories of humans – as implied in its name – based on demographic criteria. It has a number of short falls because it does not factor in that human behaviour is subjective and not linear as needed for this approach to be accurate. Influences such as geography, economic status and social powers are not considered. In the spatial approach to assessing the reasons behind social exclusion, the focus is on accessibility in terms of linkages for people in rural areas or gated estates, which does little for tackling social exclusion in major cities (Church, Frost and Sullivan 2000: 196).

There was a social policy put in place to encourage social inclusion is the New Deal which was implemented in 2000. The strategy was to give travel to unemployed people going to interviews and job training as a category approach (Church, Frost and Sullivan 2000: 196), which is a good example of how social policy can contribute to the inclusion of a wider demographic in public transportation. This would be a great initiative in South Africa because of the economic status of a majority of its citizens, but in terms of it being an inclusionary tool, it would not change the status quo because as said before, public transport is used mainly by the lower income group.

In London, the most used form of public transportation is the local buses, followed by the national railway and then taxis/private hire vehicles (PHV). Most revenue is made by the national railway, followed by local buses and then taxis/PHV. The least used form of public transport, which generates the least revenue is light rail, which includes trams. Even with all the options available in terms of public transport,

private cars are used over five times more than public transportation (TRL Limited 2004: 6). In South Africa a large number of the population uses public transportation due to the economic challenges most South Africans face, therefore it is important that public transport is of a good standard.

Within the London context, buses are the most available mode of transit. They serve stops along a specific route and permit cash payment at the stops. Over the years, some interventions have been put in place in order to improve bus services, such as a designated lane in order to reduce travel time and increase reliability. This has benefited the operation of buses in London but it is not always successful, due to physical hindrances that do not allow for bus priority lanes where they would make the greatest impact. Other bus improvements include guided bus schemes, low floor buses, off-bus ticketing services and location systems with real-time information (TRL Limited 2004: 5-6).

Railways are quite straightforward because they have design specifications that need to be adhered to in order to be operational.

Taxis in London are privately owned but operate as a public transport system. They can be found on the street on demand or at demarcated ranks. The number of operational taxis have grown in popularity since 1985 and are complementary to or competing with other forms of transport. They are most useful during the evenings when conventional forms of transport are limited or non-existent. The fare is usually set by licensing authorities and is also in the settings of taximeters (TRL Limited 2004: 6).

The Transport Research Laboratory (TRL) (TRL Limited (2004: 29) has put together five broad objectives of transport policies, together with policy instruments and constraints in a diagram to illustrate how policy works in Britain (*See on the right*). Of the policy instruments, infrastructure management is one of the most important and most relevant for this study because is deals with partnerships (collaboration) and the allocation of road space (design) which is prioritised as playing a role in sustainability and socialization.

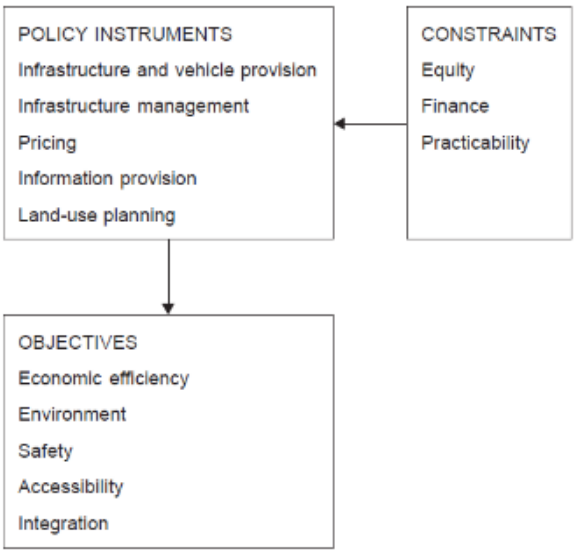

Figure 3.1: Policy diagram (TRL Limited (2004: 29)

A partnership example is the 'Quality Bus Partnership' (QBP). It is a concept that has been developed over the past two decades. It has to do with how buses are being managed by multiple local authorities and bus operators in order to improve the bus services, usually in one defined area. The most common way in which this takes place is by the local authorities handling the technical elements while the bus operators focus on the quality of the service provided. Statutory power was given to these partnerships

by the Transport Act 2000 which legally binds all partners involved in the agreement set. QBP's have to balance compliance with legislation on anti-competitive agreements and their visions of improving their bus services to be one of the best.

Another branch of infrastructure management is allocation of road space. The most successful technique in getting more people interested in public transport is High Occupancy Vehicle (HOV) lanes in road design. This is not only important on route but at junctions as well, where they would have the most impact, and so intelligent design needs to be made use of to optimise these lanes (TRL Limited 2004: 29).

3.2.4. Public-private partnerships

London is suited for this study because according to Pekka, Tuomo and Aki (2016: 224) the UK was the first country to introduce public-private partnerships (PPP) on a large scale under the leadership of Prime Minister Margaret Thatcher, and the term PPP was coined during her term in office. Siemiatycki (2011: 310) states that the UK is known as the pioneer and leading nation in the development of transportation infrastructure through PPP's, along with Australia and Spain. As an arrangement, PPP's existed long before the term was coined.

When the topic of the inner-city came to the forefront in the 1970s in the UK, policies shifted towards encouraging partnerships between the private and public sector in order to regenerate decaying areas of a city. Agencies were put in place to facilitate these partnerships by managing agreements between public and private bodies that would result in physical, economic and community development (Gore 1991: 209). Such agencies included urban renewal companies, urban development corporations, enterprise partnerships and others (Gore 1991: 211).

Transport infrastructure from the early onset has always been both public and private. Neoliberal reforms in the UK took place in the form of privatization of transportation infrastructure and assets among other sectors as a new form of public management. This lead to the corporate sector playing a larger role in service provision and the public sector adopting corporate management models, suggesting the superiority of corporate management over public administration and bureaucracy. PPP's became part of a larger wave of this proposed new paradigm of private sector superiority, and transportation infrastructure also became an integral part of this agenda (Pekka, Tuomo and Aki 2016: 224).

Officially since 1992 UK central government policy has encouraged the development through private finance initiatives (PFI) which is a version of PPPs in which only one group of firms is selected to design, build, finance and maintain a facility. PFI is still defined as the coming together of governmental agencies and firms, but the most defining feature is that they operate through deep collaborative partnerships, rather than a client-contractor based relationship. These deep collaborations happen through recurrent partnerships which merge into a latent network once all resources are taken care of (Siemiatycki 2011:

310). It can therefore be assumed that private finance initiatives only occur after a number of collaborative projects have already taken place.

These long standing partnerships are not necessarily good because they decrease the level of competition which compromises the outcome of projects in terms of quality and time efficiency. These partnerships, are however, convenient because they bundle up design, building, financing, operation and maintenance into one contract with a single concessionaire. The company is paid annually, over the period of a long-term contract which could be between 25 – 99 years, in order to cover capital costs, maintenance, operation and profit (Siemiatycki 2011: 313 - 315).

Within PFIs, the public sector plays more of an advisory role and the private sector brings together a network of suitable firms through a bidding process. Legally this is beneficial for the firms because the financial records of the PFI are linked to the consortium, therefore should the project suffer losses or bankruptcy, the firms will not be directly affected apart from the capital invested in the project (Siemiatycki 2011: 316). A further perspective of PPP's from a financial and economic viewpoint can also be gained within the reading by Pekka, Tuomo and Aki (2016).

Below is a diagram of a typical concession agreement in the UK.

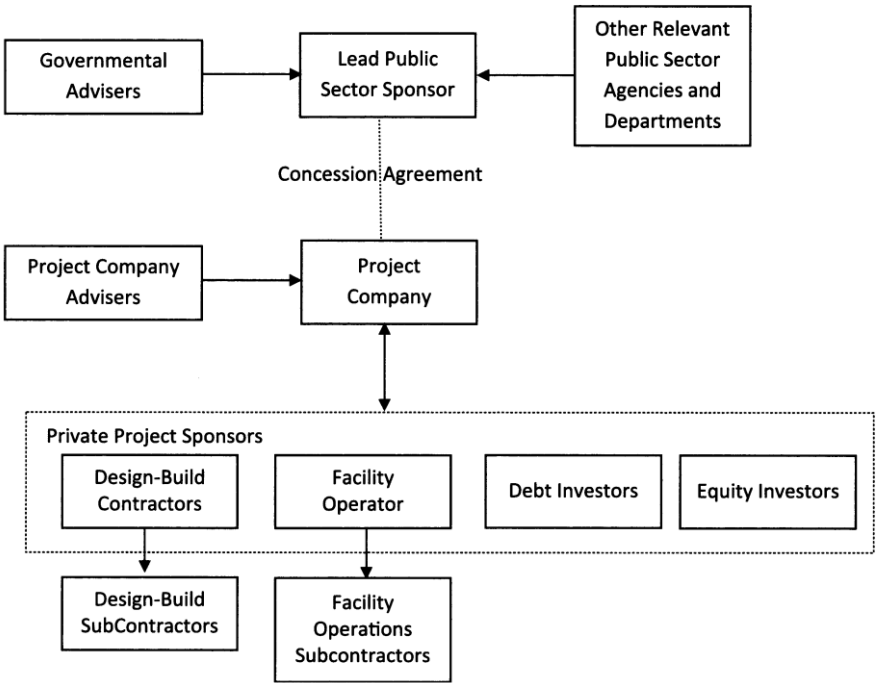

Figure 3.2: Concession agreement (Siemiatycki 2011: 315)

The United Kingdom and South Africa have different contexts and so that would need to be taken into consideration if this sort of model is adopted.

3.2.5. Road space allocation

One of the key of elements to sustainable development in transport and land use is accessibility to jobs, services and other destinations of interest. Accessibility is the ease or difficulty to overcome the spatial separation between two locations. It is the effort required to overcome this separation and it is usually a reflection of the efficiency involved in the transfer from current location to destination (Ford et al. 2015: 126).

This enables and supports economic development, and creates equitable access to essential services for all socio-economic groups (Ford *et al.* 2015: 125). Transportation systems are important mediators in creating sustainability in cities and the design of transport systems, and spatial planning can encourage the use of one mode of transport over another. Time, distance and accessibility are common factors to consider when discussing transport sustainability. Accessibility tools have been developed as standalone tools in the GIS environment. Some of these tools have been developed for a specific city, for example CAPITAL, which was developed specifically for London. This tool is only available to the UK Department of Transport, therefore creating a barrier of adoption by other non-specialists (Ford *et al.* 2015: 125). This is restrictive but also beneficial to the city it is tailored to because the specific context of the city is used to create the tool, making it the most relevant solution, so it would be great if one could be developed for Durban by specialists from appropriate disciplines. Aspects to consider when designing these tools are accessibility and integration.

The emphasis for transport planning in London is integration across all transport modes. Transport for London (TfL) developed an interchange plan which categorizes the interchanges into five groups, from major central London interchanges to local, which are prioritized according to infrastructure improvement. A number of intersecting bus routes gives the option of on-street transfers (Catherine, Attanucci and Wilson 2009: 3) which would further cement the technical path dependence of buses in London.

Technical dependence is the most difficult form of path dependence to overcome when change is occurring especially when cities have been established over a long period of time. The next case study will be looking at the theory of change.

3.3.Nairobi, Kenya

Kenya became a republic in 1963 and Nairobi continued to be the capital of Kenya after being influenced by colonial forces when it was founded in 1899 as a railway construction supply depot. One of the growth catalysts of the city was the construction of this railway line. Nairobi officially became the capital in 1905 and was officially considered a city from the year 1953. A rise in income levels in the city, created a

higher demand for personal mobility and the infrastructure was not ready for this increase in automobiles (Githui, Okamura and Nakamura 2009: 235).

One of the master plans put in place for the relief of multiple urban problems was the Nairobi Master Plan for a Colonial Capital in 1948, which was created in response to the concentration of population and economy in Nairobi (Githui, Okamura and Nakamura 2009: 235). According to Wanjiru and Giraut (2020: 8) the plan was prepared by a South African team of town planners, architects and sociologists. The main objective of this plan was to zone areas and ensure interrelations between the land uses by securing the interlinked transportation system. The plan had a racial agenda which marginalised the black population. The population planned for consisted of European (British), Asian (Indian) and African (Kikuyu and Maasai). This is the same for Durban, so there is a strong link between the two cities but the planning of the two cities was different due to the spatial differences between the two cities, seen in the map below.

Figure 3.3: Master plan (Wanjiru and Giraut 2020: 8)

The next plan was the Nairobi Metropolitan Growth Strategy 1973, which was to address urban development and physical planning. Transportation policies were one of the main aspects of this document (Githui, Okamura and Nakamura 2009: 235).

The most recent policy intervention is the Nairobi Metropolitan Area Transport Authority (NaMATA) which was established in 2017 by President Uhuru Kenyatta. Its main role is to develop an integrated public transport strategy that is sustainable, efficient and effective enough to support the Metropolitan area. Some of the NAMATAs functions include conducting studies on mass transit systems, regulating, co-ordinating and developing plans to implement strategy Nairobi (NaMATA 2017).

Matatus or mini-bus taxis, are the most commonly used form of public transportation. They were introduced in the 1950s and given their presidential decree to operate in 1973, and have become popular amongst city dwellers because of their flexible operation system. Matatus do not have a very good reputation as it is argued that they are one of the major causes of congestion and accidents on the road because of reckless driving (Githui, Okamura and Nakamura 2009: 236).

According to research conducted by Githui, Okamura and Nakamura (2009: 239), factors that influence the choice of public transport in favour of matatus include convenience, reliability and affordability. Unfortunately though, more than half the commuters reported that it takes about 60 minutes for them to get to their destination due to traffic congestion. The majority of the commuters who take matatus are between the ages of 25-35, and assumed in large part to be able bodied, which indicates how unfavourable the form of transport is for vulnerable commuters.

Other than matatus, the majority of residents in Nairobi make their way around the city by walking (Githui, Okamura and Nakamura 2009: 236) but the sharing of existing street space amongst different users seems to be a challenge faced in urban areas(Khayesi, Monheim and Nebe 2010: 104). It seems common that pedestrians, cyclists, street vendors, disabled people and communities are neglected when planning urban street space in cities, which are said to need to integrate with the community in terms of social, economic and ecological fabric (Khayesi, Monheim and Nebe 2010: 105).

Policy is one way to promote equity and democracy of urban spaces, another is through street design. In Nairobi non-motorised transport was promoted via employers who encouraged their employees to come to work using bicycles, where bicycle parking facilities were provided. Bicycle paths were built by the government. A new government came into power in 2002 that developed a policy that made reference to the integration of non-motorised and intermediate modes of transport into the road network and moreover, provided incentives that would support the local manufacture of transport modes (Khayesi, Monheim and Nebe 2010: 108) .

To change the dominant mode of transport requires re-engineering the society, and to analyse transport in Nairobi, is to question decision-making processes, urban planning models and other influences on city development (Khayesi, Monheim and Nebe 2010: 107).

3.3.1. Theory of change: Application to Nairobi

Below is a good example of how to plan and implement change through the theory of change model as defined in chapter two. This theory of change diagram was developed for the transportation system in Nairobi.

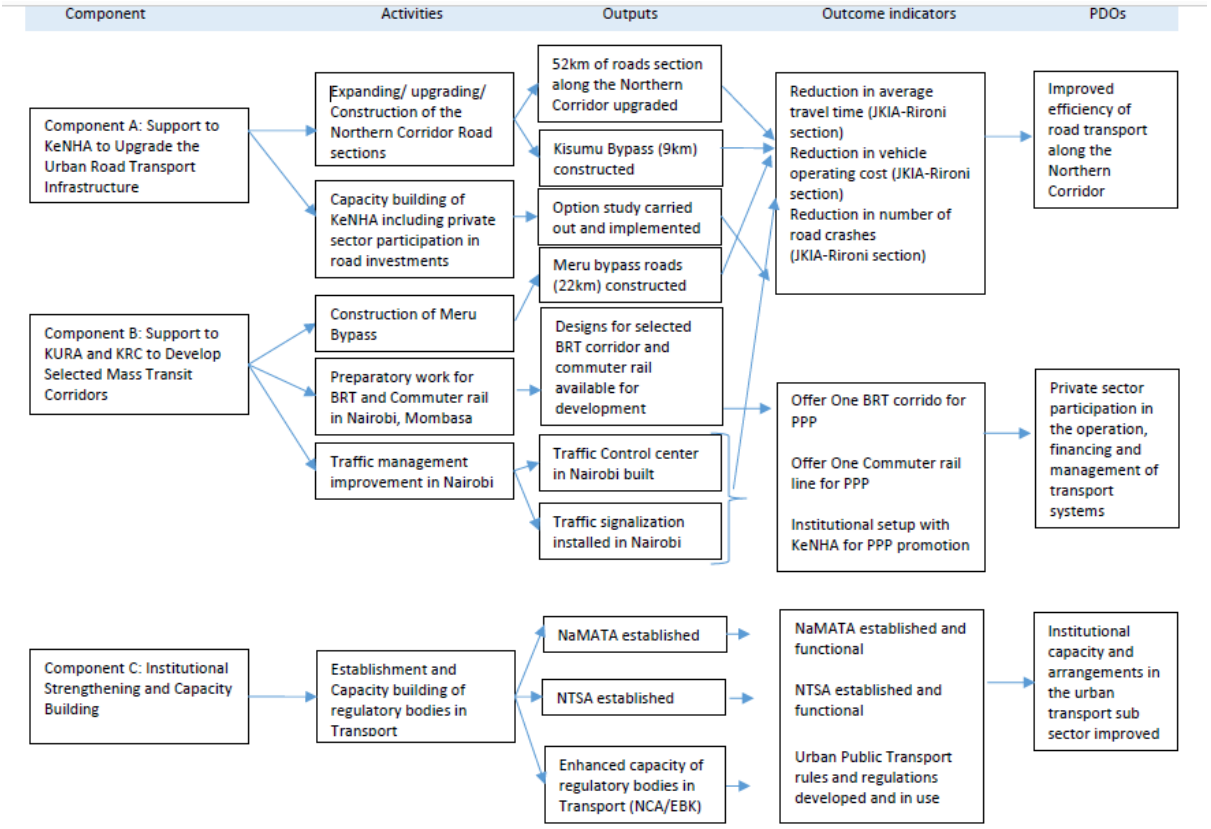

Figure 3.4: Theory of change (The World Bank 2019: 9)

Habyarimana and Jack (2015: E4662) discuss how change is brought about by the changed behaviour of individuals and that this behaviour can be influenced by providing information to people. They make an example of how passengers in a matatu could act against bad practices within this public transportation, but the issue they raise is that sometimes passengers are unaware of the power they have. It is therefore suggested that passengers be enlightened by offering them information by putting stickers in the minibuses which raise the awareness of collective power, which could in turn also influence the behaviour of the driver from the beginning in anticipation of action against bad practice.

A very similar intervention was taken by the South and North Beach Taxi Association, where they put up stickers encouraging passengers to report bad customer service and also provided a number that commuters could call to report bad behaviour. This did not seem to yield any evident results in terms of improved customer service and from its implementation, the stickers have since worn off and been taken down.

