TOWARDS DEVELOPING A MODEL FOR INTEGRATING LIGHT DELIVERY VEHICLES INTO THE RURAL PASSENGER TRANSPORT SYSTEM IN VHEMBE DISTRICT MUNICIPALITY OF SOUTH AFRICA

By

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A thesis submitted in fulfillment of the requirements of Doctor of Philosophy in Rural Development (PHDRDV) Degree

Institute for Rural Development

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ABSTRACT

This study stems from premise that Light Delivery Vehicle (LDV) passenger transport is a vital but not necessarily a safe mode in rural communities such as those in Vhembe District of Limpopo Province, South Africa. Moreover, the lack of detailed scientific data and as yet illegal status of the service inhibit efforts made to strengthen it. Nevertheless, transport authorities in South Africa are beginning to consider ways of formalising the service. The overall objective of the study was to develop a model for integrating LDV passenger transport with the public transport system in Vhembe District Municipality. It was assumed that LDVs could be a suitable mode of rural passenger transport if appropriately modified and a supporting legislative framework was developed. Specifically, the nature and extent of the service within the wider transport context in Vhembe District Municipality were investigated. A mixed methods approach was adopted, applying both quantitative and qualitative procedures and techniques of data collection and analysis. Three quantitative surveys and a qualitative case study were carried out. The latter comprised focus group discussions, in-depth interviews, observations and a document study. The purposively sampled research participants comprised 100 LDV operators, 100 commuters and 69 Administrators) using the snowball technique and based on their knowledge on LDV passenger transport.

The use and operation of LDV passenger transport was observed to be an established, regular, demand-driven, sustainable and expanding reality, operating alongside other transport services, especially in remote areas. A strong relationship ($P < 0.05$) existed between the reasons given for using LDVs and the municipalities where the respondents resided. The transport service was affordable and flexible, although it was not necessarily comfortable or safe. There was a strong statistical relationship ($P < 0.01$) between the level of satisfaction with other transport services and municipalities in which they resided.

Although the informal nature of LDV transport provided some short-term advantages to operators, various stakeholders (including operators of LDV transport) indicated that the formalization of the service would lead to long-term advantages such as improved service delivery, operating circumstances and increased customer base. In addition, LDV transport

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operators were ready to comply with structural and other changes the authorities required, and indicated a preparedness to work alongside existing public transport services.

Using the study's findings and available literature a procedure or model for integrating LDV passenger transport with the public transport system in Vhembe District was developed. What are its main features? However, there is need for further studies that examine whether the proposed model for the modification and integration of LDV passenger transport is feasible and plausible beyond Vhembe District. There is need for policy and legislative reforms that allow use of LDVs as passenger-carrying vehicles, which entails insistence on fitting canopies, spelling out seating capacity, proper seats, issuing route permits and other safety-related measures specified by the South African Bureau of Standard (SABS) and Occupational Health Standards (OHS).

Key words: Light delivery vehicles, rural passenger transport, framework, integrating, model

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DECLARATION

I, Thinandavha Edward Munwana, hereby declare that this thesis for the Doctor of Philosophy in Rural Development (PHDRDV) Degree submitted to the Institute for Rural Development at the University of Venda has not been submitted previously for any degree at this or another university. It is original in design and in execution, and all reference material contained herein has been duly acknowledged.

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To my late mother, Alilali, Matodzi, Nyatshisevhe and my beloved children

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
BCM	Buffalo City Municipality
BRT	Bus Rapid Transit
CBPWP	Community Based Public Work Programme
CBD	Central Business District
DRT	Demand Response Transport
ECRTS	Eastern Cape Rural Transport Strategy
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GRSPZ	Global Road Safety Partnership Youth Africa
IDA	International Development Association
IDP	Integrated Development Plan
INTP	Integrated National Transport Policy
IRF	International Road Federation
IRMA	Integrated Rural Mobility and Access
IFRTD	International Forum for Rural Transport and Development
ISRDP	Integrated and Sustainable Rural Development Programme
LDVs	Light Delivery Vehicles
LED	Local Economic Development
MDGs	Millennium Development Goals