It is my understanding then that systematic change within the public transportation system is more likely to take place through top down interventions rather than bottom up.

Like South Africa, Kenya has a 2030 vision, and like South Africa its main goal is economic growth that will lead it to becoming a middle-income country (Okello 2017: 5).

The National Development Plan 2030 goal in South Africa is to reduce poverty and inequality. The taxi industry stands as a constant from the era of apartheid, the most unequal time in South Africa, and the stigma around the industry has carried into post-apartheid. Twenty-five years later and the taxi industry has become the dominant form of public transportation, but is still operating within the ambiguities of its regulations as it was during the apartheid era. Other forms of public transport have evolved over the years and Johannesburg, South Africa has been the leading city in terms of transport innovation implementation, and can be used as an example to understand how far this country has gone in terms of is transportation system.

3.4.Johannesburg, South Africa

Minibus taxis are a unique feature of public transport and they are associated with many issues. The improvement of transportation in South Africa has always taken a back seat to the provision of housing, education and health which were seemingly more urgent post-apartheid. Transportation has now been recognized for the role it plays within the economy, in environmental sustainability and in road congestion thus the focus has shifted to public transport (Walters 2013: 34).

Gauteng, is the economic hub of South Africa where high levels of congestion exist due to the increase of private car ownership. Those who take public transportation find that bus and minibus taxis are the most accessible modes of transport because they are more flexible than rail. Accessibility is the main concern when it comes to public transport, with bad driving being reported a close second (Walters 2013: 36-37).

With buses, commuters are dissatisfied with the facilities at bus stops and overcrowding and with minibus taxis commuters have concerns with safety, lack of facilities at ranks (which goes back to interchange design) and vehicle roadworthiness (Walters 2013: 37). The bulk of complaints are made about the taxi industry by commuters themselves but the majority of these commuters still use this mode over others, and so there is clearly an overriding advantage provided by the taxi industry that has to do with its sustainability. As mentioned before, accessibility is a major determining factor in making a mode of transport sustainable in terms of longevity.

Buses are a close second after minibus taxis and policies on buses can be found in the White Paper of the National Transport Policy 1996 in the Moving South Africa Strategy and the National Land Transport Transition Act 2000. There are privately owned buses which can apply for government subsidy; the

Department of Transport's official policy about subsidy is that bus companies need to have gone through the process of competitive tendering. There are also buses owned by local government (Walters 2013: 41) and one of them is Rea Vaya, which is a bus rapid transit (BRT) system in Johannesburg, that was anticipated to solve some of the congestion problems in this busy city.

3.4.1. Bus rapid transit

The BRT system is being upheld as a primary means of improving public transportation services in poor communities to mediate exclusion-related poverty. However, it does not provide better accessibility because the routes that the BRT system have developed, are routes that were already being used by minibus taxis and other forms of public transport (Vaz and Venter 2012: 619). The BRT route between Soweto and the CBD replaced 580 minibus taxi's but even with this significant change, the taxi industry transports the highest percentage of commuters with the BRT system close behind. The majority of BRT commuters were previously minibus taxi commuters and therefore the competition is mainly between BRT and minibus taxis. It is noted that no commuters made the switch from private car travel to BRT.

A significant contribution of the BRT in Johannesburg is connecting former townships to areas of work which is good for integration and future economic development in these areas. This is supported by the competitive pricing of the BRT compared to minibus taxis. The BRT can also be beneficial in the socio-economy considering its routes prioritize access to work (Vaz and Venter 2012: 625) such as was done in London with the New Deal. Although the BRT's main focus is home to work travel, it also has routes to other destinations that include leisure, health and shopping therefore moving away from the stereotype of public transport in South Africa being designed to mobilise labourers. Another advantage that the BRT has over other modes of transport is that travel times are shorter due to its dedicated lanes and time schedule (Vaz and Venter 2012: 628).

With all its benefits, the Johannesburg BRT system seems to service the middle to higher income groups because its prices are slightly higher than that of rail transportation (Vaz and Venter 2012: 629). It has not attracted private car uses as expected but instead is in competition with minibus taxis.

3.4.2. Minibus taxis

As mentioned in chapter two, business opportunities were limited for the marginalised groups during the apartheid era, and the taxi industry was one of the business opportunities available at the time. Despite this it was difficult to operate under strict regulations and taxi owners ended up operating within the ambiguities of the law. Due to this fact and that there is a lack of enforcing regulation, the industry has run into issues such as oversupply, capital replacement issues and a lack of economic sustainability (Walters 2013: 49).

The minibus taxis work on demand and therefore are flexible and tailored to the area they operate in, time of the day/week/month and also weather; so essentially commuters need to study taxi patterns of the particular route they plan to take in order to make good traveling time decisions (Van Tonder et al 2005: 299).

All this sets the scene of the current road public transportation system in South Africa as this information is true for the major cities in this country, including Durban.

3.5. Durban, South Africa

3.5.1. History

There was a development boom in the city of Durban directly following the union in 1910 (Morrison 1987: 26) and as development grew, public transport changed to accommodate the densified land use. Double-decker buses replaced the single storey horse-drawn trams, which were later replaced by the American cowcatcher electric trams (Morrison 1987: 26). Before this, during 1860, Durban and Cape Town had been competing to be the first to have a working train system and Durban won, having a steam train that ran from Point to the interchange point at Pine Terrace (Morrison 1987: 30) which is now Berea Technical on Commercial Street. Within two years, the train tracks were extended to the Umgeni River, then to Pinetown, then Pietermaritzburg and a direct track was built to Johannesburg by the Netherlands South African Railway company. Durban was also the first city in South Africa to introduce the rickshaw in the inner-city (Morrison 1987: 31). Therefore it can be deduced that Durban had been the leading city in the country when it came to public transit.

The electric trams were replaced in the 1940s by buses as the main intra-city transportation. This process was filled with animosity due to conflicting interests and so this was a difficult transition in Durban (Morrison 1987: 34). Although the tram was a good step forward in transport, it also faced problems where electrical double-deckers were stacked one behind another when there was a power failure – see below (Morrison 1987: 33). This means the transition to buses was necessary. This also goes back to creating energy efficient transportation to support environmentally sustainable transportation.

Figure 3.5: Electric double-decker jammed due to power failure (Morrison 1987:33)

The provision and planning of transport in Durban was headed by the Durban Transport Management Board (DTMB) which was established in 1953. It was the only city council in the country to manage public transportation buses, and they were heavily subsidised (Khan 2014: 180).

3.5.2. Transportation

The DTMB responsibilities have been taken over by the eThekwini Transport Authority (ETA), which was established 2004. This body ensures that decisions made reflect the local views as it is a democratic and politically accountable board that includes elected representatives such as councillors. They are responsible for the management of public transportation and transport infrastructure, and they perform other functions related to transportation (eThekwini Municipality 2011).

Go! Durban is another transport body in eThekwini. It was originally established for the development of the Integrated Rapid Public Transport Network (IRPTN) in 2013, a collaborative effort of different departments, including the ETA, Project Management Support, Infrastructure Planning, Intelligent Transport System, and Integrated Fare Management System and Skills Development. The aim of Go! Durban is to create a world class transportation system and some of their projects include the cycle academy and Muvo transport cards (Go Durban 2013).

Go! Durban supports the NDP 2030 vision for eThekwini becoming the most caring and liveable city. Their efforts lean more toward the role transport can play in this endeavour. In terms of minibus taxis, the Moja Cruise initiative was established, it offers a rewards system for taxi drives as an incentive for better driving. This is in effort to integrate the industry into the planned public transport system as the municipality started construction on road infrastructure. The aim of this was to ensure that the taxi

industry continues to have stake in public transportation but in a more cohesive manner (*A new era for public transport: taxi incentives programme launch* 2017).

The Moja Cruise project was a collaborative effort between eThekwini Metro Taxi Council, (the leadership body of taxi industry) and the city. 500 minibus taxis were part of the pilot which meant that these taxis were branded and monitored to ensure that they kept to the criteria of providing safe, clean, efficient and customer-based service. If the minibus taxis were successful in this, they were rewarded financially. It was decided the programme would run for six months (Go Durban 2013).

In 2018, July, the project was given permission to continue as it was designed to empower the taxi industry and took on the form of a non-profit organisation (eThekwini Municipality 2011). In 2019, the programme was politically challenged by one of the parties who wanted Moja Cruise to account for all the money put into the programme to improve taxi industry service because there had not been a significant enough improvement as anticipated (Eyewitness News 2019).

This was an important initiative to have happened because it demonstrates that the city values the taxi industry and supports the principle of the right to the city. The only issue is finding a working system that improves the power dynamics between the city and the taxi industry. There is still a parental power dynamic within the Moja Cruise initiative – if you behave, you will be rewarded, instead of approaching it from a business stand point. The PPP is in keeping with business standard when the city merges with private to produce a service, but it is not necessary a blueprint that can be applied everywhere, only the principle can be the take away.

As mentioned in the previous chapter, power relations within collaborative efforts are worth careful consideration because they always come up and Foucauldian concepts can be used as a basis for these negotiations.

The minibus taxi service remains the most prominent mode of public transport in the CBD which according to Van Tonder *et al* (2005: 299) is structurally informal and unregulated in terms of operation. Apart from the taxi industry service, there are many complaints about the South African transportation system in general and below is a table showing transport related problems in South Africa which have been categorised by province (Department of Transport 2014: 92):

Table 3.1: Public transport related

Transport-related problems	Province (per cent of problems within province)									
	WC	EC	NC	FS	KZN	NW	GP	MP	LP	RSA
General problems										
No transport problems	8,9	9,9	19,3	14,6	6,4	13,2	6,5	7,4	10,5	8,7
Poor condition of roads	2,8	26,3	15,2	21,0	12,2	19,8	7,0	16,0	17,9	13,0
Rude drivers	7,0	4,4	7,9	6,7	4,6	7,3	8,3	7,2	2,7	6,3
Overload	6,0	8,9	2,6	1,5	6,6	3,4	3,5	2,8	4,6	4,9
Congestion	6,2	1,8	1,0	0,9	1,8	1,2	6,3	2,8	1,8	3,6
Crime	8,9	1,3	1,2	1,4	2,9	2,6	3,1	1,2	0,9	3,0
Toll fees	0,1	0,1	.	1,1	0,3	0,2	2,9	0,8	0,3	1,1
Parking	1,0	0,3	0,9	0,3	0,3	0,4	0,7	0,2	0,3	0,5
Other	1,5	1,6	1,7	3,3	1,1	1,9	2,0	2,0	0,7	1,7
Taxi										
Taxis too expensive	5,5	10,5	12,8	9,5	11,6	9,7	9,5	14,5	12,2	10,2
Reckless driving by taxi drivers	10,1	4,7	7,0	6,3	4,4	6,4	10,3	8,2	4,3	7,4
No taxis at specific times, e.g. late at night	2,6	4,8	6,7	8,5	10,6	6,6	3,8	5,3	9,8	6,1
Taxis too far	1,4	3,8	3,5	6,4	6,1	4,8	3,1	5,8	7,0	4,3
No taxis available	2,5	2,6	6,2	4,1	2,7	2,8	1,6	3,2	3,6	2,6
Bus										
No buses available	12,0	11,6	9,5	7,0	11,8	7,3	12,5	6,4	6,6	10,5
No buses at specific times, e.g. late at night	3,3	2,9	1,6	2,0	6,0	6,7	2,5	7,3	8,9	4,4
Buses too far	2,2	1,4	0,6	1,1	3,3	1,0	1,9	3,1	3,8	2,2
Buses too expensive	4,8	0,4	1,0	0,8	1,6	0,8	1,1	2,4	1,5	1,6
Reckless driving by bus drivers	1,8	0,6	0,3	2,1	1,2	1,6	2,3	1,5	1,4	1,6
Train										
No trains available	3,7	1,0	0,6	0,5	2,1	1,4	3,7	0,6	0,7	2,2
Trains are not reliable	3,0	0,2	0,1	0,1	0,4	0,2	2,8	0,2	0,1	1,3
Trains too far	3,5	0,6	0,2	0,2	1,3	0,3	2,6	0,2	0,1	1,5
No trains at specific times, e.g. late at night	1,0	0,2	0,1	0,2	0,4	0,2	1,5	0,7	0,2	0,7
Trains too expensive	0,4	0,3	0,2	0,2	0,2	0,2	0,4	0,1	0,1	0,3
Total	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**

In following with the just city concept, all these complaints need to be considered and addressed in order to create a more just city, but first it is important to understand the people and how they make decisions in order to ensure the sustainability of implemented solutions.

According to Vuchic (2005) in (Ngoc, Hung and Tuan 2017: 4561) commuters base their choice of public transport on; the availability of the transit, punctuality, travel time, transfer and departure times (influenced by the aforementioned), as well as user costs, comfort, safety, security and convenience (including good off peak services and adequate information pertaining to the routes of the transit). These form part of the sustainability criteria provided in chapter 2.

It would seem that the association possesses most traits of accessibility, affordability and low facility costs, therefore the South and North Beach Taxi Association is only economically sustainable. In terms of social and environmental sustainability, this is where the taxi industry lacks. Moja Cruise was an attempt to improve the social sustainability of minibus taxis in eThekwini but there still exist issues around safety, community liveability, equity, non-motorised transport planning and citizen involvement.

The Taxi Recapitalization Programme attempted to address environmental sustainability by reducing the number of taxis on the road but implementation of this strategy was more efficient during the introductory stages of the programme and then steadily decreased until the programme was forgotten.

As a country whose overall goal is to grow economically and increase the percentage of middle-income citizens, it can be assumed that economic sustainability will be more important to its citizens than social and environmental sustainability. Minibus taxis are still favoured by commuters because even though the transit has many issues, they provide the most convenient and economically sustainable service. The South and North Beach minibus taxis are a low cost form of travel through the inner-city, accessible, have clear routes, are highly convenient due to the flexibility of the service, but because they do not have a set schedule; travel times vary depending on the driver and how many loading stops he decides to make. These taxis could make improvements in terms of safety, general comfortable, competitive practises that create discomfort for passengers while drivers pursue potential commuters and therefore make abrupt stops and speedy take offs. The South and North Beach taxis often also play loud music and vehicles have a low level of privacy. Even so, these are all barely issues compared to all other issues found in other forms of transportation because minibus taxis are still the preferred form of transportation over other forms of public transportation.

3.5.3. South and North Beach Taxi Association

There are two main methods of taxi operation in eThekwini; there are taxi's that are constantly traveling on their route with a few stops, picking up commuters along their usual route and there are those that station at loading zones until the taxi is full and then proceed to their destination. In the South and North Beach taxi association, the official rank is at the Workshop area and the North Beach taxi have another official rank station, which is at the South Coast Casino, but everywhere else along the route there are pick up and drop off stops. One of the issues with these stops is that taxis stop for longer than they should. The association has appointed managers for each of the stops to manage the time spent by taxis at the stop, to open and close doors for passengers and also control noise levels. Taxis do not always stop at these demarcated areas but instead stop wherever they choose and even when they do use the demarcated areas, some drivers still do not always adhere to the rules. Below is a visual of the South and North Beach Taxi Association routes:

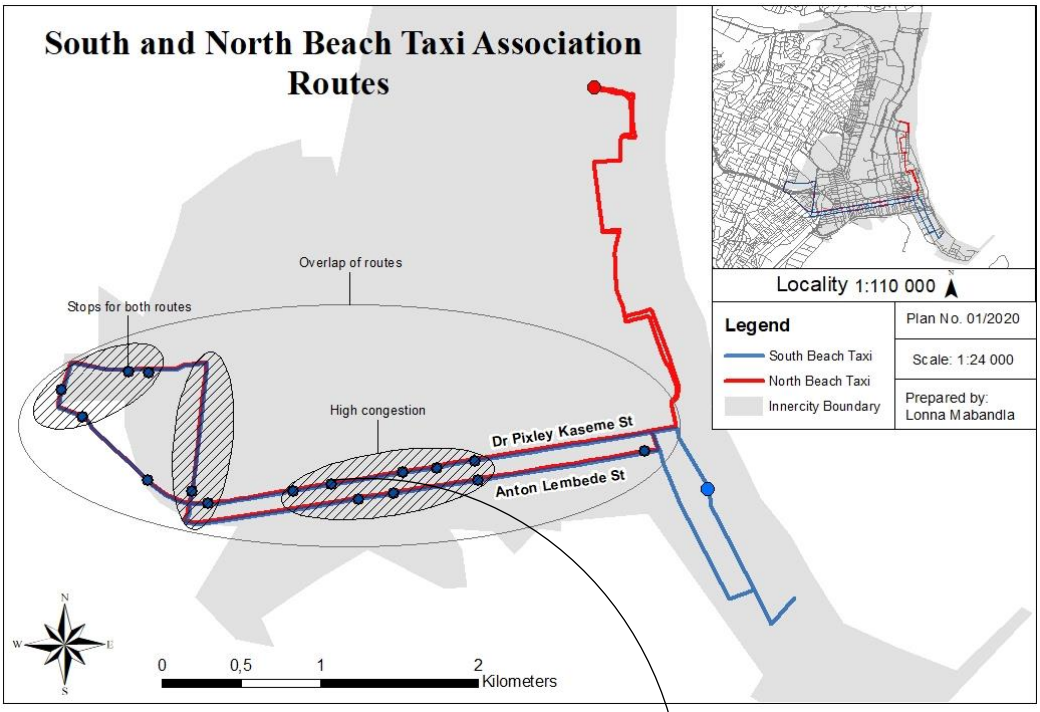

Figure 3.6: South and North beach taxi association routes

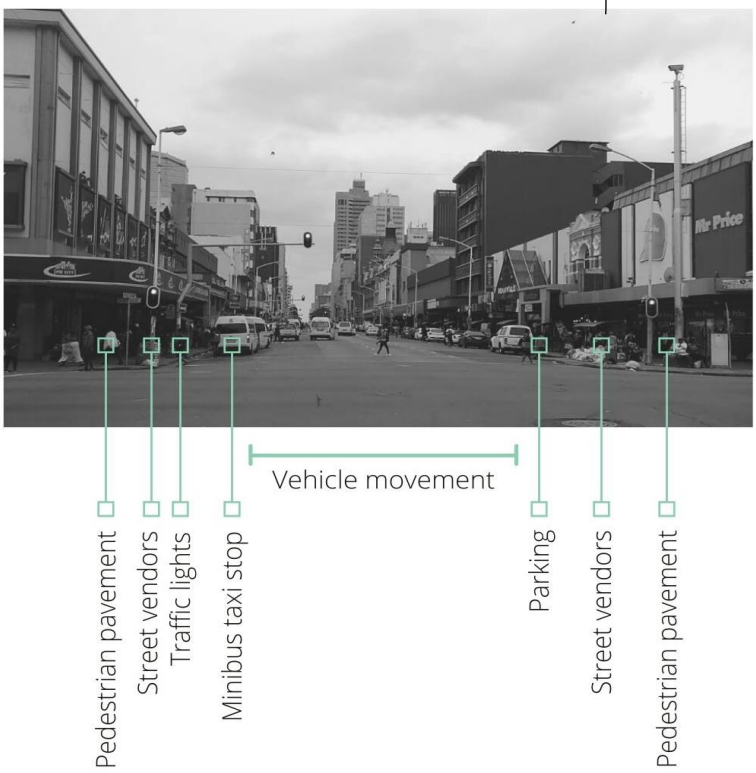

Figure 3.7: Intersection of Dr Pixley Kaseme Street and Yusuf Dadoo Street

3.5.4. Road space

Durban citizens make their way around the city by either walking, or using minibus taxis, buses or private cars. The inner city has no provision for cyclists and is too congested for many cyclists but some people do still cycle against these odds. Apart from movement, another street activity is informal trading or street vendors as we know them in South Africa. Road space is not sufficiently distributed to accommodate all these activities. This close up image below further illustrates how cramped pedestrian space is in the Durban CBD. It is clear that pedestrian movement is not prioritised, which should not be the case in well-designed road spaces that consider that all movement begins and ends on foot.