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MEC	Member of Executive Council
MRD	Ministry of Rural Development
NDoT	National Department of Transport
NLTSF	National Land Transport Strategic Framework
NLTA	National Land Transport Act
NRTA	National Road Traffic Act
NSDP	National Spatial Development Perspective
OECD	Organisation for Economic Co-operation and Development.
OHSA	Organisational Health Safety Act
PLTF	Provincial Land Transport Framework
PMGSY	Pradhan Mantri Gram Sadak Yojana
PRTP	Peru Rural Transport Policy
PRE	Provincial Regulatory Entity
RTSSA	Rural Transport Strategy of South Africa
RTS	Rural Transport System
RSS	Road Safety Strategy
SABS	South African Bureau of Standards
SSATP	Sub-Sahara African Transport Policy Program
VBOA	Vhembe Bus Operators Association
VDM	Vhembe District Municipality
WHO	World Health Organisation

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CHAPTER 1 INTRODUCTION

1.1 Background

A well-developed and maintained formal transport system is crucial for socio-economic development and poverty reduction in any given locality (International Road Federation, 2010a, b; 2012; Watkins, 2010; World Bank, 2010; Thompson, 2011; Banjo, Gordon and Riverson, 2012; Sachs, 2012). The absence of such a system restricts the movement of people and goods across regions (Dennis, 2001; Patrick and Roseland, 2005; World Health Organization, 2010a, b). In particular, it impedes communities' access to services and employment as well as opportunities to maintain essential social networks (Williams and White, 2001; Njenga, 2003; Archer, Chanda, Darkoh and Mpotokwane, 2005; World Bank, 2010; World Health Organization, 2010a,b).These impediments apply to rural areas in sub-Saharan Africa where transport-related infrastructure is in general poorly developed and maintained because of limited resources (Sieber, 1996; Belwal and Belwal, 2010; World Bank, 2010; Sachs, 2012). Efforts towards improving transport systems in rural areas in sub-Saharan Africa and in particular in South Africa are therefore essential.

The Millennium Development Goals (MDGs) capture the fact that poorly developed (road) transport systems inhibit development and the reduction of poverty (United Nations, 2000; African Union, 2005; International Road Federation, 2010a, b; Poku-Boansi, Ekepe and Bonney, 2011; Banjo *et al*., 2012). As stated in the MDGs, an effective transport system is a cross-cutting issue which is essential for achieving the respective goals (World Bank, 2001; 2010; Global Transport Knowledge Practice, 2012). The eighth MDG for example, emphasises the need for establishing a global partnership for development that focuses on removing the impediments to the cost-effective transportation of goods, services and people within and between regions (World Bank, 2001, 2010; International Road Federation, 2010a, b). The MDGs underscore the need to strengthen road transport systems in rural communities in developing regions such as sub-Saharan Africa where road transport is the main means of transport (Lagarde, 2007; International Road Federation, 2008).

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The development of an effective road transport system in rural areas requires a more holistic understanding of the mobility and access needs of the communities concerned than has traditionally been the case in past road sub-sector investments (International Road Federation, 2008; Sachs, 2012). In order to ensure that road transport systems are relevant and efficient, it is essential to adopt a demand-led or people-centred approach that focuses on the specific and variable needs that affected communities express (Lebo and Schelling, 2001; Banjo *et al.*, 2012). Based on the complexity of rural transport systems, and as recognised in the South African Rural Transport Strategy Action Plan of 2007–2014 (Republic of South Africa, 2007a,b), efforts seeking to strengthen such systems require a much wider focus than mere improvement of road infrastructure. A comprehensive and integrated combination of enabling policies and measures should be in place if the challenges are to be addressed effectively.

Developers of transport systems should bear in mind that rural communities struggle to acquire appropriate means of transport to access services. Various factors invariably necessitate the use of unconventional and informal public road transport modes such as adapted light delivery vehicles (LDVs) (Williams and White, 2001; Wosiyana, 2005; Ericson, 2011; Banjo *et al.*, 2012). One of these factors is the characteristically poor road infrastructure and physical conditions such as a frequently rough and/or wet terrain in especially remote rural areas (Williams and White, 2001; Kekana, 2009). Formal public transport is also largely non-existent in these areas (Wosiyana, 2005). Furthermore, limited material resources in rural communities in the developing world, including in South Africa, often result in the use of old, poorly maintained and largely unsafe vehicles (Republic of South Africa, 2003a, b; Kharola, Tiwari and Mohan, 2010). Considering the mentioned transport-related constraints rural communities face and the importance of adequate transport for socio-economic development, exploring ways of strengthening informal modes of passenger transport such as LDVs in such communities is essential.

In South Africa in particular, the use of LDVs for informal public transport is associated with numerous challenges. Most notable among these is the fact that existing legislation does not permit the use of LDVs to carry passengers for reward. For example, regulation 250 of the National Road Traffic Act (93 of 1996) prohibits the conveyance of people for reward in a goods compartment of a motor vehicle. Moreover, Regulation 247 of the same Act only allows this when specific safety conditions are met. In addition, the National Land Transport Transitional

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Act 22 of 2000 prohibits the conveyance of passengers using vehicles other than the four categories specified in section 31(1).These categories exclude LDVs. However, transport officials are anxious to find ways that might accommodate them in the wider regulatory framework of the country (Harris, 2006). The major concern of the relevant authorities in South Africa and elsewhere relates to public health and in particular safety implications associated with the transportation of passengers in the cargo area of pickup trucks or LDVs (Agran, Winn and Anderson, 1994; Republic of South Africa, 2003a, 2003b; Wosiyana, 2005; Kharola, Tiwari and Mohan, 2010). The cargo area is not designed to meet safety standards applicable to passengers and is thus not necessarily a safe form of passenger travel (Agran *et al.*, 1994). Thus, although the relevant authorities in South Africa recognise that it is important to find ways to formalise and integrate the LDV passenger service within the formal public transport system in rural areas, they also recognise it is essential to explore how to ensure the safety of this transport service.

Despite the legislative prohibitions highlighted above, the use of LDVs as an informal mode of public transport has apparently become a way of life in many rural areas in South Africa, including in the predominantly rural Vhembe District of Limpopo Province (Agran *et al.*, 1994; Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006; Laws, Enoch, Ison and Potter, 2009; Greater Tzaneen Municipality, 2011; Vhembe District Municipality, 2012). As in various other countries, LDV passenger transport in South Africa is particularly prevalent in remote rural areas where conventional modes of transport such as minibuses or taxis do not and cannot operate. It is thus not surprising that LDVs tend to be referred to as "survival" or "bakkie" taxis (Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006). In addition, available information suggests that the LDV passenger service is demand-driven and comparatively cheap. The operators of LDV services, for example, tend not to follow a set timetable, and often carry passengers and goods for a single overall fee. Operators of LDVs are apparently prepared to pick up and drop passengers at their doorsteps together with their luggage and in accordance with their needs or in response to particular requests (Laws, Enoch, Ison and Potter, 2009; Ericson, 2011). Light delivery vehicles are also used to provide vital services such as transportation of school children and the disabled. In short, LDV passenger transport is seemingly more convenient, affordable and accessible than the conventionally recognised modes of passenger transport in VDM and other rural areas in South Africa, even though it is as yet an illegal and not necessarily safe service.

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The factors discussed above point to the need for developing comprehensive, integrated and demand-driven (passenger) transport systems, policies and action plans in rural areas such as those in the Vhembe District of Limpopo Province. Such systems, policies and actions should accommodate all modes of transport and in particular LDVs to carry passengers. Various scholars, among them Imran (2009) and Weir and McCabe (2009), have expressed this need. The tenets of the South African National Land Transport Strategic Framework (NLTSF) of 2006–2011 (Republic of South Africa, 2006) indicate that the South African government is committed to facilitate the establishment of comprehensive, integrated and demand-driven transport services. These tenets suggest that the NLTSF could be used as a basis for developing a comprehensive, integrated and demand-driven rural transport system that provides for LDV passenger transport, if appropriately amended. The NLTSF's key objective is to facilitate the coordination and delivery of relevant and integrated systems of land transport services within the context of the entire spectrum of land transport policies, strategies and plans as well as other government policies, strategies and plans.

Moreover, the NLTSF contains programmes and legislative provisions that have an important bearing on the rural transport strategy in South Africa such as the following: the Integrated and Sustainable Rural Development Programme (ISRDP), the Integrated Development Programme (IDP), the Community-based Public Works Programme (CBPWP), the Local Economic Development Programme (LED) and the National Strategy on Rural Transport (NSRT) (Republic of South Africa, 2000, 2003a, b, 2006, 2007a, b).