Figure 3.8: Dr Pixley Kaseme Street

An inner-city LAP was proposed in 2016 and some of the goals listed included making Durban a walkable city and also supporting the IRPTN. This would be done through reconfiguring streets and creating a new pedestrian priority network. Apart from road design, this is also influenced by land use activity (eThekwini Municipality 2016). When considering all these changes it is very important to examine and understand the spatial patterns that already exist in order to implement solutions that are relevant. This will improve existing infrastructure and ensure that new problems are not created by inefficient solutions.

3.6. Conclusion

Each case study has a unique context but as mentioned before they all have British influence. London, being a British city itself was designed for the benefit of the majority around the principal of capitalism during the industrial period. It was a pioneer city in this regard and as so, the shortcomings of the urban environment were not yet known and therefore development was more of an experiment that needed to be continually adjusted.

Nairobi and Durban were built for the segregation of people and marginalisation of the local majority. The urban areas were built for a minority and therefore it is no surprise that the central areas cannot accommodate the population post-colonialism. The culture of the different race groups is also different and so integrating it into an already established system and urban context for the previously marginalised group can be a difficult process, especially when both the system and built environment were institutionally oppressive to the local people. Minibus taxi's in South Africa were first permitted during the Apartheid era and this standard of public transportation seemed to be acceptable to the ruling party for the oppressed race groups. Operators/owners in the taxi industry had to operate within legal ambiguities before minibus taxis were fully permitted and this way of conduct has persisted even in a democratic country. Instead of elevating this industry to a better standard post-apartheid, the oppressive stance the government had taken on this industry has continued and further cemented its path dependency.

Nairobi has come up with a theory of change but it seems that the only real way for this industry to be improved is if drastic change takes place that may be uncomfortable but necessary. This change has to benefit all stakeholders involved, namely commuters and owners; the state should play a facilitative role as they enforce policy and act in the best interest of all its people. This would need to be different from the existing parent role that the state seems to play in South Africa. Where people are constantly waiting for a solution or money to fix their problems, instead, all stakeholders involved need to collaborate in the most effective way to solve the problem, therefore improving the status quo of the public transportation in South Africa.

For this study I have chosen to include commuters, officials from the South and North Beach Taxi Association, the eThekwini Transport Authority (ETA), and the Town Planning department. All these different institutions were created to serve a certain purpose in helping to create harmony within the city and one of the functions for each has to do with transportation, minibus taxis in particular. The next chapter will look at the methodology I employed to collect the data represented in this paper.

4. Chapter four: Methodology

4.1. Introduction

According to Leedy and Ormrod (2005: 2) research starts with a question or a problem and the question for this study is how the taxi industry works with the local government in offering a public service. The basis of this question lies in the fact that the service can be improved to provide not only an economically sustainable service – which seems to be the case at the moment – but also one that is socially and environmentally sustainable. In order to further explore this matter, the case study of the South and North beach taxis was examined in the inner city area of Durban. Inner city areas are economic hubs and so transport flow is most important in these areas. My hypotheses, therefore, is that a better working relationship between the different associations and local municipality could foster a more commuter friendly public transportation, thus encouraging the use of public transport for many more people resulting in reduced congestion in the inner city, lower carbon emissions into the environment and improved economic circulation.

After the establishment of the question the actual collection and interpretation of data is the next step to answer the said question or solve that particular problem. Depending on the findings, the research can be said to support a certain phenomenon but can hardly ever prove a phenomenon without a shadow of a doubt (Leedy and Ormrod 2005: 5).

This chapter focuses on the methodology employed for this research. It begins by explaining why a case study was most appropriate to investigate the phenomenon of collaborative planning in achieving better sustainability within private-public transportation. The case study chosen is Durban as mentioned before.

4.2. Case study

Abercrombie, Hill, and Turner (1984: 34) as cited by Flyvbjerg (2006: 220) define a case study as the use of a single example to examine a phenomenon. Campbell and Stanley (1966: 6-7) as cited by Flyvbjerg (2006: 220) add that case studies lack control and may be deceptive because of their focus on a particular example. Flyvbjerg (2006: 220-221) opposes some of this argument by mentioning that it is misleading to say that case studies cannot provide reliable information. Flyvbjerg (2006) further elaborates on the criticism with reference to the five *misunderstandings about case-study research*.

Misunderstanding 1 is that general or theoretical knowledge is more valuable than practical knowledge. In the early stages of research it is theory that is fundamental in the research process, but case studies help to provide practical examples, therefore giving the researcher an in-depth understanding of the phenomena in play. It can be said that case studies provide context development therefore changing “rule-based beginners to virtuoso experts”. It is also not possible to come up with predictive theory in the

social sciences because human behaviour is not definite and one cannot produce general theory that is context-independent hence it is imperative that one considers practical knowledge. Flyvbjerg (2006: 224) quotes Hans Eysenck (1976) who advocates that “sometimes we simply have to keep our eyes open and look carefully at individual cases – not in the hope of proving anything, but rather in the hope of learning something”.

Misunderstanding 2 is that one should not generalize using only one case study, as this cannot contribute to scientific development. This misunderstanding is common amongst supporters of the natural science ideal within social science. Although it may be applicable at times, Flyvbjerg (2006: 225) argues that it is incorrect to say that one cannot generalize from one case study as it depends on the case study itself and the methods used to obtain the information. He then substantiates this by giving the example of Galileo rejecting Aristotle’s law of gravity by means of only using one case. This case study method was also helpful in developing the physics of Newton, Einstein, and Bohr. Thomas Kuhn (1987) as cited by Flyvbjerg (2006: 226) also mentioned that the most important thing is that science researchers should possess a wide range of skills and generalization is one of them, therefore it is valuable to generalize a single case study provided that it is central to scientific development and is used as a supplement or alternative method.

Misunderstanding 3 holds that a case study is most useful in the initial stages of research for generating hypotheses, thus other methods are more suitable for hypothesis testing and theory building. Flyvbjerg (2006: 229) responds to this by stating that a case study is not only useful at the primary stages of research but is also suitable for hypothesis development and testing. This misunderstanding is linked to *misunderstanding 2*, as Eckstein (1975) is on the complete opposite end of the spectrum of the argument in stating that case studies are actually more useful for testing hypotheses, which brings us back directly to generalization, because the method is used in testing hypotheses. It is important though what case study is used in generalization, for example, extreme cases would be more useful considering that they activate more actors and therefore more basic mechanisms in the situation study than a typical case. Other examples include maximum variation cases, critical and paradigmatic cases. The interpretation of a case when testing can provide a wealth of information that is unique because the perspectives and conclusions obtained will be viewed and interpreted according to whether a case is one type or another. In this process it is also important to have strategic sample selection and the different selection samples include random selection and stratified sampling. (Flyvbjerg2006: 229-233)

Misunderstanding 4 is that case studies have a bias towards verification, which is, a tendency to confirm the researcher’s preconceived notions. Qualitative research methods in general are seen to be more susceptible to subjective and arbitrary views of the researcher, than quantitative methods. Francis Bacon (1853) as cited by Flyvbjerg (2006: 234) viewed this bias as a phenomenon that was not only limited to case study research, but rather as a fundamental human characteristic, and therefore can be found in

other methods of inquiry. Flyvbjerg (2006: 237) argues that experience reveals that there is a greater bias towards falsification in case studies than there is to verification. Whether a large or single sample is used, if case studies are used as a form of learning and researchers study case studies with the intention of learning, then case studies can be quite useful in that they provide an advanced understanding by being within the context being studied.

Misunderstanding 5 is about how difficult it is to summarize and develop general propositions and theories using specific case studies as a root. Case studies are basically narratives that contain many different elements which demonstrate the complexities and contradictions of real life. It is difficult to summarize these narratives and critics view this as a drawback but to a researcher, a lot of information gives depth. The question then becomes whether the ideals of summarizing and generalizing are always desirable. Flyvbjerg (2006: 238) describes a method of openness which includes all views, even conflicting ones and not linking the case with theories but rather open-ended philosophical ideas, which then gives the opportunity for different interpretations from a diverse audience. Case studies that are conducted in this manner cannot be summarized or recounted in a few main results, the case study is the result itself. Thus it is correct that case studies are difficult to summarize but it is not always necessary to do so, instead good studies should be read as narratives.

The topic being researched is one that has a social impact as it affects the way in which society experiences the Durban inner-city. This is not limited to residents of the city but extends to those who live on the outskirts and also includes national and international tourists. That is why an empirical methodology is particularly relevant because according to Walsham (1995: 74) it focuses on human interpretation and meaning, and the way to undertake such research is through the use of a case study.

According to Blaikie (2000: 213) case studies are used for a variation of research intentions such as exploratory, descriptive and explanatory research, as well as to formulate theory and initiate change. Case studies are typically used in social anthropology, sociology, management and city planning.

The Durban case study is where the taxi industry has the most impact on the city. It has great influence on the operation of the inner-city as the minibus taxis dominate the two main roads in the city, Dr Pixley Kaseme Street and Anton Lembede Street. They are visible, audible and play a big role in the traffic flow of the two streets.

Case studies form part of the social science studies and within social sciences there are two main methodological approaches one could take, either a positivist approach or a post-positivist approach. Positivism is about facts and scientific knowledge and post-positivism is basically a critique or alternative to positivism, offering a more contextualised and historic presentation of the facts (Allmendinger and Tewdwr-Jones 2002: 3-6).

A post-positivist approach will be used because of its relevance to the planning profession and our belief in context. Case studies are useful in research as they give an idea of how the principles discussed in the different theories apply in reality. Different places have their own context and history and so applying the theory to these places gives different results. When one uses a number of precedents to analyse, it is easy to identify the short falls of theories and make it possible for other theorists to fill in the gaps or provide critique, therefore helping to better comprehend the given topic.

African countries have highly complex systems, which require methods that will be able to holistically understand these institutional, environmental and socio-economic complexities (AAPS 2010: 6). Therefore case studies can provide information on these places which can be consolidated to give relevant assessment of these African systems that have been left uncovered due to literature being mainly focused on the Northern countries.

Case studies are a good tool to use when analysing complex planning because they provide details of developmental factors and give value to context. They help to better understand power relations which is an issue as mentioned in chapter 2, as well as issues related to ethics and values in social action. In Africa specifically, countries have had different post-colonial experiences and case research could potentially reveal these experiences (AAPS 2010: 6).

The Durban South and North Beach Taxi Association is the most relevant case study due to its prominence in the inner city and its many attempts as an association to improve the service level provided by making small changes such as providing the contact information on each of the taxis for commuters to place their complaints and suggestions. Many changes have been put in place over the years, displaying their concern with improving their public transport for their commuters. It is then questionable if local municipality has taken to this and assisted in this attempt to improve public transportation within the inner-city. The eThekwini Municipality have set the 2030 goal to make Durban the most liveable city and public transportation plays a huge role in this. For the municipality to reach its goal, it will have to address the dominant form of public transportation and help it improve for its daily commuters and also for the improved structure of the inner city. This should be done through collaborative effort and so the research design employed was one that included all stakeholders involved and had to be systematic so that each phase of research could be informed by the previous.

4.3. Research design

A mixed methods approach was utilised when undertaking this research question, which is a combination of both qualitative and quantitative research methods. Qualitative research is an open-ended approach that is conducted by means of interviews or observations that allow the participant to share their views or experiences (Creswell and Plano Clark 2007: 6). Quantitative research is quantifiable research that is collected using a close-ended checklist in order to gather information about

attitude, behaviour or performance instruments (Creswell and Plano Clark 2007: 6). Both are relevant to the study and within the mixed methods approach, a sequential exploratory strategy was made use of, which is a phased research strategy beginning with qualitative data collection and analysis, followed by quantitative data collection and analysis that is built on the findings of the first phase of the research strategy. In this research strategy, weight is placed on the qualitative phase of the data collection rather than the quantitative aspect of the research because the purpose of the sequential exploratory strategy is to ensure the quantitative information that has been collected and analysed is used to make better sense of the results of the qualitative research.

4.3.1. Qualitative research

Within the qualitative phase of the research, interviews were conducted with officials from the municipality, SANTACO and the metro police. Interviews were also structured in a sequential way to ensure that each interview was built from the previous one. The first interviews conducted were with SANTACO, followed by the municipal and then the metro police. The logic behind this was that the taxi industry was introduced by private owners (SANTACO) into the city (municipality) and now are regulated with the help of the metro police.

4.3.2. Quantitative research

Commuters are affected most by the decisions made by the stakeholders mentioned above and so based on the general conduct of the South and North Beach taxi's, as well as the findings from the qualitative study, a questionnaire was put together to gather the attitude of commuters towards minibus taxi's as a form of public transportation.

4.3.3. Sequential exploratory strategy

The focus of this strategy is to explore the private-public transportation phenomenon and is relevant to the research topic since it is speculation that a collaboration between the taxi industry and municipality would make minibus public transportation more sustainable, not a proven fact. In many instances collaboration has been beneficial in the improvement of certain projects but it is the relationship dynamics within the collaboration that can determine whether it is successful or not, and so this model under the mixed methods approach was instrumental in exploring this phenomenon. Before collecting primary data, secondary data were collected and synthesised to first give context.

4.4. Types of data

There are two main data types worth considering when undertaking research, namely primary and secondary data (Boeije and Hox 2005: 595). In order to produce a useful data set, one would need to consider the best techniques to extract the most relevant data within the primary and secondary data research carried out. There are a number of strategies that may be adopted when proceeding with primary data collection, which can be categorised into quantitative research – the experiment, interview survey, observation, and administrative documents amongst others – and qualitative research – open-ended interviews, focus groups and existing records such as images (Boeije and Hox 2005: 596).

For the research topic at hand a number of the aforementioned strategies will be used, namely, the interview survey, observation, open-ended interviews and existing records.

The interview survey is to gather the attitudes and experiences of the public transport commutes. Observation will help to get a complete overview of how the South and North Beach minibus taxi's operate within the Durban CBD. Open interviews are the most appropriate strategy for obtaining information from taxi association and municipal officials. Existing records will help to gauge how the city has transformed through images.

Within primary data, data are either solicited or spontaneously collected. There is an advantage and disadvantage to each. When soliciting information, the researcher is able to collect in the most efficient way but the downfall of this method is that the subject knows that they are part of a specific research problem and may consciously or subconsciously alter their opinion to what they think is most appropriate. The opposite is true when collecting data spontaneously (Boeije and Hox 2005: 595).

Unlike in quantitative data collection, when collecting qualitative research, flexible and sensitive methods need to be undertaken to accommodate the social context (Boeije and Hox 2005: 595).

When collecting secondary data, the most relevant sources have been used but were not limited to the urban context because there is a lot that can be understood and related to in other academic categorise of study, such as environmental studies which help better comprehend natural processes that can be related to social behaviour. Although there were no limits to the data sources chosen, there was a focused search in order to ensure that the information gathered does not derail from the purpose of the study.

Secondary data were collected from libraries at the Durban University of Technology and the University of Witwatersrand. Other sources of secondary data were collected from books bought from thrift stores.

4.5. Sampling

Sampling can be defined as selecting a subset of a population in order to generalize findings about a study to that population and there are specific sampling methods that work best with certain data capturing strategies (Blaikie 2000: 198). Which sampling is chosen is determined by the nature of the research, the information available on the research topic and the cost. Sampling methods can be divided into two categories: probability and non-probability (Blaike 2000: 199).

Non-probability is also known as purposive sampling which is designed sampling, emphasizing that the research samples are carefully selected. Purposive sampling is best when the sample size is fairly small (Ornstein 2013: 2). Probability sampling takes a more organic approach to research.

For the questionnaire, it was most appropriate to identify a subset of the population of people who make use of the minibus taxi system. When considering sustainable transport services, it is useful to identify population parameters, for example average male and female commuters, the elderly, disabled, women with children and young commuters (school children).

Participants for the questionnaire were identified on the taxi rides on both the South and North Beach taxis. In order to obtain the required sample and demographics, this process took place over six days, three days for each route (North and South). The questionnaire itself took between 10 and 15 minutes to complete including the letter of information and consent. Convenience sampling, which is a type of non-probability sampling, was used for this process. Convenience sampling is also termed accidental sampling and is a sampling method based on the closest, willing participant. This method of sampling is time saving and cost efficient (Blaike 2000: 200).

Before conducting the questionnaire, interviews took place with the involved stakeholders, namely South and North Beach Taxi Association officials, and from the eThekwini Transport Authority and Municipal Town Planning Department and from the metro police. Non-probability sampling, was the most appropriate method for conducting open-ended interviews with these stakeholders. This method of sampling was important in selecting representatives of the different stakeholder groups. Snowball sampling was then used as the interviewee gave suggestions of persons who would better suited to answer some of the questions that they did not have enough information on. Semi-structured interviews worked well in the interviews because questions were set prior to the interviews, some answers initiated new questions that were not in the prepared list. Each interview did not take less than 20 minutes, to ensure that the interviews were not rushed and that participants were given enough time to give full information that was useful to the study. Many of the interviews did go over 20 minutes because of how extensive the questions and answers were, especially with officials from the taxi association and the municipality. Interviews were conducted in the most convenient venues, which included boardrooms, offices and work stations of the various stakeholders.

Gatekeeper letters were issued via email to the Municipality via the eThekwini Municipal Academy for the Department of Transport and Town Planning Department and also to the Durban SANTACO office for the North and South Beach Taxi Association and were approved.

The chosen population was made aware that participation was optional and that they were required to be truthful in their answers for both the interviews and the questionnaires. This was also relayed in the letter of information and consent. A sample size of 100 was used for the questionnaires.

A desktop lynch analysis was conducted and was informed by the experience of the minibus taxi rides taken. This helped to better understand why the South and North Beach taxis make the stops that they do along the chosen routes. Lynch analysis is useful for this because it assesses the spatial arrangement of the built environment and gives an over view of the physical and psychological barriers or pathways created by the different activities that take place in the specified space.

A hand drawn lynch analysis (figure 4.1) was first done before the final digital lynch analysis was completed as can be seen in the following chapter (figure 5.7).

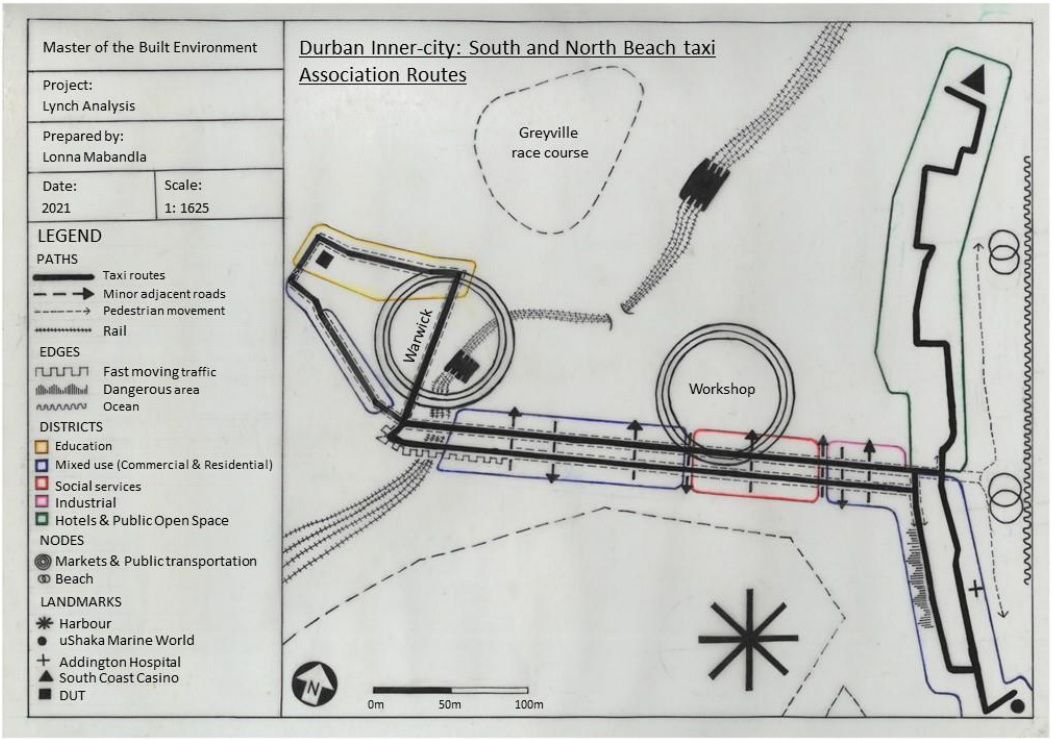

Figure 4.1: Sketch lynch analysis

The space in question, the Durban inner city, can be seen in the below map (eThekwini 2016: 3). Within this boundary, the minibus taxis operate in the southern part of the inner city. This is detailed further in the locality map, which can be found in the following chapter.

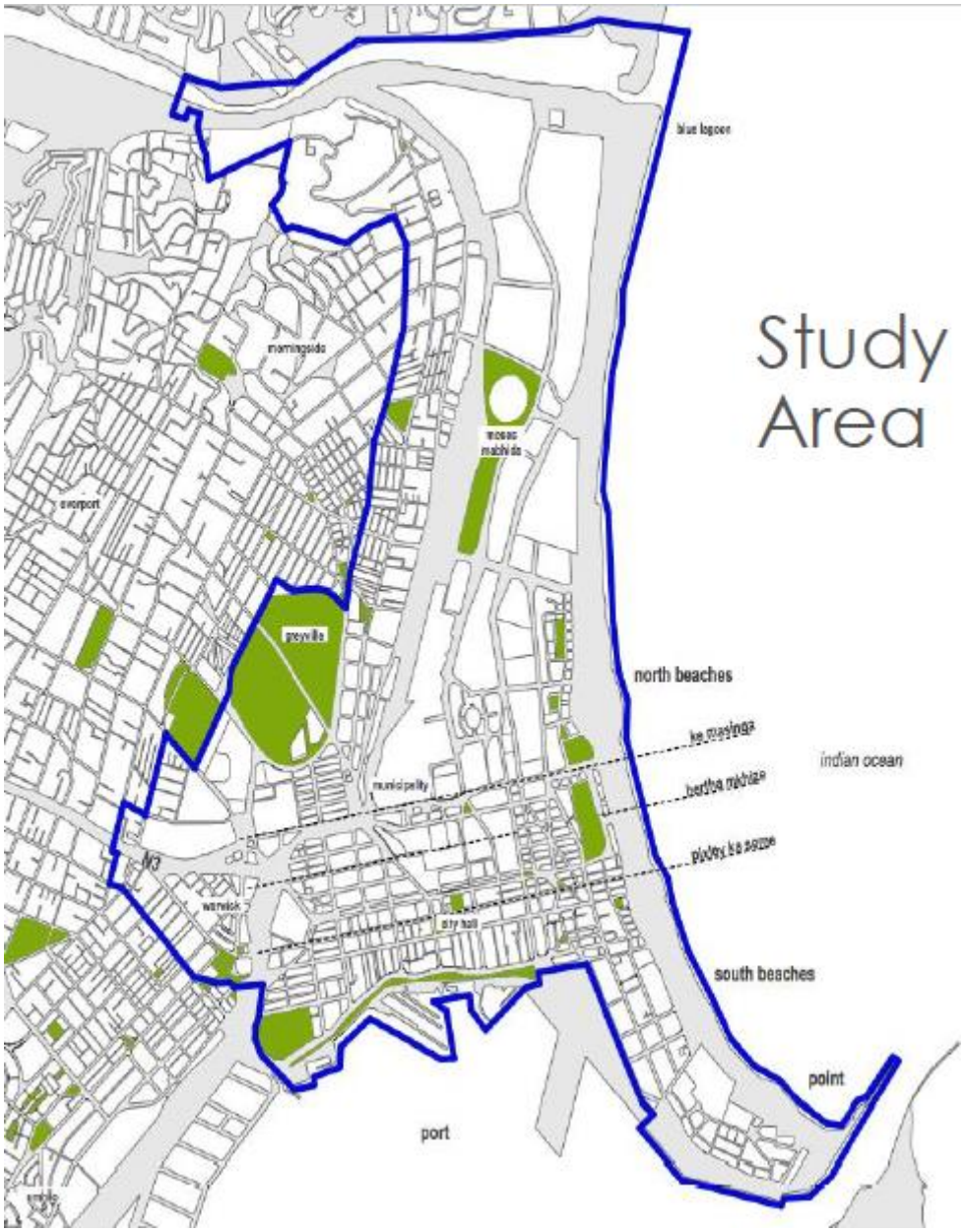

Figure 4.2: Inner city boundary

4.6. Data analysis

Analysing qualitative and quantitative data requires different procedures but both have multiple levels of analysis involved. When analysing qualitative data, the first step would be to code the data and classify it into the appropriate categories. For quantitative data a statistical test is required to analyse the questions or hypotheses put in place (Creswell and Plano Clark 2007: 131). There are four different data analysis techniques for quantitative data, namely description, association, causation and inference. The association method of data analysis was most useful to analyse the association between minibus taxi's and sustainable transport services (Blaike 2000: 236). Both qualitative and quantitative analysis is to investigate the research question or hypothesis (Creswell and Plano Clark 2007: 131).

4.7. Ethical considerations

Social sciences need to take into consideration a variation of social etiquette including the impact the research has on its participants' lives. When considering a critical ethical methodology, it is useful to address the mentality of the researcher as their beliefs set the scene for the discipline and regulatory practises undertaken during the research process. There are two forms of governmentality in research methodology; the legislative practises put in place and the individuals – both are important in ensuring critically ethical research methods in social science (Denzin and Lincoln 2018). When considering ethics there are different things to take into account, namely data collection, validity, reliability and anonymity.

4.7.1. Data collection

Data can be collected in various forms including field notes, photos, audio recordings and video recordings. All these forms of data can be stored in a digital format – long term, using quality data storage. Data needs to be comprehensive and therefore needs to be accompanied by contextual documentation to improve understanding (Corti 2008).

4.7.2. Validity

Validity is about how well the measurement instrument measures its intended subject. When a phenomenon has no direct physical measurement instrument, its validity becomes questionable (Leedy and Ormrod 2005: 28). Validity can be improved by use of triangulation. Triangulation means that the researcher can look at aspects of a phenomenon from different vantage points. Analysis of the information provided by each method of investigation and its strengths and weaknesses need to be considered to achieve successful triangulation (Sommer and Sommer 1997). A mixed methods approach was made use of during the study as well, which also improves validity.

4.7.3. Reliability

According to Leedy and Ormrod (2005: 29) reliability is the consistency at which a measuring instrument will produce the same results for an unchanged phenomenon. Reliability of the information can be checked by a second observer. This does not have to happen routinely but can happen once in a while to check that the researchers reporting is accurate and fair (Sommer and Sommer 1997).

4.7.4. Anonymity

Research participants are protected using two methods, namely confidentiality and anonymity. Confidentially meaning that the participant's identity is known by the researcher but is protected from public view. This method is useful during interviews as sensitive or embarrassing information may be revealed by a source, and they need to be confident that the information they reveal will not affect them in a negative manner. Some researchers go as far as using codes to ensure that the participant cannot be identified even in the researcher's files (Sommer and Sommer 1997). Confidentiality was appropriate for this research because the identity of officials that belong to institution may not remain anonymous to the researcher, for the questionnaire, participants signed a consent form which disclosed some of their personal information. Anonymity is most useful in observational research (Sommer and Sommer 1997).

4.8. Conclusion

This chapter detailed the methodology used to collect the research data. A mixed methods research design was used for this study due to its complexities, including both quantitative and qualitative data. A sequential exploratory strategy was used for the collection of primary and secondary data and ethical considerations are also detailed in the collecting of the research data. This data was then used to undertake the analysis presented in the next chapter.

5. Chapter five: Collaborative planning and sustainability analysis

5.1. Introduction

The purpose of this chapter is to present the analysis of the data and associated findings from this research. The conceptual framework provides the foundation of the data presented in this chapter, which was further developed by the precedences in the third chapter. Data was obtained from engaging with the stakeholders involved, namely taxi association officials, municipal officials, metro police and minibus taxi commuters. The stakeholders are listed according to the order of engagement which was partly decided by the sequential exploratory strategy which was applied to this study. The analysis will address the different themes of the study and present the views of the stakeholders involved as well as identify where these views overlap and differ. As previously mentioned in the methodology chapter, interviews were conducted with the institutional bodies (taxi association, municipality and metro police), and a questionnaire was prepared for the commuters.

The two main themes presented in the conceptual and theoretical framework chapter include collaborative planning and sustainability, which is how the analysis will be structured. Under the collaborative planning theme, the relationship between land use and transport will be discussed with reference to urban design. A brief assessment of policy implementation will also be part of this theme so as to analyse not only minibus taxis as a form of public transportation but the implementation of policy when dealing with the taxi industry. Technical path dependency elements within this study involve all stakeholders as the physicals or ends met are the product of the work/processes conducted by both city and taxi industry, and are experienced by consumers, the commuters. The metro police play a facilitation role. Under the sustainability theme, commuters will be the main focus as they experience the actual public service therefore their perceptions will give a better understanding of the social sustainability of the taxi industry in the Durban inner-city. Urban settlement patterns are also assessed under the sustainability theme using the relevant topics within the sustainability criteria as presented in the conceptual framework.

Within the planning discipline there is public and private planning. This study falls under public planning because it deals with a public service provided in a public space. According to Levy (2009: 403) public planning is often more difficult because any solution given needs to satisfy many different stakeholder expectations, which are sometimes in conflict with one another. The different ends that need to be satisfied in this study are those of the commuter, minibus taxi operators/owners who are represented by the South and North Beach Taxi Association and the eThekwini municipality (eThekwini Transport Authority and Town Planning Department). The two latter stakeholders work together to achieve sustainable public services for the former.

Below are the demographics of the study participants (commuters). These individuals were identified on the South and North Beach Taxi rides over a period of a week.

5.1.1. Demographic profile of questionnaire participants

Although a sequential exploratory strategy was used, therefore ensuring that the questionnaire is informed by the qualitative data collected, the questions were also informed by the sustainability criteria presented in the conceptual framework. Upon assessing the case in the precedents chapter, the South and North Beach Taxi's seem to lack social and environmental sustainability, and this was confirmed by the results of the questionnaires which tallied commuter attitudes towards this public transport. The questionnaires were completed by passengers who were commuting using the South Beach or North Beach taxis, thus the public transport that was focused on was the minibus taxi, but the questionnaire was not limited to this form of public transport.

A total of 106 commuters answered the questionnaire. The commuter gender is polarised as there are more female responses. So it is seems that more females take minibus taxis within the inner-city. Another bias found is that people who take the South or North Beach taxis are young individuals between the ages of 18 and 34 followed by those within the age range of 35 and 49 as can be seen in table 1.

Table 5.1: Breakdown of participants' gender and age

Gender	**Age range**	**Participants**	**Percentage (%)**
Female	18 – 34	41	38.7
	35 – 49	19	17.9
	50 – 70	3	2.7
Sum		**63**	**59.4**
Male	13 – 17	5	4.7
	18 – 34	27	25.5
	35 – 49	7	6.6
	50 – 70	4	3.8
Sum		**43**	**40.6**
Total		**106**	**100**

The people who make use of the South and North Beach minibus taxis come from all over the Durban area, *see figure 5.1* below. The majority of inner-city taxi commuters are from the inner-city, but there are many live on the periphery of the Durban inner-city. For the latter commuters, it means that they experience at least one transportation transfer onto the South and North Beach taxis.

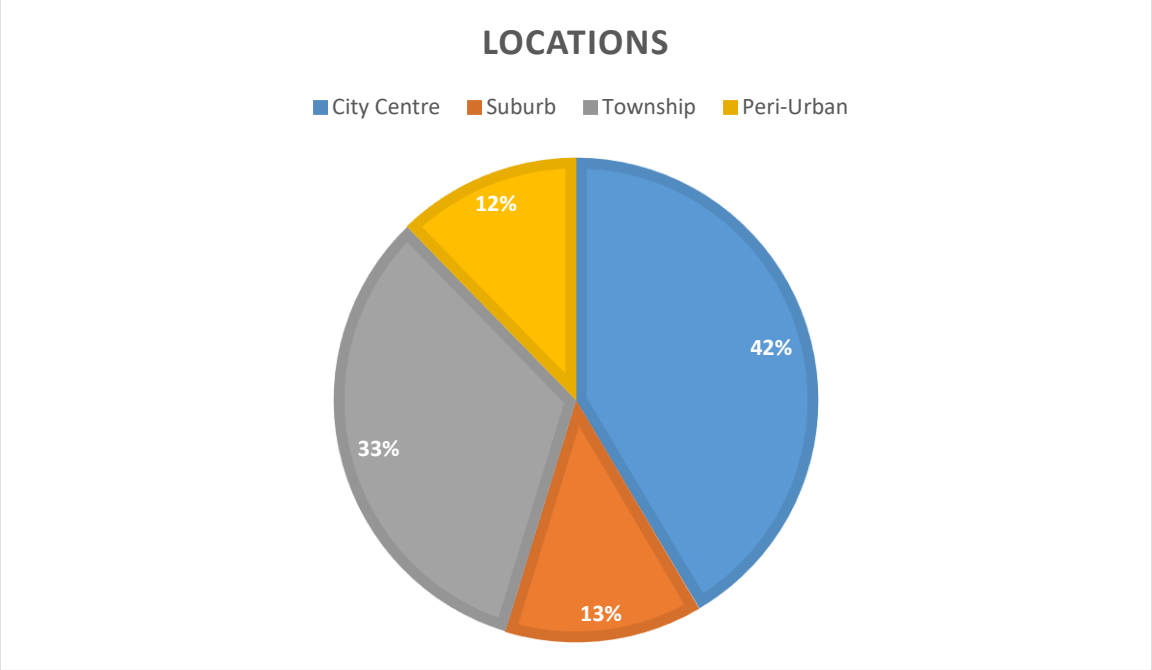

Figure 5.1: Home location of questionnaire participants (n=106)

This leads to the topic of interchanges, which was brought up within technical path dependence in the literature review. The argument made about interchanges as stated in the conceptual framework is that providing such facilities improves the overall experience of the commuter if they are designed to meet the needs of the people and function of the space. The metro police play a regulatory role within the traffic setting in the inner-city, and are sometimes specifically dispatched to regulate minibus taxis. In an interview with metro police officers, they raised the fact that they have to deal with taxis stopping to pick up passengers even where it obstructs traffic. It has become a systematic issue that contributes to the chaos of city life. It is an issue that can be resolved through providing facilities that ensure smooth change overs for commuters and transport operators as well as the integration of different transportations.

Apart from the police, interviews were conducted with officials from the eThekwini municipality town planning department, eThekwini Transport Authority and SANTACO. Below is a gender breakdown of the interviewees for context.

Table 5.2: Gender breakdown of interviewees

Gender	Participants	Percentage (%)
Female	1	9
Male	10	91
Total	**11**	**100**

As seen in the table above, there is a heavy male bias in the transport, urban planning and police industries in Durban. Of course there are more females in the different industries than represented in the table but these are the individuals who availed themselves to participate in the research study. It would have been beneficial to have more of a female representation since the commuter majority is female.

A lot of the interviewees are heads in their departments and some not. The only female to participate in this study is an assistant to one of the heads and other participants who are not head of departments are in middle management in their respective departments.

It is an advantage to have interviewed heads of departments because the assumption is that they would be the most informed about processes of collaborative engagement. The only disadvantage of interviewing heads of departments is that these individuals have a lot of responsibility placed on them and may feel the need to represent their department in the best way possible which could compromise some of the information shared. This is when it becomes advantageous to interview those in middle management because they are likely to be more open about the processes that take place in their respective departments, but they might be less informed than their superiors. What has been evident during the process of data collection is that in order to gain a holistic view of the workings of an institution, it is beneficial to consider perspectives from different hierarchal positions.

Apart from presenting the results of the questionnaire and conducted interviews, there are also a few maps presented in this chapter that give an idea of how the city of Durban has developed over time. These maps have been integrated into the sequence of maps and analysis plans that follow.

First the study area is presented in terms of its locality. The historical maps then follow according to their time-line as to give an outlook of the development of Durban. The base map used for the lynch analysis is then presented, and finally followed by the lynch analysis which demonstrates how the urban fabric contributes to the dynamic of the South and North Beach minibus taxi operations.

5.2. Spatial analysis of the study area

5.2.1. Locality

Durban is located on the East coast of South Africa, within the KwaZulu Natal province. Represented below is the current inner-city boundary of Durban within the jurisdiction of the eThekwini metropolitan municipality. The Durban inner-city road network is presented with special attention drawn to the South and North Beach Taxi Association routes in blue and red. These routes form the spatial representation of the case study of this research.