Another positive factor which specifically relates to strengthening LDV passenger transport in South Africa is that various Transport Brokering Services (TBSs) and Special Needs Contracting Services (SNCSs) have evolved. These services facilitate the development and especially implementation of safety and other specifications as well as accreditation criteria for adapted multi-purpose vehicles such as LDVs and trucks. Despite indications that existing policies and services could provide to some extent a basis for strengthening and integrating the LDV passenger transport service within the formal public transport system in rural areas, such as those in the Vhembe District of Limpopo Province, the effective refinement of these policies and services would require an in-depth empirical study of the relevant service.

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To conclude, Carapetis, Beenhakker and Howe (1984) as well as the South African government (Republic of South Africa, 1996; 2010) have emphasised that regulatory and other efforts to facilitate the establishment and strengthening of public transport systems in rural areas, such as those in the Vhembe District of Limpopo Province, should be comprehensive and based on up-to-date plus in-depth scientifically generated information. These efforts should also focus on issues such as the quantity, quality and registration of transport facilities together with the allocation of transport resources. Although authorities in the Vhembe District and other rural areas have indicated that there is a need to strengthen LDV passenger transport (Republic of South Africa, 2003a, b; Vhembe District Municipality, 2011, 2012), they also recognise that the information needed to do so appropriately is lacking. This state of affairs points towards the urgent need for finding viable solutions to the challenge of strengthening the LDV passenger transport service.

1.2 Overview of the State of Public Transport in Vhembe District

The need for strengthening public transport and in particular the LDV passenger transport service in the Vhembe District of Limpopo Province becomes more clear when considering the following preliminary overview of public transport in this district: Taxis, buses and LDVs dominate public transport in Vhembe District. Operators of buses have a functional transport association, namely the Vhembe Bus Operators Association (VBOA). The latter association controls almost all buses that operate in the District. Core members of VBOA include Mabirimisa, Mulaudzi, Magwaba, Enos, Netshituni, Omega Line and Do Light Bus Services. Charter bus companies, such as CTL Tours, Translux, Transtate, City to City and TSB, also ferry passengers. Not all are members of VBOA as membership is not compulsory.

Various taxi associations operate daily in Vhembe District. Among these are the Thohoyandou, Vuwani, Sibasa-Siloam, Thohoyandou-Makhado, Thohoyandou-Malamulele, Thohoyandou-Polokwane and Venda-Johannesburg taxi associations. Metered taxis also offer informal, individual-oriented passenger transport. Since the latter are not registered as a transport service, their operations are not officially regulated and as a result, they are not allowed to use public transport facilities such as official taxi and bus ranks, including bus stops (VDM, 2009).

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Light delivery vehicles are seemingly the most common means of passenger transport in the predominantly rural Vhembe District. They ply their trade in various parts of the District and ferry a diverse range of passengers such as civil servants, school children, the elderly and shoppers. However, unlike buses and taxis, LDVs do not follow specific operational schedules or timetables. The LDV operators are not organised or registered to provide passenger transport services. For this reason, they are not allowed to legally use public transport facilities. The LDV passenger transport often operates particularly in areas with poor road infrastructure. Apparently, most of the LDV operators are individually-owned businesses, with the owners or family members serving as drivers.

1.3 Statement of the Research Problem

Through observation, the use of LDVs to transport people for a fee is a vital but not necessarily safe service that rural communities in Vhembe District of Limpopo Province in South Africa enjoy. However, current transport legislation in the country prohibits rendering this service because LDVs are categorised as goods-carrying vehicles only. The National Road Traffic Act 93 of 1996 for example states that, "No person shall on a public road carry any person for reward in a goods compartment of a motor vehicle". The National Land Transport Transitional Act 22 of 2000 also excludes LDVs from other passenger vehicles. Because of these prohibitions there is as yet no legislative framework that defines safety and other measures that would ensure the appropriate use of LDVs as a form of rural passenger transport. However, despite the fact that the existing legislative framework excludes LDVs as passenger carrying vehicles due to safety concerns, they are apparently still commonly used in rural communities. This situation justifies investing in efforts seeking to find ways of strengthening this service. Such efforts must be customer-driven and supported by scientific research.

1.4 Research Objectives

The overall objective of the study was to investigate the nature and extent of the use of LDVs as a passenger transport service as well as customer satisfaction in order to develop a framework for a model for integrating them into the public transport system in Vhembe District of Limpopo Province. The specific objectives were to:

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1) Determine the nature of and the extent to which LDVs are used to transport passengers in Vhembe District;
2) determine the existing passenger transport options and choices in Vhembe District;
3) assess the level of awareness among users and operators of LDV passenger transport in Vhembe District about legislation that prohibits the use of LDVs for passenger transport;
4) assess the level of customer satisfaction with the use of LDVs to convey people in Vhembe District; and
5) Suggest the types of modifications and other measures needed to integrate LDVs into the formal public transport system in Vhembe District.