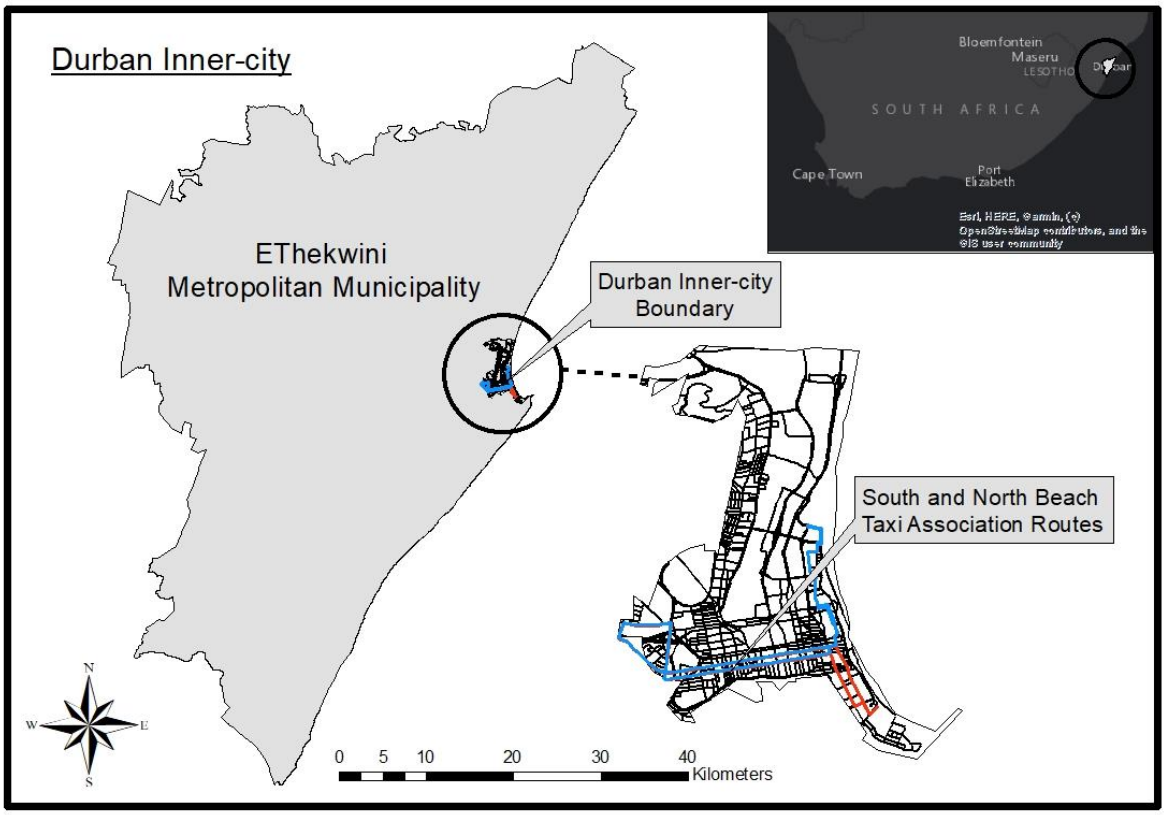

Figure 5.2: Locality of study area

5.2.2. Development of Durban over a period

The boundary of the inner-city has not changed since much since 1846 as can be seen in the map that follows. It can be observed from the road network that only the core of the inner-city had been developed at that point. The map was drawn by Thomas Okes and it gives a general overview of the character of the land. It is also interesting to note that even though only the core of the inner-city had been developed, the area covered includes all of what is consider the inner-city of Durban, which gives the sense that the extension of the city had already been considered when plans were being drawn in 1846.

Figure 5.3: General plan of Durban 1846 (Rory. Lynsky 1982: 1)

By 1892 the ‘Plan of the Borough of Durban Natal’ was developed. Although the legend is not clear in this plan, what can be seen in this map is that a 400m radius has been used for this plan. Transport oriented development (TOD) also uses the 400m radius. It prioritizes non-motorised transportation and encourages mixed use development at stations to enhance the quality of life in those areas (Rosni, Ponrahono and Noor 2018: 148).

Figure 5.4: Borough of Durban map 1892 (Rory. Lynsky 1982)

This map shows the Durban municipal boundary in 1982 which is smaller than the current eThekwini metropolitan municipality boundary as can be seen in the locality map.

Figure 5.5: City of Durban map 1982 (Rory Lynsky 1982)

5.2.3. Base map

The base map shows the general study area which is the Durban Inner-city, and the routes of the South and North Beach minibus taxis have been highlighted in blue and red respectively. The North Beach taxis travel an estimated 14km in one round trip and the South Beach taxis travel an estimated 12km in one round trip. The fair charged for this was R7 at the end of 2021.

This map has been used to generate the lynch analysis map that follows.

Figure 5.6: Base map

5.2.4. Lynch analysis

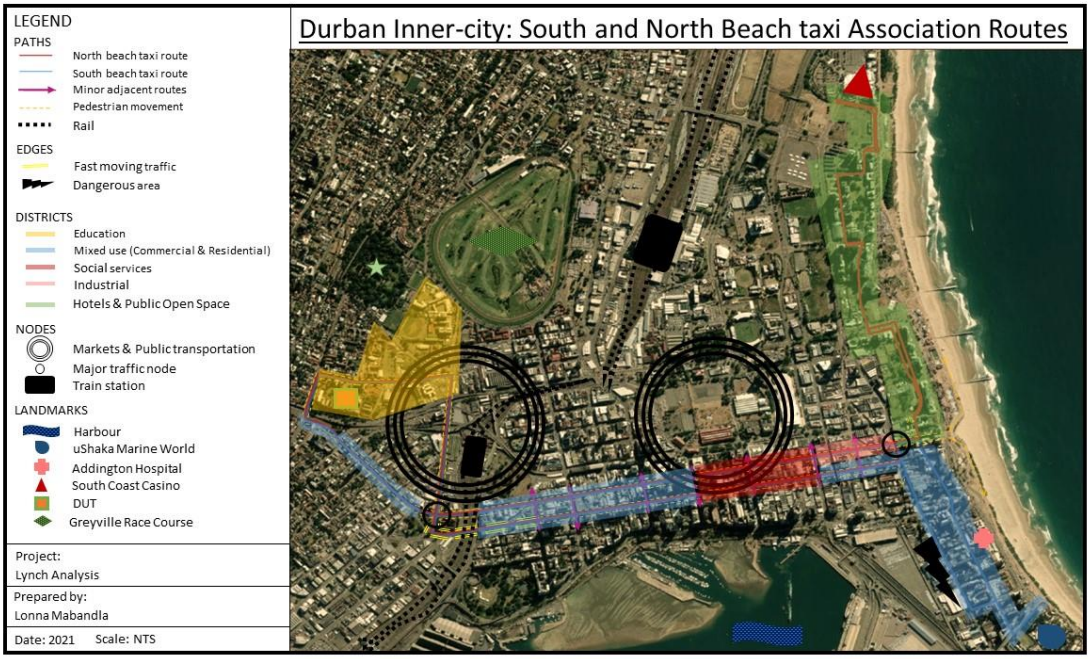

Figure 5.7: Lynch analysis of study area

The lynch analysis displays how different land use activity impacts the operation of minibus taxis in the inner-city therefore influencing what stops are made by them. The South Beach taxi follows a more densified route along the beach front consequently increasing competition for commuters and distinguishing the operation of the South Beach taxis from the North Beach taxis. The South Beach taxis tend to make more stops for longer periods of time and the general conduct of these taxis makes for a less pleasant experience than the North Beach taxis.

A lot of foot traffic exists at the Workshop and Warwick nodes. The difference between the two is that the Workshop has a lot of dedicated pedestrian space that is open not enclosed where vendors trade. Many people use the Workshop as a route to their various destinations and do not necessarily go into the space for retail. At Warwick Junction on the other hand vendors trade mainly in large buildings and so the workshop market in this scenario has greater accessibility than Warwick market because of the volume of foot traffic that each of the different built environments inspire. Both nodes have bus depots but Warwick Junction also houses the central train station therefore making it a larger transport node than the workshop because of the large number of people that arrive and depart from that area.

5.3. Collaborative planning analysis

There are three main authorities involved in this research – the town planning department, the transport authority and the taxi association. Urban planning decides the location of land uses while transportation ensures access to these spaces by making the best decisions on the systems used to provide transportation. In this case study, it is the taxi association, who run a privately owned form of public transportation, that enables people to access spaces within urban settlements. All these entities form part of a process which results in the current output therefore making it important that there are good working relationships between all three. Judging from the current status of the public transportation system, there may be some issues along this process.

Within the municipality it is interesting to note that some individuals who work in the transport authority department are also qualified urban planners and practised urban planning before they became transport planners. With this, one would make the assumption that these individuals would understand both processes of urban and transport planning, therefore making use of the principles in each of the respective professions.

Collaborative planning requires a lot of communication involves the joining of different stakeholders to achieve a common goal. As mentioned above Foucauldian concepts suggest that certain power struggles occur within any institution and these are based more often on the individual. Considering that collaborative planning is also viewed as the understanding and assessment of governmental processes and the continuation of communicative action, it is interesting to assess the interaction amongst the different stakeholders. It is also interesting to note the internal interactions within the different stakeholders.

Within the ETA itself, their work scope has been divided into three different sectors – road system management, strategic transport planning and public transport – which fall under service and infrastructure. The infrastructure component deals with the planning of public transport using the principles of supply and demand. The service sector interacts with the minibus taxi industry when meetings are held between the ETA and the South and North Beach Taxi Association. A continuous level of communication therefore is required within this particular construct of the ETA in order to proceed towards common goals. Once the goals of the ETA have clearly been defined, then communication with the taxi association takes place. In this case the service sector becomes the mediator between the taxi association and the transport infrastructure sector even though both these sectors are part of the same department. Due to there being no direct communication between infrastructures and the taxi association, co-ordination between the two for planning processes may become extended.

The infrastructure sector would also need to have clear communication channels with the Town Planning Department as transport infrastructure is interlinked with land use. These are also different departments

that function separately from each other so the communication channels between the ETA and Town Planning Department would be limited as well. The way the relationship works between the Town Planning Department and the ETA is that Town Planning only comments on projects submitted by the ETA about proposed structural plans. Joint meetings are only held for bigger projects such as Go! Durban where taxi associations were included from the onset as well. This is when town planners meet with taxi association officials as well.

One of the challenges experienced within these meetings is how the taxi industry limits the planning processes by not accepting proposals. Decisions amongst the association also change erratically because of power relations created by the dynamics of this particular stakeholder. These power relations may also be an influencing factor in representative members of the association frequently changing for different meetings of the same project, therefore prolonging proceedings because matters need to be explained over again and reimagined.

Power relations of knowledge also occur as the different stakeholders have different sets of information at their disposal. On the other hand, the ETA has more technical knowledge of how infrastructure should or could be designed as well as the best modal chose for demand. While Taxi associations have more local or on the ground information about commuter patterns which they adapt to in order to achieve the most economically sustainable business in a capitalist system.

The goal of the ETA is the Integrated Public Transport Network (IPTN). The public transportation philosophy for this is the right mode for the demand. If the number of commuters reaches 20 000 per day during peak hours, the most suitable mode of transportation according to ETA is the rail system. The ETA does recognise the role played by the minibus taxis currently because the municipality cannot support public transport commuters as needed, but what is unsatisfactory is the level of service and professionalism in which they provide this public transportation.

In a public-private partnerships, the two sectors fulfil different roles. The public sector plays the role of the project funder, is the primary stakeholder, and plays the role of the facilitator in terms of ensuring the operation of the project and overseeing the different phases of development (Gautrain Management Agency 2015: 7). This is how the PPP has worked for the Gautrain which provides public transportation for many commuters daily in Gauteng. Although trains and minibus taxis are different modes of transportation, they provide the same required basic service and may be treated with the same approach when considering PPP's. The 'trick' as mentioned in the Gautrain Management Agency (2015: 7) is that the collaboration between these stakeholders when initiating PPPs needs to be implemented from the outset with the best communication systems that can support the relationship throughout the duration of the project.

Transport planning in South Africa has been focused on the use of private cars, therefore roads have been designed to accommodate the prominent use of private cars which were the last innovation in transportation modes. This factor can therefore make it difficult to run an efficient system of public transportation for either the public or private entities.

5.3.1. Technical path dependence

As mentioned in the chapter 2, road design can help alleviate or contribute to traffic congestion. When road space has sufficient allocation for the different modes of transportation it can improve the functionality of a road system. As seen in chapter 3, Dr Pixley Kaseme Street is a wide road and all other movement paths, including pedestrian movement, have not sufficiently been provided for. Pedestrian space is very minimal, especially on to the West of Dorothy Nyembe Street, along the presented South and North Beach minibus taxi route. This is due to the fact that the pedestrian path shares space with informal traders, and the pathway was not enlarged to accommodate both street traders and pedestrians. Road design in the case study area could be reimagined to assist in the functionality of the inner-city by reflecting the simple fact that all movement starts and ends on foot. Interchanges then play a significant role when considering this fact and that commuters are more likely to choose one mode of transport over another based on convenience/access as can be seen in the table below.

Table 5.3: Reasons for choosing one mode of transport over another

Reasons	Frequency	Percentage (%)
Convenient/accessible	53	36.81
Time	30	20.83
Route	14	9.72
Cost	27	18.75
Comfort	6	4.17
Safety	14	9.72

The South and North Beach taxis do not have an official rank facility but rather they have interchange points along the demarcated route where they sometimes use the ranking system by waiting for passengers to fill the vehicles before the taxi continues on its route. At these particular interchanges, there are managers who monitor the waiting period of the taxis and who direct the commuters to the taxi being prioritised at that given time. The ranking system is not used at all interchange points but only at selected points where the commuter volumes are high due to the land uses of that area such as the Workshop stop, the stop outside the 320 building on Dr Pixley Kaseme Street and outside Shoprite on

Anton Lembede street. Something else to note is that the South Beach taxis do not follow the same routine of stops as the North Beach taxis, even on the shared route.

There are differences in waiting periods at specific interchanges and differences between the stops made by the taxis operating the two routes. The commuter perception of the minibus taxis is compromised at these points of difference because there are no visual cues in terms of interchange design to draw attention to these differences. Since time is the second most prioritised factor when choosing transportation, the ranking system causes commuters to become agitated, particularly because the taxis take routes that are internal to the inner-city because the many stops that they have prolong the commuters' journey. This is in addition to long waiting periods at the ranking points. The South Beach taxis generally make more stops for longer periods, making the North Beach taxis the preferred option. When questioned about this phenomenon, the South and North Beach Taxi Association pointed out the South Beach taxis face more competition than the North Beach taxis, due to another association occupying the same route that leads to uShaka Marine World. The South Beach taxis therefore make more of an effort to gain more commuters by making more stops and waiting longer periods at those stops for commuters. They also generally make their presence felt through loud music and are also more likely to be involved in verbal altercations with other taxi drivers.

Competition has degraded the service provided by the South Beach taxis because there is no point in their route where they are the only taxis available, which is not true for the North Beach taxis once they have branched off onto the Sun Coast Casino leg of their route. Instead the South Beach taxis share their route with the North Beach taxis and the other association taxi once they branch off onto the uShaka Marine World leg of the route. This means they do not hold any exclusive access, which makes them less secure, and this attitude is reflected in the way they conduct themselves. Commuters are subjected to this conduct as they make their way to the south beach of Durban. Even so, the South and North Beach Taxi Association has made a great effort to be more professional over the years and have become the better option as their leaders continue to advocate for best practice.

The graph below illustrates that scheduling is the chief improvement that commuters would like to see in the minibus taxi system.

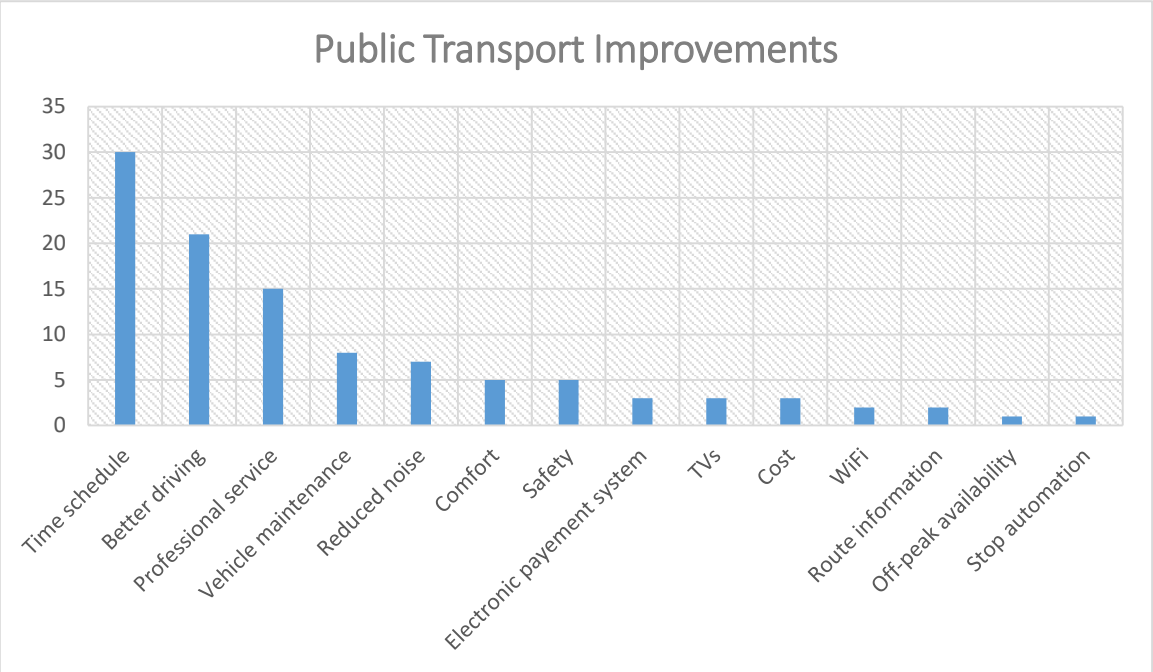

Figure 5.8: Public transport improvements

Although these improvements refer to the actual public transport, some can be supported by infrastructure design such as providing facilities that detail the scheduling, routes for this and even information on other forms of public transport at integrated or hybrid interchange stops.

5.3.2. Policy

The 2016 eThekwini LAP promotes pedestrian prioritised streets and has also considered street traders within the inner-city under the principle of a walkable city. The implementation of the LAP should see an improvement in the dearth of the current road design, while also considering the principle of an integrated and inclusive city (eThekwini Municipality 2016: 16-19).

The LAP is informed by different strategic plans such as the IDP and the Spatial Development Framework (SDF), and is implemented by means of using the principles stated in the Municipal Systems Act, Act no. 32 of 2000 (MSA). The principles as set out in the MSA are guided by the South African Constitution and assist in the implementation of the goals identified in the NDP. It can therefore be said that the democratic procedures that have been put in place, are to ensure that development is aligned with the system and goals of this country.

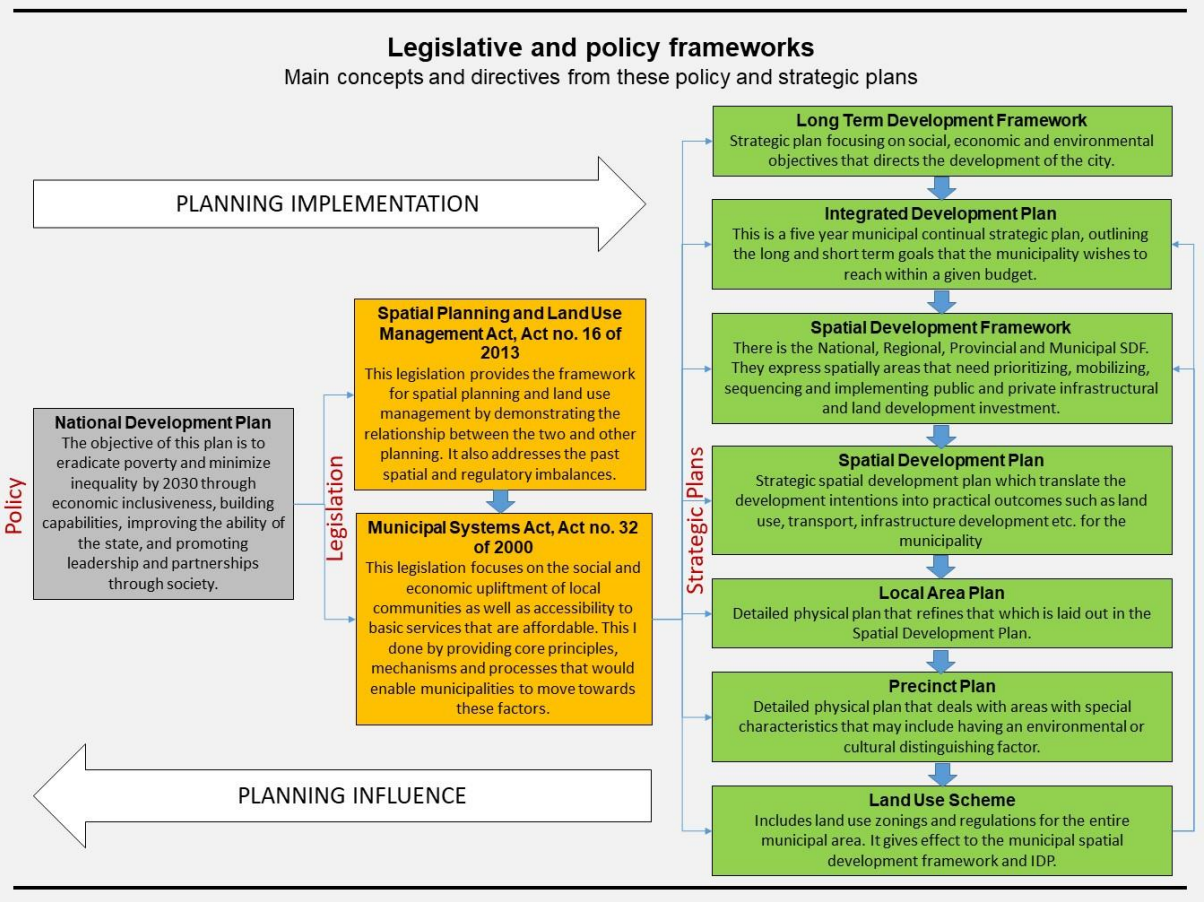

Figure 5.9: Legislative and policy frameworks

Apart from providing principles, the MSA is also responsible for providing the processes and mechanisms that enable municipalities to operate in a manner that facilitates social and economic development in local communities (Republic of South Africa 2000: 2). With regards to private companies, the MSA states that a municipality may acquire an interest in a private company "*for the purpose of utilising the company as a mechanism to assist it* (municipality) *in the performance of any of its functions or powers referred to in section 8.*" Section 8 talks about how the power granted to any municipality is assigned to it by the Constitution and therefore the municipality may perform any task that will ensure its effective operation within the confines of the Constitution. Section 8 refers to Chapter 5 of the MSA which details the process of planning, drafting and adopting the IDP (Republic of South Africa 2000).

The MSA mentions power, which is one of the critiques mentioned in relation to collaborative planning. The power mentioned in this document is that of a municipality when working with a private entity. It mentions that the power of a municipality operates within the boundaries of the constitution and when interest has been established within a private company, it has to be for the purpose of fulfilling the role of a municipality within a community. This clause ensures that the power the municipality has, as being part of the country's leadership, is not abused but is in line with the democratic principles set out in the constitution. In terms of Foucault six concepts of power, this would most relate to the sixth circumstance.

According to the MSA section 23(1), a municipality needs to be oriented towards development (Republic of South Africa 2000: 36), the IDP which points to a developmental state, defined by Edigheji (2010: 4) as including economic growth, industrialization, and the improvement of human capabilities. This definition provides a more holistic view of a developmental state, as it focuses on more than just economic growth as many other definitions do. When considering South Africa's past and that the country now uses a democratic system, a holistic view of development becomes important when discussing the goals of this country.

The goals of the country are articulated in the NDP, and as mentioned in chapter 2, one aim of the NDP is the breaking down of apartheid geographies that still exist by creating a more effective transportation system (National Planning Commission 2012: 238). The NDP also emphasises context-embedded development (National Planning Commission 2012: 233) and the current context of the South African public transportation system includes minibus taxis.

Policy on the minibus taxis industry can be found in the New Growth Path 2010 (NGP) under the BBBEE heading which is about empowering all people who were historically disadvantaged. The NGP is about job creation and the BBBEE regulation specifically advocates for ownership of businesses by Black communities as well as increased skills development and people being able to follow a career path. The taxi industry was disadvantaged during the apartheid era, is predominantly owned by the black population, and has subsequently created many jobs and improved many people's lives financially. However, it is also important to consider the lives of the commuters it affects daily through the level of service provision. Improving human capabilities, as mentioned by Edigheji, could potentially be interpreted to mean fashioning a more pleasant public transport experience as provided by the taxi industry. The improvement of human capabilities would need to be geared towards improving the commuters' experience and in doing so create an industry that displays an understanding of business etiquette, making it easier to engage in arrangements such as public-private partnerships.

The reality is that apartheid geographies are still a factor in this matter due to the inseparable relationship between urban settlement patterns and transportation, which have systematically put the black population at a disadvantage financially. It is stated in the eThekwini IDP 2020/21 (eThekwini Municipality 2021: 33) that there is a divide between areas of employment and areas of population density, which means that employee's spend a significant amount of their salaries on transportation. The taxi industry has contributed to mitigating this financial strain by firstly creating jobs and secondly by providing an affordable, and reliable form of public transportation for the population living on the outskirts of cities.

Another indication of persisting apartheid geographies is how there is still a clear separation between the taxi industry – which has become a dominant form of public transportation, owned by a previously

marginalized population group – and local government, despite the many years of opportunity to reconcile the gap through effective transportation reform.

In the eThekwini IDP 2020/21 one of the challenges facing the inner-city is uncoordinated public transportation systems which have contributed to the decline of the urban core (eThekwini Municipality 2021: 348). One of the desired outcomes listed in creating a liveable city is to implement an effective public transportation system (eThekwini Municipality 2021: 17). The transport system proposed is the IRPTN that is meant to assist in addressing apartheid spatial imbalances (eThekwini Municipality 2021: vii). The growth of the IRPTN is intended to be accompanied by the phasing out of minibus taxis in the inner-city which will put the taxi industry and municipality at odds with each other, unless an amicable solution can be negotiated that will be sustainable for both the taxi industry and municipality. A better operating and managed public transport system will be for the benefit of commuters, therefore contributing to a more liveable city.

The municipality and taxi industry need to find a collaborative method that is suitable for both stakeholders and as stated in chapter 2, policy is what will hold both parties accountable in achieving a common goal that will benefit the city and its citizens. Currently the taxi industry does not ordinarily receive subsidies from the government and so the industry's most prioritised form of sustainability is economic.

5.4. Sustainability analysis

In the short analysis given in chapter 3 of the minibus taxis in Durban, it is concluded that the minibus taxi industry is economically sustainable but lacks environmental sustainability, which can be improved by the intervention of the municipality, and social sustainability, which is determined by citizens. The larger part of this analysis will be assessing the social sustainability of the industry. The rest of this analysis will be assessing the transport plans of the eThekwini municipality and how they could achieve a more environmentally sustainable transportation system through the IRPTN.

The plans for the IRPTN include the following:

- Trunk Routes with dedicated Right of Ways (ROW);
- Feeder Routes to Trunk routes;
- Complementary routes;
- Transfer and Terminal Stations;
- Park and Ride Facilities;
- Information, Communication Technologies (Integrated Fare Management and Intelligent Transport Systems);
- Fleet;
- Non-Motorised Transport Facilities;
- Depots;
- A Transport Management Centre.

The IRPTN system works with a series of trunks and feeders called the Inner-city distribution system (ICDS). The current bus system, namely the People Mover will see its routes and buses increased to accommodate this new BRT trunk and feeder system. The ICDS will run from the terminals along the Workshop area all the way to the ICC. The taxi industry would be absorbed into this system even though they operate on the other side of the Workshop on Dr Pixley Kaseme Street adjacent the Church Walk Market. These two transport nodes work separately from one another which makes the integration of the BRT and the South and North Beach minibus taxis questionable in terms of spatial arrangement. The timeline for this project is estimated between 10 to 20 years and will happen in phases as can already be observed by the trunk corridor developments. This is partly due to financial reasons and also strategy.

The IRTPN has been described as a hybrid system, making it inclusive of different transport modes, including road and rail based transport. The IRPTN is planned to have a total of nine corridors. The first phase of the project will only consist of three corridors, the C1, C3 and C9. These trunk corridors originate from the Bridge City terminal and terminate at the City Centre, Pinetown Centre, and Umhlanga Rocks Town Centre respectively.

Public transport and land uses are interdependent and when they do not correspond, public transport becomes cost-heavy for the supplier and subsequently for the commuter. This is not good for the agenda eThekwini is trying to put forward of reducing private car use, especially in the inner-city. No new roads are planned to be built in the Durban inner-city but what will take place is the prioritising of available land for appropriate land uses and establishing sufficient accessibility by using principles from the compact city theory. The public transport plans are intended to transform spaces to make them more vibrant and effective as activity nodes. The IRPTN itself is informed by the public transport demands of the planned land-uses in the LAP. It has been determined by the ETA that the ICDS will run using 69 buses distributed among eight routes. In the long term, depending on the demand, the ICDS is planned to evolve into the TRAM system.

The ETA has also considered non-motorised transport in the plans to make public transportation more effective. This is important when considering road design for the different variations of transportation and talks to social sustainability.

In terms of involving private businesses in the reduction of traffic within the city, it is addressed individually when the proposal for a specific land use is submitted in terms of building/traffic control but there is no collective effort that specifies how traffic can be managed within the city. It is also hard to implement the penalising system in terms of travel demand management because Durban does not have a safe reliable transportation system that can be reverted to, that is supported by the municipality.

The ETA has pointed out two issues about the public transportation system provided by the taxi industry. They are:

- There is an oversupply of minibus taxis which creates some of the issues related to congestion and parking. The minibus taxi nodes or interchanges take up enough space to consider them land uses of a certain calibre:
- Although the municipality is responsible for the management of the city, it is also the responsibility of the taxi industry to manage their business in a socially acceptable way in order to contribute to the efficient use of public space.

The South and North Beach Taxi Association agrees that there is an oversupply of minibus taxis working the demarcated routes and the reason for this is that there are no solid financial figures in place that can be used as a reference for best practice. The ETA mentions the mathematics of supply and demand in this regard, so as to avoid over trading and would improve environmental sustainability. Permits are the next step to controlling the supply of minibus taxis once these calculations have been done and agreed upon. The issue with permits mentioned by both the association and the ETA, is that the current process of obtaining a permit can be bypassed and so permits can easily be obtained without following the procedures put in place to manage the number of operating minibus taxis.

The management of the South and North Beach taxis within the context of the city is dispersed amongst different public sectors, namely Town Planning, eThekwini Transport Authority and the Metro police. In order to receive a permit, a driver/owner would need to visit all three offices. This means there is no consistent working relationship between these sectors in issuing permits. The process is left to the taxi owner/driver as a result decreasing the levels of accountability within the state structure and making it easier to manipulate the system. As stated by Descartes (2019: 5) there is less perfection in work that is carried out by many people. When considering this statement, it can be imagined that if the public sector could operate as a unit for this particular procedure, the excessive issuing of permits could be reduced by a percentage, consequently contributing to social sustainability.

It is also noteworthy that collaborative meetings between the ETA, Town Planning and taxi associations are not a regular occurrence. Only when there are big projects is Town planning involved. ETA and taxi leadership do regularly meet and Town Planning is usually provided with comment sheets when collaborative projects take place.

5.4.1. Urban settlement patterns

The expansion of cities and the development or improvement of automobiles go hand in hand which is why Cervero (1998: 90) states that the urban landscape needs to be adapted to support mass transit, while transit services need to be optimized to minimise transfers and deliver commuters close to their destinations. This statement encourages land use practitioners who deal with urban settlement patterns to work together with transport planners.

Using compact city principles when planning for land use and transport could reduce the need for transit, therefore reducing congestion. As can be seen from the results below, people use motorised transportation the most for basic travelling needs such as getting to work or school, which could be eliminated or the mode of transportation changed to suit short distance travel.

Table 5.4: Reasons for travelling into town

Reason	Frequency
Work	53
School	29
Shopping	32
Social services	15
Entertainment	7

The primary reason for travel is work and the secondary reason is school. This means the majority of commuters make use of public transport between three and five days a week as shown in the following table. Other reasons for commuting into and around town include shopping and social services. It was interesting to find that very few public transport commuters travelled into to town for the purpose of entertainment, which to some degree explains why off peak mass transit is not common. This demonstrates that not much has changed since apartheid in terms of public transportation still being used for transporting labourers into the city centre. Many citizens who live outside of the city centre have to leave the city before off-peak hours, therefore systematically putting in place a curfew for those who cannot afford their own private transportation. Accessibility then becomes the issue in this case.

Table 5.5: How often participants take public transportation

Regularity	Frequency
3-5 days a week	40
Everyday	38
1-2 days a week	13
Few times a month	15

5.4.2. Accessibility

Accessibility has been highlighted as a major contributing factor to sustainability in the literature, and it can refer to economic, environmental or social sustainability. This is supported by my data determining the perception of commuters with regards to public transportation: accessibility was the most prioritised factor in selecting one mode of public transportation over another. Accessibility can include a range of elements: visibility on the road; right of entry into the public transit vehicle; and accessibility in terms of appropriate routes creating better access to land uses. Accessibility has been the polarising element in drawing commuters to using minibus taxis in and around the inner-city.

Accessibility also contributes to quality of life as high levels of private vehicle use results in traffic congestion which contributes to social disparities. It also affects both the economy and environment

when drivers are stuck in vehicle queues for hours on end. The increase in private vehicles and freight transportation on roads not only affects private vehicle traffic but also the efficiency of public transportation. (Steenberghen, Thomas and Vandenbulcke 2009: 39). As mentioned, minibus taxis suffer the same fate as private vehicles because they operate as such, therefore emphasising the importance of road design that has demarcated lanes for public transportation to ensure improved efficiency.

Congestion typically happens in city centres and this can contribute to their deterioration. Congestion results in reduced accessibility and this affects quality of life and the competitiveness of cities, which impacts on economic growth and sustainability (Steenberghen, Thomas and Vandenbulcke 2009: 39).

In terms of economic sustainability, many private companies leave city centres due to various factors, including accessibility. Accessibility provides the opportunity for interaction between land uses and ease of reaching locations using a form of transportation (Geurs and van Wee 2004: 128) which opens companies to a wider client base and the potential to increase revenue with improved services. This is true not only for land uses within urban settlements, but transport services as well.

5.4.3. Social change

Apart from urban settlement patterns, design is important because, mentioned within technical path dependence, public transportation suffers the same fate as private vehicles in Durban due to public transport not being prioritised in the road design, by, for example having dedicated lanes. There is no incentive for those who can enjoy comfortable, reliable and safe transportation in their own vehicle to choose public transit which is less convenient in this scenario. Instead those who make use of public transportation would actually prefer to have their own private vehicles, but as presented in the table below, the most prominent reason why people take mass transit is because they cannot afford to buy their own cars.

Table 5.6: Reasons why participants take public transportation

Reason	Frequency
No private car	81
Save money	23
Other: Fast	2

This suggests that transportation is classist, and that mass transit in particular is for the lower income group in South Africa. If mass transit were to be prioritized over private vehicles in terms of infrastructure, more commuters would be happy to use public transportation and maybe even some private vehicle users would feel more inclined to using public transit. As argued by Button and Nijkamp (1997: 215)

social change happens gradually and is supported by a revolutionary event. In keeping with that logic and also considering the current context, the first step would be to understand commuter needs and what efficient public transportation means to the current population group that uses it.

During the Covid-19 pandemic the minibus taxi industry suffered a financial loss because of regulations that required social distancing to protect the health of citizens, and for this reason the taxi industry qualified for a subsidy. A state intervention was put in place to assist the taxi industry to continue to provide a public service for citizens. Although Covid-19 is a global crisis, it also presents opportunity for change, but again the change cannot be hasty.

There are many different forms of public transportation in Durban including trains, buses, minibus taxis, metred cabs and private hire vehicles such as Uber. Even during a pandemic the majority of respondents still use minibus taxis over another form of public transportation as can be seen in the table below:

Table 5.7: Most frequent mode of public transport taken, of all the modes utilised

Public transport modes	Frequency
Train	2
Bus	6
Minibus taxi	83
Metred taxi	0
Uber	15

The questionnaire revealed that those who prefer to use minibus taxis over other modes of transport, do so mostly because of convenience followed by the cost and route but were most unsatisfied by the duration of their trip, which takes longer than should due to taxis not operating on a schedule. It was also revealed that the majority of public transport commuters do not want a drastic change, but would rather have an improvement of their existing chosen transportation.

Connell and Kubisch (1998: 5) list four questions to consider when implementing a theory of change. The first is ‘what is the long-term goal to be achieved?’ and within the public transport context, it would seem that accessibility should be the long-term goal. This is because accessibility is the number one reason why commuters choose one mode of transport over another.

According to eThekwini IDP, in 2018, 68% of commuters chose minibus taxis over any other form of public transportation (eThekwini Municipality 2018: 99). This is supported by the Statistics South Africa’s General Household Survey of 2018, which states that minibus taxis are the most used form of public transit for basic travel in the country (South Africa 2019: 265). Although, within these same statistics, it can be seen that KwaZulu Natal – where Durban (the third largest metropolitan) is the main city – is not

part of the provinces where there is the highest use of minibus taxis. According to ETA officials, the back bone of public transportation in Durban is actually the railway system which supports about 40% of peak hour demands. This however does not apply to the inner-city because there is no rail system in the city, only one that leads into the city as can be observed in the lynch analysis.

Minibus taxis still dominate the inner-city route within the Durban CBD, thus the operation model used by the South and North Beach taxis attracts the most commuters as it is provides the greatest level of accessibility.

The ETA plans to achieve the long-term goal of convenient public transport in the inner-city by reintroducing trams which would be derivative of the short-term goal of ICDS. These plans seem to follow a theory of change sequence and so are likely to reach the targets set, the only obstacle in creating the social change desired is the social structure within the inner-city created by the current dominant mode of public transportation, the minibus taxis.

5.5. Conclusion

The eThekwini municipality introduced the LAP in 2016 and one of the aims outlined in that document is to restructure roads in order for the public spaces in the CBD to be more walkable. The restructuring of these roads through policy and legislative guidelines should see a more democratic representation of the road space. This could possibly include hybrid interchange points that accommodate minibus taxis, as well as non-motorised forms of transit.