1.5 Key Research Assumptions and Questions

The central assumption underpinning this study was, if appropriately modified, LDVs can be officially adapted as a suitable and essential mode of rural passenger transport in Vhembe District. Thus, the understanding that LDVs play an important role in the lives of the communities in Vhembe District informed the following research questions that this study answered:

1) What are the nature and extent to which LDVs are used to transport passengers in Vhembe District?
2) What are the passenger transport options and choices available in Vhembe District?
3) To what extent are LDV users and operators in Vhembe District aware that existing South African legislation prohibits the use of LDVs to transport passengers for reward?
4) To what extent are customers satisfied with the use of LDVs as passenger transport in Vhembe District?
5) What modifications and associated measures might be needed to integrate LDV passenger transport with the formal public transport system in Vhembe District?

1.6 Theoretical Framework

Jessor, Graves, Hanson and Jessor (1968:143) are of the view that "observation can never be achieved in 'raw' form – no facts exist independently of an interpretative apparatus". In line with this view, the current study in Vhembe District embraced a systems perspective of rural road transportation as articulated by South African scholars such as Pretorius and Mulder (1991),

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Botes (1996), Pretorius (1999), Ratau (2008) and Munwana (2010). This perspective is consistent with the current national transportation policy in South Africa as reflected in the National Road Traffic Act (93 of 1996) (Republic of South Africa, 1996) and the White Paper on National Transport Policy (Department of Transport, 1996). It is also consistent with the systems as illustrated in figure 1.1, safe system and public health approach to road traffic safety of international agencies such as the World Health Organization and the Commission for Global Road Safety as well as relevant African agencies (Southern African Development Community, 1996; Commission for Global Road Safety, 2009; Watkins, 2010; Thompson, 2011).

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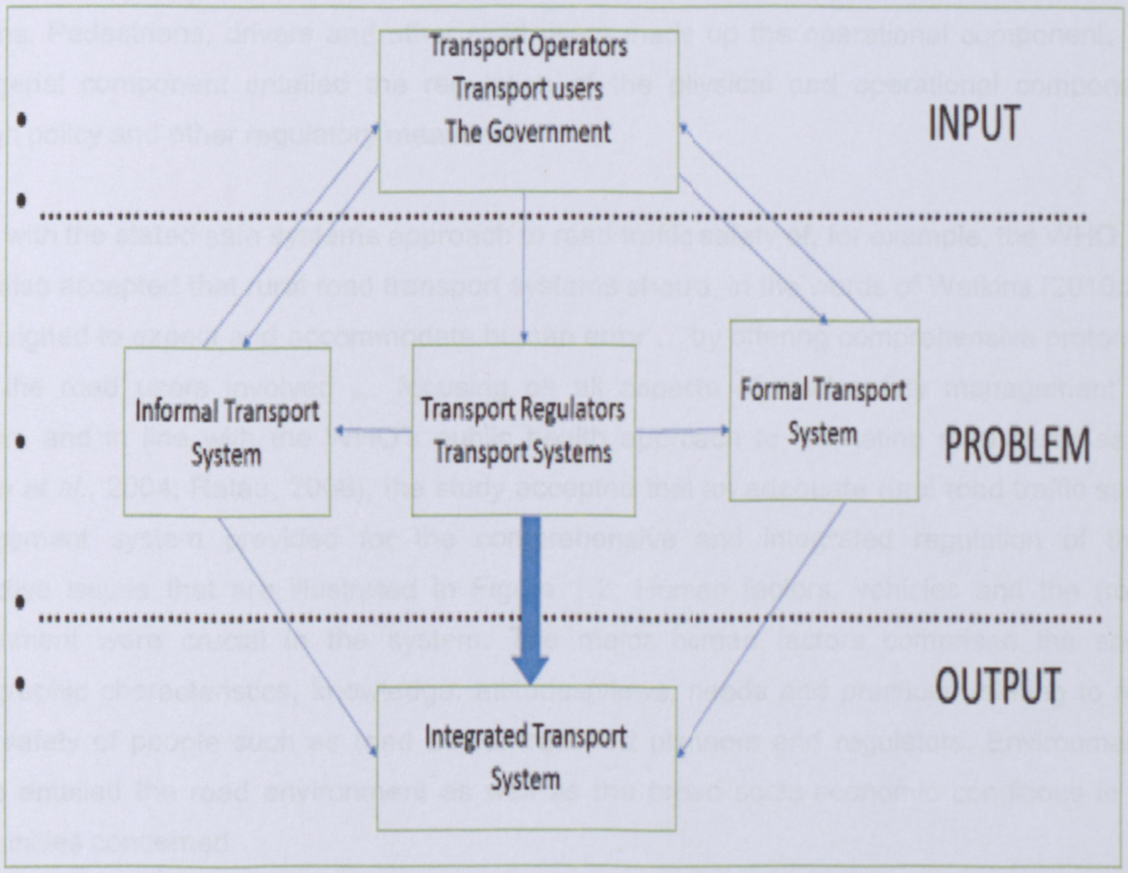