The most important thing is that accessibility is created through urban settlement design and through transportation.

Access is the first aspect of public transport prioritised by commuters – it is the reason why minibus taxis are chosen over other forms of public transport.

Time is the second aspect of public transport prioritised by commuters, and it is the biggest issue that commuters have with minibus taxis.

So it seems that the top priority within the public transport system, overrules any other aspect of public transport, no matter how high up in the priority list it sits. Minibus taxis are the most highly accessible form of public transport, which is a quality that the industry has worked and improved on over the years. It has helped the industry secure commuters and made it the most popular form of public transport.

From the findings, it seems that the operation of the minibus taxis is strenuous on all stakeholders involved, as detailed below. It is strenuous on:-

- The **taxi industry** itself because it is continuously challenged by local authority when the metro police are dispatched to assist in managing taxis within the inner-city. The industry is also challenged by its commuters for the level of service they provide.
- The **ETA** has to consider the taxi industry every time they need to make adjustments to transport systems, and sometimes cannot implement strategies that are beneficial to the community because the taxi industry creates obstacles to make sure some of these efforts.
- **Town Planners** need to consider how the congestion caused by the minibus taxis can be mitigated and the taxi stops can be better integrated into the fabric of the city. This has to be done in collaboration with the ETA and the minibus taxis association.
- **Commuters** are unsatisfied with the level of service provided by the taxi industry.

Collaborative methods between the first three stakeholders need to be revised through novel approaches to create a system that will take us away from the persisting apartheid legacy within the urban space. Democratic policy has been created to guide this shift and create effective boundaries that will enable a working relationship and consequently the implementation of developmental solutions.

6. Chapter six: Final conclusion and recommendations

6.1. Introduction

"It is the long history of humankind (and animal kind, too) that those who learned to collaborate and improvise most effectively have prevailed." – Charles Darwin. What is intended to prevail on a global scale is sustainability as set out by the United Nations in the 17 SDGs. One of the ways to achieve sustainability exists within the central theme of this dissertation which is collaborative planning. The differences to be merged between the collaborative partners identified for this research study are their statuses of formal and informal as well as public and private.

This chapter presents an overview of this study, as well as the final concluding thoughts and recommendations of the research explorations. The primary line of investigation is the processes of collaboration between public and private sector and the secondary line is the state of sustainability that is and can be achieved in internal public transportation within the city of Durban.

6.2. Synopsis of the study

Chapter one is the introduction to the study.

Transportation is an integral part in urban settlements. Feedback loops are created between the two as either of these elements expand or change. Over the years transportation has evolved from non-motorised to the motorised private car. These transport innovations have allowed cities the opportunity to develop further out from the centre and also drawn focus to the city centre through internal transportation routes within inner-city areas.

The South and North Beach Taxi Association is an association within SANTACO that is responsible for the internal transportation routes within the inner-city of Durban. According to Stats SA (Republic of South Africa 2020: 17) minibus taxis are the leading mode of travel in South Africa after walking. Since commuters prefer minibus taxis over other forms of public transportation, this places a great importance on the taxi industry.

Chapter two presents the conceptual and theoretical framework of this study.

In order to understand the taxi industry, one of the first things to consider is that minibus taxis operate under the institutional path dependence of capitalism. The main objective of this institution is to generate capital through the exchange of goods or services. The only criterion is ownership, therefore favouring privatisation. Foglesong (2012: 134) states that private property creates what is termed as capitalist urbanization. This form of urbanization limits the socialization or planning intervention in an area because part of the capitalist agenda is to control space. Minibus taxis usually operate in a way that

assumes control in order to feel secure within their business. The taxi industry is a mobile business and so their capitalist influence is not confined to one space but instead is felt all over the city and country, but specifically in inner-cities because all transportation is geared towards city centres.

Minibus taxis operate using the underpinning principle of capitalism, which is an exclusionary instrument, within urban public spaces. Therefore, updating policy is important in assisting to direct development along a certain path to fit the narrative of that era, which is currently democracy.

Democratic rule in South Africa is guided by the 1996 constitution. It informs the NDP, which is the governing policy for all other policy, legislation and strategy within the urban planning discipline. NDP objectives are set to be achieved by the year 2030 and they speak to the dismantling of apartheid geographies through land reform, the compact cities concept, improving transportation systems and developing industries and services to make use of local resources. The NDP mentions how focus should be directed to localities where land, labour markets, supply chains and markets are assessed as they create positive and/or negative externalities. Transportation plays a particularly important role in connecting all the aforementioned as it creates linkages between these components of local economy. Transportation is also listed as one of the four prioritised elements of breaking down apartheid geographies. One of the strategies put in place to implement this is *Moving South Africa* where the optimization of road space is promoted, along with the densification of transport corridors through the interaction of urban settlements and transportation. These corridors would be serviced by buses according to the strategy, and minibus taxis would provide feeder services to these corridors. This strategy has also acknowledged the relationship between urban settlements and transport therefore encouraging co-ordinated solutions which require the application of collaborative planning.

Collaborative planning is place-focused. It is about understanding the complexities of socio-spatial processes through the use of communicative practises. Collaborative planning also encourages the engagement of stakeholders from different institutional environments.

Power relations are an unavoidable result of the coming together of people. A number of factors exist that create the differences in power. Foucault lists six of these factors which exist within different settings. As mentioned by Innes and Booher (2015: 6) that power is not possessed by institutions or individuals, but is created by the circumstances of the type of relationship that exists between the individuals, as well as the time/era and place of these gatherings. Power relations exist between stakeholders and within the separate stakeholder structures themselves. Foucauldian concepts were adopted into the planning profession not to dissolve power relations but to provide understanding of the dynamics that exist during the engagement of multiple stakeholders. This understanding allows individuals to navigate these dynamics in the most suitable way.

Within collaborative planning, justice and sustainability are also important as they should form part of foundational principles during the conceptual stage of any urban planning solution. This is why the Just City concept is discussed under the theory of collaborative planning. The concept highlights the implementation of socially just plans in order to achieve a just city. The just city is a utopian idea that models what a good city could entail. The right to the city is a virtue that is encouraged by the just city. It promotes not only access to the city, but the right for citizens to participate in changing it. One of the limitations of a just city is capitalism because it creates classism which is not part of this planning model. Once the characteristics of a just city have been achieved, they create environments where people can enjoy democracy, equity, diversity, growth and sustainability.

The plans must meet the needs of the present without sacrificing the needs of the future, which is what sustainability is. Sustainability is also about minimising production and consumption by optimizing function through design which links to road design and the design of the transport system itself. Design can reduce mileage and improve safety, comfort and other social sustainable transport features. To improve on these would change the experience commuters and the perception of public transport for the better, which could spark social change within public transportation to make it less classist.

Chapter three presents the precedents used for this study.

What the precedents all have in common is that all have been influenced by British planning. The way that the minibus taxis operate is reflective of how omnibuses used to operate when they were introduced in London, Paris and New York. The behaviour most reflective of how omnibuses operated, is how minibus taxi drivers also make mad dashes to pick up potential commuters. This is a noted discomfort by the South and North Beach taxi commuters.

Durban and London have a similar town plan in that the west end is where most of the commercial activity takes place and on the eastern side there is an industrial area with factories, workshops and also low-income housing (Ball and Sunderland 2001: 8). This can be attributed to the fact that Durban was once a British colony, so was Nairobi. Furthermore, the Master Plan for a Colonial Capital was drafted for Nairobi in 1948 by a South African team of town planning, architecture and sociology professionals.

Transportation has been monumental in all three cities as well. Nairobi became the colonial capital in 1905 when it experienced a developmental boom due to railway construction. The founding element of Durban is the port and Durban continued to be a leading city in transport innovation when it became the first city to have a working train system in 1860 that expanded all the way to the Witwatersrand over a two year period. Durban was also the first city to have an operational rickshaw transport system in the town. The Zulu nation, whose origins are in KwaZulu Natal, the Durban province, are considered the father of the taxi industry in the country. So Durban has been active in the transportation scene.

Unlike Nairobi, Durban only experienced its developmental boom in 1910 following the union after the Anglo-Boer war. London went through a development phase during the industrial revolution in the eighteenth century which is when transportation came to the forefront due to the separation between work and home. The omnibus was introduced as result of this spatial arrangement in 1829. Minibuses also came about due to the spatial arrangement that separated population from the central business district. Minibuses were officiated in Nairobi in 1973 and in 1977 in South Africa.

London was built on the principle of the capitalist city. According to Ball and Sunderland (2001: 5-6) there are five characteristics that shaped London. The first was the clustering of market forces which created the second principle of high competition in business. Third was the separation of home and work, therefore making transport a necessity. Fourth are conurbations and lastly is the constant innovation of technology.

The technologies were mainly run by private companies and so regulations were put in place in order to manage the operations and investments of these private companies. There were also discussions about infrastructure development as private companies could champion these projects as innovation leaders but it was also appropriate that the public sector heads city development. Within these discussions there were even talks of PPPs on rare occasions. Moreover there were discussions about what regulations were needed to avoid monopoly abuse and how to encourage change.

The UK became known for taking the lead in the development of transportation infrastructure through PPPs. In 1992, PFI were encouraged which are similar to PPPs. The difference about this partnership is that it operates through deep forms of collaboration that can only occur through partnerships that happen consistently over time.

Chapter 4 presents the methodology employed to undertake this research study.

For this case study research, a mixed methods approach was used to gather information from both officials (qualitative) and the public (quantitative). A sequential exploratory strategy helped to map out the research trail that began the qualitative data collection with the SANTACO officials, followed by municipality, then the metro police. Questionnaires were then conducted to gather quantitative on commuters' perceptions of the South and North Beach Taxi Association.

Conducting this research during a global pandemic made the process a little lengthier than it needed to be and it also limited the number of participants that could be met during the research process. Only one representative from each department was interviewed from the qualitative interactions with the different stakeholders. For the questionnaires, the minimum number of participants of 100 was achieved over a period of roughly a week because not many commuters were willing to participate in the study due pandemic social etiquette among other reasons. A total of 106 commuters participated in the study and revealed the following about their perception of public transportation, minibus taxis in particular.

Chapter 5 presents the analysis of the findings.

The fundamental purpose of transportation is providing citizens access to their urban environment. The ease of access within an urban space is not only granted by transportation but also by urban settlements themselves. Urban settlements that have well-designed layouts and make use of good planning practices such as the compact city concept, which minimise the need for motorised transport create more liveable spaces.

The most important aspect of public transportation is accessibility. Ease in accessing the public transportation system is the highest advantage if the transport has routes that provide access to the particular spaces/land uses that the commuter wants to get to. Second on the priority list of whether to choose one public transport mode over another is time. The aspect of minibus taxis that commuters would like to change is the fact that this form of public transport does not have a schedule. This fact makes minibus taxis more flexible but it also creates uncertainty for commuters because the drivers of the individual taxis ultimately decide the duration of the taxi ride, which can be frustrating. The most popular destinations are work or school via the minibus taxi transit. It is required that people arrive at these destinations at a particular time, but this is not a priority for taxi drivers. Their only priority is making a profit as they operate from capitalist principles.

6.3. Summary of findings

Apartheid spatial arrangements have been a persisting impediment to the transformation of urban spaces in South Africa. Transportation infrastructure, the network of lines, linkages and routes that encourage the movement of people and goods (Edwards 2011: 1), is a technical path dependence which has created, as termed by Hensley *et al*. (2014: 199) a 'lock-in' effect caused by deeply laid foundations that make change difficult. The difficulties are created by sunken costs and existing infrastructure. The urban core was only built for a minority and once the majority became mobilised under the new democratic rule, rapid urbanisation took place and the urban core became highly densified. The development of new infrastructure and supporting services then became a priority in order to keep up with urbanisation which took place in the form of residents and included the informal market. These informal markets moved into public spaces within cities and became add-ons to the existing infrastructure. This informal economy began to dominate public spaces but existing infrastructure was not adjusted or redesigned to accommodate the new occupants of the city. Informal traders and minibus taxis form part of the informal economy. Pedestrian movement has become congested because walkways share space with vendor stalls, and roads have become congested with traffic as minibus taxis dominate the space shared with private cars, buses and a few cyclists. No provision has been made to prioritise public transportation or create dedicated cycle lanes on the wide CBD roads of Durban.

Democracy should not only be an institutional phenomenon but should also be evident in the physical form, more especially in public spaces because that, apart from general freedom and economic status, is how citizens experience the ruling institutional principles. Design is not only about aesthetics. It is also about cementing policy and current institutional systems as demonstrated by colonial and apartheid rule. Design is a direct representation of National, all the way to local governance, and therefore public spaces should reflect democracy and urban settlement patterns should be democratic because essential urban planning is the instrument that enforces government ruling principles. For this study only a small portion of democracy is being examined, which is public transportation that operates in public space. Edwards (2011: 13-14) mentions democracy in road design: the demarcation of road space for different users creates the most efficient functioning roads and can be used to promote more sustainable forms of transportation.

The Durban CBD transportation infrastructure currently favours the use of private vehicles over all other modes of travel. This is demonstrated by how wide the roads are compared to how narrow the pavements are and how much parking space is available on the side of those roads for private cars compared to how many efficient bus stops or interchanges exist.

Minibus taxis take up a lot of space on the roads, not only physically but are also highly visible and audible due to the way they operate. Regulations have been set by governing forces for the minibus taxi industry but these regulations have not physically been represented; even though they are periodically monitored by the metro police. Physically representing these regulations would be a more effective way of enforcing them. This would be most beneficial in inner-cities, as these areas are the heart of urban settlements, and a contributing factor to inner-cities being the core of settlements is internal transportation. According to Smerk (1992: 4-5) internal transportation has the power to shape the growth of a city, making it a catalytic thread in shaping the urban fabric of the city toward a more democratic reality.

6.4. Recommendations

The anticipated output of this research was to produce a dissertation that could assist in improving the current public transport system, and before any meaningful improvement can take place, an understanding of the status quo is necessary.

This study has helped to better understand the occurrence of minibus taxis and also assess how the taxi industry works together with the municipality to produce the current transportation system. The inner-city transportation system was particularly important for this study because internal transport plays a big role in the quality of the inner-cities because it provides access to internal markets and in the process contributes to the condition of public space within the city. This is why transportation infrastructure is also a reoccurring theme in the paper.

There are many forms of public transportation in Durban, most of which are not integrated in any way. The public transport system includes the privately owned mini-bus taxi's which dominate the inner-city's main roads, namely Dr Pixley Kaseme Street and Anton Lembede Street. The dominance of these taxi's has influenced the urban fabric of the city as well as the perception citizens have of the Durban CBD due to the effect that transport has on how people experience the city.

Many have considered the formalisation of the taxi industry but it seems to be a bit of stretch considering the history of the country and the current operation of the mini-bus taxis. If the municipality and the industry could find mutual grounds to improve the mini-bus taxi service for the public and urban fabric of the city, Durban could again lead in the transportation innovation. This could set an example for the rest of South Africa and even the world in procedures that merge the informal economy with the goals of the local government to create a liveable city for all its citizens and its visitors. The possibilities of this collaboration could change the negative perception associated with the taxi industry and integrate it as part of the culture that it is of the city of Durban.

Providing clear recommendations to the complexity that is the Durban inner-city public transportation system is not easy. Doing so during challenging times is even more complicated. What is offered below are five simple recommendations that could help improve the overall system.

1. Inclusive and participatory stakeholder planning

The case study has shown that what is needed is for greater mutual involvement of planning of processes. From the literature it is clear that when stakeholders come together, each stakeholder usually works to achieve their own particular interest (Innes and Booher, 2015). Specifically for this research study, eThekwini Transport Authority and the South and North Beach Taxi Association would plan for each other during procedural planning, and town planning would act as the rational participant in this process. What is highly recommended is a robust and inclusive process that in which the intentions and expectation of each group would be made clear. The role of the urban planner here is paramount, and it would be their responsibility to facilitate the process and help co-create a coherent solution. The ground rules of the engagement including lines of accountability must be guided by a policy statement that could be crafted by the Municipality and accepted by all.

2. Consider implementing more creative longer term institutional mechanisms such as PFIs

The transport experience in London implementing PFIs appeared to be fairly successful. This process embedded participation and ensured that there is continuity in representation. Descartes (2019: 5) suggests that work that is carried out by a number of people is more problematic than when only a single quality service provider is employed. Adopting the London model of PFIs may be one such solution. The specific selected collaborative would only work on that single project and not be tasked with multiple

projects at a time. Detailed regulating policy would need to be drafted carefully for the best results of this strategy.

3. Re-imagination of current transport system

The eThekwini Municipality's vision of the IRPTN has been lauded as progressive. However, it is interesting that the majority of questionnaire participants mentioned the need for an upgrade of the current transportation system. Therefore, considering this empirical evidence and the logic of the theory of change, the third recommendation of this study is for the Public Transport Committee to rethink its current model in order to explore what would make transportation sustainable now. In this way, a gradual change can take place through achieving short-term goals that would eventually evolve the public transportation system into what it would need to be in the future. The most pressing issue as gathered from the questionnaire responses is the scheduling of the public transportation system, and therefore this should be the point of departure.

4. Road design that promotes better road behaviour

Road design is a key component to the improvement of the public transportation system. The research shows that currently Metro Police are usually assigned to regulate the operation of minibus taxis. Whilst policing is important, it is recommended that a more fundamental infrastructural issue be also attended to, such as road design that promotes public transport safety. When road design is done right, it has been observed that infrastructural design has a major impact on behavioural cues.

5. On-going and sustained commuter engagement

The eThekwini Municipality has had engagement sessions with its citizens in the past. Unfortunately, this culture of engagement has not been sustained. In this sector, it is strongly recommended, based on the study, that there is consistent interaction with commuters to monitor the outputs of interventions that have been implemented. This also entails that transparency is maintained with commuters during the processes of improvement. In that way democratic principles are upheld not only physically through the redesigning and redistribution of road space, but also through development processes. Including the public throughout the development process also contributes to the plans sustainability as citizens take ownership and practise their right to the city, therefore creating a more just city.

6.5. Shortcomings and limitations of the research conducted

Within research it is not always certain that the information provided by participants is accurate. The exchange of information is based on trust which is a limitation in qualitative research and to a lesser extent in quantitative research.

The field research was conducted during a global pandemic which meant that it was harder to reach people because not everyone was at work during this time. Even those who were available took a while to respond and set dates for interviews due to the inconsistent work days and remote working that had been taking place. Conducting the questionnaires was also a risk for both the researcher and participants, but since public transport regulations had not been successfully implemented within the taxi industry, minibus taxi operations resumed as per usual which made the task a bit easier. The only issue encountered during the questionnaire process was that some commuters were unwilling to participate because of the fear of covid-19. Some commuters were afraid they would not understand the questions and so decided not to participate. Others were making a short trip and so could not participate because they would not be able to complete the questionnaire.

The actual field work had to be postponed because of the pandemic, until the lockdown regulations were eased. The final limitation was not having library resources available other than sourcing the material online.

6.6. Recommendations for further study

The recommendation for further study would be the design of hybrid interchanges that integrate different modes of transport, even non-motorised transportation. Currently the different public transportations available are not integrated and creating hybrid interchanges could help facilitate the integration of the different transportation and subsequently make public transit more efficient. This recommendation goes hand-in-hand with road design, which is mentioned in the research study.

These topics could potentially contribute to the improvement of the current public transportation system, especially within inner-cities.

6.7. Conclusion

The taxi industry is complex. It has deep lying path dependencies that make it difficult for intervention. Local government needs to deal with the situation at hand instead of being uncompromising about the process of transforming public transportation.

The need for transport is created by land use arrangements which were separated into home and work during the industrial revolution. Moreover, in South Africa it was apartheid planning that separated people according to race, putting all inferior race groups on the periphery of economic centres, away from services, jobs and goods. The minibus taxi public transport system began as a result of inefficient and expensive public transport. There were strict laws that did not allow the full operation of minibus taxis which meant they had to operate within the ambiguities of the law and this set a precedent for taxi

operation. Even after minibus taxis have been fully permitted as public transportation and even after the end of apartheid, taxi still operate within the ambiguities of the law which make them difficult to regulate.

The taxi industry still falls under the informal economy yet they provide a necessary public service which currently dominates over state subsidised buses. There still exists a gap between this industry and local government, which has affected the operation of minibus taxis and in turn created an unpleasant atmosphere for commuters.

There was an opportunity to close this gap during the overturn of apartheid and the introduction of democracy. Another significant event is occurring in this era, which presents another opportunity for social change within the taxi industry. eThekwini municipality and the South and North Beach Taxi Association have the opportunity to set a precedent and become the leading city in resolving the complexities that exist between the state and the taxi industry through collaborative planning.

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APPENDIX 1: LETTER OF INFORMATION

Appendix 1a: Letter of information and consent

LETTER OF INFORMATION

Title of the Research Study: Collaborative approaches in achieving sustainable private-public transport services in inner city areas: a case of the Durban mini-bus taxi's

Principal Investigator/s/researcher: Lonna Mabandla, BTech: Town and Regional Planning

Co-Investigator/s/supervisor/s: Godfrey Musvoto, PhD

Brief Introduction and Purpose of the Study: The minibus taxi Industry is an informal industry that has dominated the public transportation system in South Africa due to its low rates, convenient stops and it is an industry that predominantly serves the lower income group. It is difficult to calculate the revenue brought in by this business as well as regulate the number of minibuses operating in a city. It is also difficult for first time commuters to find out about trips and prices. As South Africa moves into an era of smart cities, it is questionable whether the taxi industry is efficient enough to contribute to sustainable public transport customs that will influence the betterment of cities. According to Litman and Burwell (2006: 334) sustainability that is narrowly defined overlooks the relationships between transport issues that would offer a coordinated solution.

The purpose of the study is to identifying collaborative approaches between the eThekwini Municipality and the North and South Beach Taxi Association in order to improve the sustainability of the minibus taxi transportation system in the Durban inner city.

Outline of the Procedures: You are required to be truthful and give information that is accurate. The questionnaire will only take 10 minutes and the interviews may last as long as needed as follow up questions may come up as the interview goes on, but the estimated time is between 20 to 30 minutes. This research will involve all stakeholders involved in the taxi industry and commuters. The results of the research will be made available to those who would like feedback via email. I will also write a short report on a blog platform. Focus groups may be held in the Town Planning Postgraduate Studio or where convenient for you, for example the boardroom at your offices. There may be availability in an alternative venue that may need to be booked ahead.

Risks or Discomforts to the Participant: The different groups of the relevant participants involved will be separated into focus groups – municipality and taxi associates - in order to create an environment that is most comfortable for each group to fully express themselves. Commuters may experience slight discomfort when questionnaires are conducted in minibus taxis.

Benefits: The research may contribute to the betterment of the public transport system in Durban by providing information to the relevant stakeholders that may be able to implement change in the most relevant way.

Reason/s why the Participant May Be Withdrawn from the Study: You may be withdrawn from the study if you wish not to comply. There will be no adverse consequences for you should they choose to withdraw for any reason.

Remuneration: You will not receive money for participating in this study.

Costs of the Study: You will not be required to contribute towards the cost of the study.

Confidentiality: A coding system will be used when collecting data therefore you will remain anonymous throughout the process.

Research-related Injury: Compensation for injury will not be provided to you by the researcher. Proceedings will take place in a safe environment and you will not be asked to participate in any activity that may result in injury.

Persons to Contact in the Event of Any Problems or Queries:

(Supervisor and details) Please contact the researcher (tel no.), my supervisor (tel no.) or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the DVC: Research, Innovation and Engagement Prof S Moyo on 031 373 2577 or moyos@dut.ac.za

Appendix 1b: Incwadi yemininingwane

Incwadi yemininingwane

Isihloko socwaningo: Izindlela zokusebenza ngokuhlanganyela ekwakheni izinsiza zokuthutha abantu ezizimele kanye neziqondane nomphakathi: Ucwaningo ngemboni yamatekisi eThekwini.

Umcwaningi: Lonna Mabandla, oneziqu zeBTech kwi-*Town and Regional Planning*.

Obambisene nomcwaningi aphinde ongamele ucwaningo: Godfrey Musvoto, oneziqu zobudokotela

Isethulo kanye nenhlosongqangi yocwaningo: Imboni yamatekisi yiyona mboni engungqaphambili kwezokuthutha umphakathi eNingizimu Afrika yize ingenasimiso sokulawuleka; lokhu kubangwa ngamanani aphansi akhokhwa ngabagibeli kanye nokuhleleka, nokusondeleka kwezindawo zokwehlisa abagibeli. Le mboni igxile kakhulu ekusizeni abagibeli abahlala ezindaweni zokuntuleka kwemali, abangaholi imali eyanele. Kulikhuni ukubala yonke imali eqoqwa kulemboni kanye nokulawula amatekisi athutha abagibeli kunomayiliphi idolobha. Kuphinde kube lukhuni ukuthi abagibeli abaqala ukusebenzisa loluhlobo lwezinqola luthole ulwazi olwanele mayelana nemizila yomgwaqo kanye namanani. Njengoba iNigizimu Afrika isithuthuka ekwakheni amadolobha asezingeni eliphakeme, kuyasolisa ukuthi kungahle kubenzima ukuthi imboni yamatekisi ibambe iqhaza elitheni ekuthuthukiseni amadolobha kwezokuthutha amalungu womphakathi. Ngokuka Litman noBurwell (2006:334) …
Injongo yalolucwaningo ihlose ukuqamba izindlela zokusebenzisana phakathi kuka Maspala wase Thekwini kanye nososesheni base nyakatho nase ningizimu kweTheku, ukuthi kulondolozeke imboni yamatekisi enkabeni yedolobha eThekwini.

Imidati yocwaningo: Kulindeleke ukuthi ukhulume iqiniso futhi udalule imininingwane eqondile. Imibuzo izothatha imizuzu elishumi kanti nenhlolokhono izothatha isikhathi esifanelekile; isikhathi esinqunyiwe siphakathi kwemizuzu engamashumi amabili kanye nemizuzu engamashumi amathathu. Lolu cwaningo luzobandakanya zonke izinhlaka ezithinta imboni yamatekisi, kuzo lezi zinhlaka kubalwa abagibeli kanye nabaqashi imbala. Imiphumela yocwaningo izothunyelelwa bonke abanogqozi ekwazeni imiphumela ngokusebenzisa i-*email*. Njengomcwaningi nami ngizokwethula umbiko omfushane kwi-*blog* platform. Amaqembu akhethekile angahlanganyela kwi-Studio *seTown Planning Postgraduate*, okanye endaweni ethize eqhubekise ucwaningo ngobunono nenkululeko yabantu abaqondene nocwaningo. Uma isikhala sikhona kwelinye lamahhovisi angasetshenziswa, kungahle kube nesidingo sokuhlela ukusebenzisa lelo hhovisi/gumbi isikhathi sise khona.

Imbangelangcuphe eqondane nomhlanganyeli: Amaqembu ahlukene kubo bonke ababambe iqhaza kulolucwaningo azokwehlukaniswa ukudala amaqembu azimele - uMasipala kanye nososesheni, ngenhloso

yokunethezekisa wonke amaqembu ukuthi kungabibikho ukungakhululeki emaqenjini. Abagibeli ngeke bakhululeke uma begcwalisa *amafomu* wocwaningo phakathi ematekisini.

Inzuzo: Lolu cwaningo lunga thuthuksa uhlelo lwezokuthutha umphakathi edolobheni lase Thekwini ngokwabelana ngemininingwane kuzo zonke izinhlaka ezingaletha ushintsho embonini yamatekisi.

Imbangela yokuhoxa kwaba bambe iqhaza: Unalo ilungelo lokuhoxa ocwaningweni uma kuyisifiso sakho ukwenza njalo. Akakho ozojeziselwa ukuhoxa ocwaningweni.

Inkokhelo: Akakho ozohlomula ekubambeni iqhaza ocwaningweni.

Izindleko zocwaningo: Akulindelekile ukuthi uxhase ngemali ukuqhubekisa lolu cwaningo.

Ubumfihlo bocwaningo: Uhlelo lwe-*Coding* luzosetshenziswa uma kuqoqwa yonke imininingwane, ngakho ke ngeke udaluleke ngokwegama.

Ukulimala okuhlobene nocwaningo: Umcwaningi ngeke anxephezisele ukulimala kwabantu kulolucwaningo. Ucwaningo luzoqhutshwa endaweni ephephile futhi ngeke ucelwe ukuzibandakanya emsebenzini ozokufaka engcupheni yokulimala.

Abantu abathintekayo uma kuvela izinkinga okanye imibuzo:

Thinta umcwaningi (0784721344), umphathi wami (0792588881) okanye umphathi wezimilo zocwaningo ku 031 373 2375. Izikhalazo zingabikelwa ku DVC: Research, Innovation and Engagement Prof S Moyo ku 031 373 2577/ moyos@dut.ac.za

APPENDIX 2: CONSENT FORM

Appendix 2a: Consent

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Lonna Mabandla , about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC 184/19,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant	**Date**	**Time**	**Signature/Right Thumbprint**

I, Lonna Mabandla herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher	**Date**	**Signature**
Full Name of Witness (If applicable)	**Date**	**Signature**
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Appendix 2b: Imvume

Imvume

iStatimende sokuvuma ukubamba iqhaza ocwaningweni. Ngiyaqinisekisa ukuthi umcwaningi uLonna Mabandla udalule isimo, uhlelo, inzuzo kanye nemibangelangcuphe yocwaningo - Research Ethics Clearance Number: IREC 184/19

- Ngitholile, ngaphinda ngafunda ngaqondisisa imininingwane engenhla mayelana nocwaningo.
- Ngiyazi ukuthi imiphumela yocwaningo, kanye nemininingwane yobulili bami, iminyaka yami, usuku lokuzalwa, negama ngeke kudalulwe kulolucwaningo.
- Maqondana nezimfuneko zocwaningo, ngiyavuma ukuthi imininingwane eqoqiwe kulolucwaningo, ingabhalwa ohlelweni lwe-Computer ngumcwaningi.
- Ngingahoxa nomayinini, ngaphandle ngokubandlululwa ocwaningweni.
- Ngibe nesikhathi esanele ukubuza imibuzo futhi ngiyaqinisekisa ukuthi ngisesigabeni sokuqhubeka nocwaningo.
- Ngiyaqonda ukuthi imiphumela ethinta mina ezotholakala kulolucwaningo iyonikezwa mina ngesihle.

Igama lakho eliphelele	**Usuku**	**Isikhathi**	**Isiginesha**

Mina, Lonna Mabandla ngiyaqinisekisa ukuthi udalule isimo, uhlelo, inzuzo kanye nemibangelangcuphe yocwaningo.

Igama eliphelele lomcwaningi	**Usuku**	**Isiginesha**
Igama lofakazi (Uma kukhona)	**Usuku**	**Isiginesha**
Umzali (Uma kukhona)	**Usuku**	**Isiginesha**

APPENDIX 3: QUESTIONNAIRE

Appendix 3: Questionnaire

Master of the Built Environment Research:

Minibus Taxi Commuters Survey

Demographics

Age/Iminyaka

□ 50 – 70 □ 35 – 49 □ 18 – 34 □ 13 – 17 □ 12 and Younger/ Ukwehla

Gender/Ubulili

□ Female/ Insikazi □ Male/ Owesilisa

Questions / Imbuzo

1. **Where do you live (Area)?/ Uhlala kuphi (Indawo)?**

_____

2. **Do you usually take public transport into the city?/ Ujwayele uyazisebenzisa izithuthi zomphakathi uma uya edolobheni?**

□ Yes/ Yebo

□ No/ Cha

3. **How often do you take public transport?/ Uzisebenzisa kangaki izithuthi zomphakathi?**

□ Everyday/ Zonke izinsuku

□ 3-5 days a week/ 3 – 5 Izinsuku esontweni

□ 1-2 days a week/ 1 – 2 izinsuku esontweni

□ Few times a month/ Izinsukwana enyangeni

4. **What do you often need to take public transport for?/ Izikhathi eziningi usuke usidingelani isithuthi somphakathi?**

□ Work / Umsebenzi

□ School / Isikole

□ Shopping / Ukuya ezitolo

□ Social services / ukwenza izidingo zempilo

□ Ukuyozijabulisa / Entertainment

□ Other (specify) / Nokunye

_____

5. Why do you take public transport?/ Kungani usebenzisa izithuthi zomphakathi

□ No private car / Anginayi moto □ Save costs / Ukonga imali □ Environmental reasons / Ukonga imvelo

□ Other (Specify) / Okunye

_____

6. What form(s) of public transport do you take?/ Hlobo luni lwezithuthi zomphakathi ozisebenzisayo?

□ Train / Isitimela □ Bus / Bhasi □ Minibus taxi / Tekisi

□ Cabs □ Uber / Ubha

7. If more than one. Which do you use most often?/ Uma kungaphezulu kohlobo olulodwa iluphi uhlobo olusebenzisa kakhulu?

□ Train / Isitimela □ Bus / Bhasi □ Minibus taxi / Tekisi

□ Cabs □ Uber / Ubha

8. Why? (Select as many as are relevant)/ Kungani? (Ungakhetha nanoma iziphi izizathu kwezibalwe ngezansi)

□ Convenience / Tholakala kalula □ Time / Izikhathi □ Route / Umzila ewusebenzisayo

□ Cost / Inani □ Comfort / Ukunethezeka □ Safety / Ukuphepha

9. **What are you unsatisfied with about the public transport you take the most often? / Yini engakwanelisi ngohlobo lwesithuthi osisebenzisa kakhulu?**

□ Convenience / Kulula □ Time / Isikhathi □ Route / Umzila ewusebenzisayo

□ Cost / Inani □ Comfort / Ukunethezeka □ Safety / Ukuphepha

10. **Would you want to change your mode of transport to a new better one or would you just want an improvement on your current choice of transportation? / Ungashintsha kuhlobo lwesithuthi osisebenzisayo noma ungafisa ukuthi kuthuthukiswe lolu ovele ulusebenzisa?**

□ New, better transportation / Ukushintshela koluthuthukile, olusha

□ Improvement on current transportation / kuthuthukiswe olusebenzisayo

11. **If you would prefer a new, better transportation, which would you prefer? / Uma ufisa uhlobo lwezokuthutha olungcono, oluphi ongalukhetha?**

□ Bicycles / Bhayisekile

□ Bus Rapid Transit (i.e. Rea vaya in Gauteng) / Amabhasi ohlobo olusha

□ Train Rapid Transit (i.e. Gautrain) / Isitimela

12. **Name one thing that would improve your public transport experience? / Chaza okukodwa okungenza ngcono uhambo lwakho ngesithuthi somphakathi osisebenzisayo?**

_____

APPENDIX 4: GUIDELINE QUESTIONS FOR INTERVIEWS

Appendix 4a: Questions for the ETA

Master of the built Environment

Research topic: Collaborative approaches in achieving sustainable private-public transport services in inner city areas: a case of the Durban mini-bus taxi's

Researcher: Lonna Mabandla

Questions

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1. How long have you been working for the ETA? (In your position, what are some of your responsibilities)
2. How often does the department communicate with taxi owners?
3. Have there been collaborative meetings between taxi owners, town planners and the ETA?
4. What efforts has the ETA made in improving the taxi industry in Durban?
5. What is the most challenging part of a privately owned public service such as transport?
6. What plans does the department have concerning the public transport provided by the state?
7. What plans does the department have concerning the inner city minibus taxi system, specifically the North and South Beach Taxi Association?
8. How has the Taxi Recapitalization Programme had an effect on transport planning?
9. How successful was the Moja Cruise project and is it still in place?
10. Can the current inner city urban environment sustain predicted levels of future traffic?
11. Can reducing the road surface area be beneficial in reducing traffic?
12. Is it possible to optimize the use of existing road networks by making investments in public transport?
13. Apart from access and affordability, which aspect of public transport is most important for the satisfaction of commuter needs?
14. What steps has the ETA taken to nurture this important aspect of public transport?
15. Are there any Public Private Partnerships (not limited to transport) and what have been their ongoing progress and outcomes?
16. What are important factors to consider within transport planning that are specifically linked to the taxi industry?

Appendix 4b: Questions for the Taxi Industry

Master of the Built Environment

Town and Regional Planning Department

Durban University of Technology

North and South Beach Taxi Association Questions

17. How often does the taxi association make contact with the eThekwini municipality?
18. What are some of the reasons the association would make contact with the municipality?
19. What are some of the positive impacts the taxi industry has had on the inner city of Durban?
20. What are the current issues faced by the association in terms of operation?
21. How closely does the association work with SANTACO?
22. Is there still competition for routes? Is there tension caused by routes?
23. In a capitalist economy, how does the North and South Beach Taxi Association intend on improving the industry in order to remain a top competitor?
24. How does SANTACO intend on improving the industry?
25. What are the future plans for the North and South Beach Taxi association?
26. Would the association consider collaborating with the municipality and business owners to improve the function of the taxi industry?
27. Would the North and South Beach Taxi Association be interested in introducing technology to improve the operation of the taxi industry?

SANTACO Questions

1. Is the Taxi Industry ‘brand’ ever a concern?
2. Are tensions within the industry still high in terms of competition?
3. What causes does the taxi industry stand for?

Appendix 4c: Questions for the Town Planning Department

Master of the Built Environment

Town and Regional Planning Department

Durban University of Technology

Town Planning Department Questions

1. How involved are town planners in the transport plans for the city?
2. Do town planners ever meet with taxi industry officials?
3. Are there ever collaborative meetings between taxi owners, town planners and the department of transport?
4. How does the taxi industry contribute to the urban fabric of the inner city?
5. What are the future plans for the inner city and how are they affected by the minibus taxi industry?
6. How do future plans for the inner city affect the minibus taxi industry?
7. Where does the eThekwini see the city of Durban in 20 years' time and how does the taxi industry contribute in a positive way to that vision?
8. Can the current inner city urban environment sustain the predicted levels of future traffic?
9. Does Durban practice the principles of a Just City?
10. Is it important for the city to prioritise pedestrian movement over vehicle movement within the CBD?
11. What steps has the city taken to ensure a balance of movement systems?