Figure 1.1: Theoretical framework of the study on developing a model for integrating light delivery vehicles in the rural passenger transport system in Vhembe District of South Africa

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In particular, the study adopted the view that rural road transportation was a systemic collection of physical, operational and managerial components. The physical component consisted of for example, vehicles (modes of transport) and the physical road environment such as road sections. Pedestrians, drivers and other road users made up the operational component. The managerial component entailed the regulation of the physical and operational components through policy and other regulatory measures.

In line with the stated safe systems approach to road traffic safety of, for example, the WHO, the study also accepted that rural road transport systems should, in the words of Watkins (2010:23), "be designed to expect and accommodate human error … by offering comprehensive protection … to the road users involved … focusing on all aspects of road safety management". In addition, and in line with the WHO's public health approach to facilitating road traffic safety (Peden *et al*., 2004; Ratau, 2008), the study accepted that an adequate rural road traffic safety management system provided for the comprehensive and integrated regulation of three interactive issues that are illustrated in Figure 1.2. Human factors, vehicles and the (road) environment were crucial in the system. The major human factors comprised the socio-demographic characteristics, knowledge, attitudes/views, needs and practices relating to road traffic safety of people such as road users, transport planners and regulators. Environmental factors entailed the road environment as well as the broad socio-economic conditions in the communities concerned.

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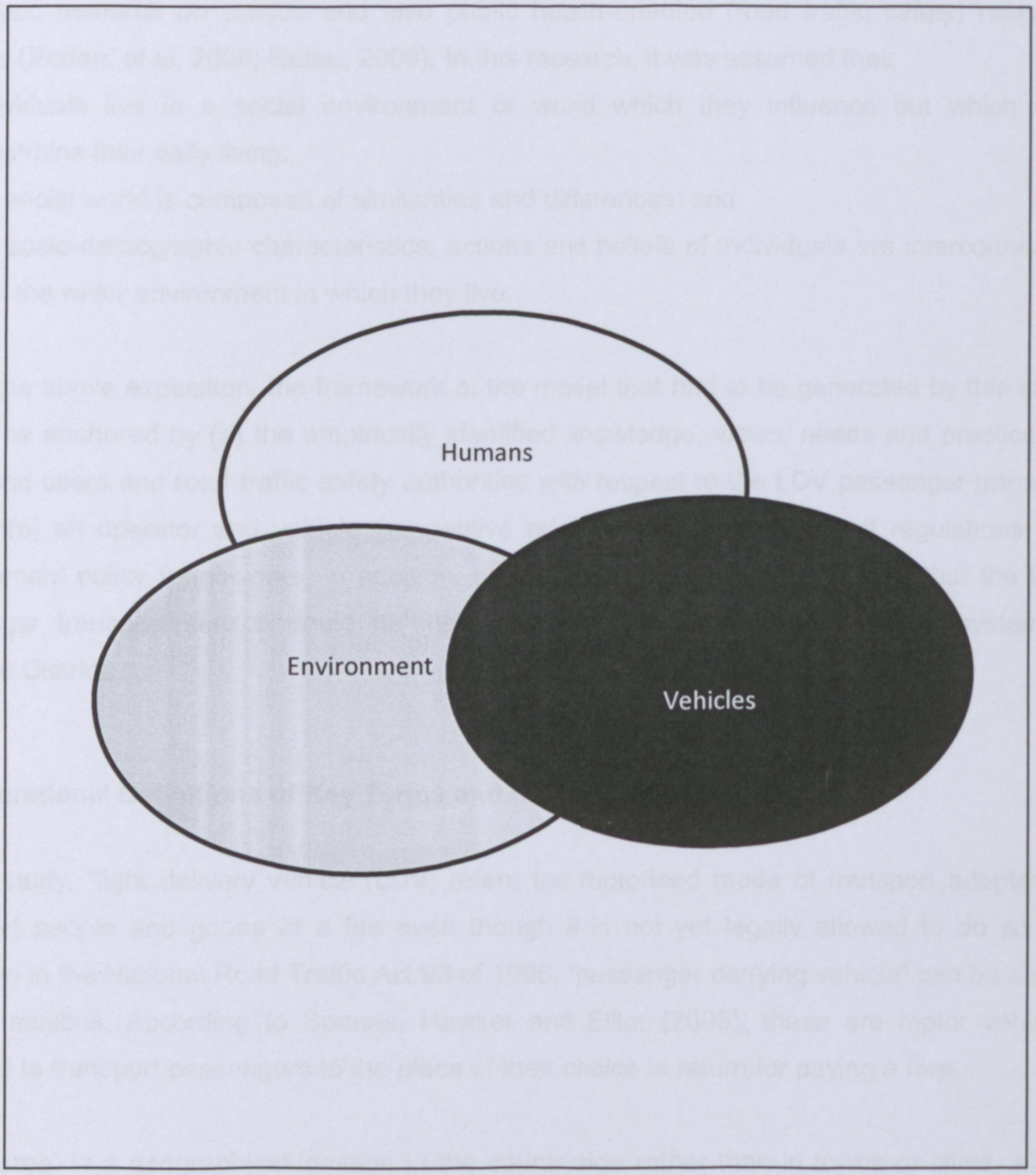


Figure 1.2: General outline of key issues of concern in road traffic safety management (adapted from Ratau, 2008).

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Another aspect of the current study was built on a conception of "reality" and, in particular, a conception of the individual-environment relationship consistent with the views expressed in the classic research on suicide and also public health-oriented (road traffic safety) research projects (Peden, *et al*, 2004; Ratau, 2008). In this research, it was assumed that:

a) individuals live in a social environment or world which they influence but which also constrains their daily living;
b) the social world is composed of similarities and differences; and
c) the socio-demographic characteristics, actions and beliefs of individuals are interconnected with the wider environment in which they live.

Given the above exposition, the framework of the model that had to be generated by this study had to be anchored by (a) the empirically identified knowledge, views, needs and practices of rural road users and road traffic safety authorities with respect to the LDV passenger transport service;(b) an operator and vehicle competitive edge and (c) rural transport regulations and enforcement policy frameworks. In addition, attention should shift towards ways that the LDV passenger transport service could be integrated into the mainstream transport system in Vhembe District.

1.7 Operational Definitions of Key Terms and Concepts

In this study, "light delivery vehicle"(LDV) refers toa motorised mode of transport adapted to transport people and goods at a fee even though it is not yet legally allowed to do so. As specified in the National Road Traffic Act 93 of 1996, "passenger carrying vehicle" can be a bus, taxi or minibus. According to Soanes, Hawker and Elliot (2005), these are motor vehicles licensed to transport passengers to the place of their choice in return for paying a fare.

"Rural area" is a geographical location in the countryside rather than in towns or cities, which has not been proclaimed or zoned (Soanes, *et al*, 2005). Although there are many definitions of rural area, this is the definitionthat appliesin this thesis.

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"Rural transport" means the movement of people and goods in specific areas for any conceivable purpose and by any conceivable means (Bryceson and Howe, 1992).

The Rural Transport Strategy for South Africa (Republic of South Africa, 2007b) recognises "rural road infrastructure" as ranging from proclaimed District or feeder roads to village-level roads and facilities such as specified tracks, footpaths, trails, crossings and bridges for non-motorised vehicles or objects which include bicycles, donkey carts and wheelchairs,most of which are not proclaimed or registered as yet.

"Transport service" refers to what operators of all modes of motorised and non-motorised transport provide to move goods and people from one geographical location to another.

As pointed out by the International Transport Forum (2008), "rural road traffic safety" encompasses initiatives directed at preventing road traffic crashes and in particular the risk of a road user being killed or injured. Currently, road safety strategies focus on preventing serious injury and death crashes in spite of human fallibility. Thus, this relates to establishing safe road environments, vehicles and road users.

1.8 Outline of the Thesis

This thesis is organised into seven chapters.Chapter 1 outlines the background and problem of the research anchoring the study, among other components. In Chapter 2, the literature relating to the use of LDVs as a mode of sustainable rural passenger transport is reviewed. Chapter 3 deals with the methodology used to execute the research. Thereafter, Chapters 4-6 are devoted to presentation and discussion of the research findings. Chapter 7 is a synthesis of the entire study, which contains conclusions and recommendations for practice, policy and further research. The thesis also includes a list of references and thereafter, the relevant appendices.

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CHAPTER 2 REVIEW OF LITERATURE

2.1 Introduction

This chapter presents an overview of the literature that influenced the conception of the study. The first part focuses on the general characteristics of rural transport systems. Attention is then drawn to rural transport challenges. Thereafter, there is a section dealing with possible ways of strengthening rural transport systems. Special attention is given in the latter section to the use of light delivery vehicles (LDVs) for transporting passengers. Ideas on the integration of this service into the wider rural transport system are distilled. The last part of this chapter is a summary of the key issues that emerged from the review of literature. It is important to note that published literature on rural transport needs and in particular the use of LDVs to transport passengers is limited. This seems to originate from the apparent bias towards developing urban transport systems, difficulties in accessing rural communities and in particular those residing in remote areas as well as limited resources to investigate rural transport needs and the inherent strengths of using LDVs to transport passengers.

2.2 Key Role Players and Components of Rural Transport Systems

According to (Rural Transport Strategy for South Africa, 2007), rural transport transport system entails a demand response passenger system, offering rural community a demand response transit services through formal transport modes. Various studies (Starkey, 2007; Sarkar and Mashiri, 2009; World Bank, 2010; Banjo,) have shown that a well-developed and well-managed rural transport system can reduce poverty. Also, it is accepted that an effective rural transport system is essential for the achievement of the Millennium Development Goals (MDGs), particularly with respect to education and health-related issues highlighted in the goal of reducing maternal and child mortality (African Union and United Nations Economic Commission for Africa, 2005; International Road Federation, 2010; Republic of South Africa, 2010; Global Transport Knowledge Practice, 2012). However in Africa, transportation is faced with many challenges.

Adeoti (2009) reports that most people in developing countries such as those in Africa live in comparatively isolated and poor rural communities. Socio-economic development in these communities depends on the availability of a well-established, well-balanced, safe and

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sustainable transport system (World Bank, 2010; International Road Federation, 2012). An efficient and effective rural transport is vital because of the need for facilitating smooth movement of people and goods from one place to another, apart from enabling access to essential services and social networks. However, the establishment of an adequate rural transport system is complex (Touton, 2003). It entails far more than mere construction of road infrastructure (Republic of South Africa, 2007). Such a system requires the operation of various complementary large-scale and small-scale transport modes that ferry people and goods to and from hubs in villages, towns and markets (Starkey, Ellis, Hinem, and Ternell, 2002). Therefore, in the light of the above it can be argued that a well developed and managed transport system that provides for communities' specific transport needs improves the lives of these communities by making it possible for them to access essential services such as health and education.

As shown in Figure 2.1, an adequate or full-fledged rural transport system encompasses various role players who complement one another. Starkey *et al.* (2002) cite the following as key agencies in this regard: (a) transport regulators, (b) bank and credit institutions, (c) non-governmental organisations, (d) agencies providing and maintaining transport, (e) transport operators and (f) transport users. Transport regulators include government agencies such as (a) the Ministry of Transport (for example the Departments of Roads, Transport and Planning Commission in South Africa); (b) the Ministry of Finance; (c) other relevant ministries such as those concerned with rural development, production or marketing of commodities, and health, education and veterinary services;(d) relevant local government agencies (for example sectors responsible for the planning of routes, issuing of licences and regulations, and the setting up of traffic signs);(e) the judiciary and police; and organisations such as (transport or roads-related) training and research centres. Banks and credit institutions finance the owners of vehicles and transport services who in turn provide transport services in the rural areas. Non-governmental organisations such as socio-economic development agencies, disadvantaged groups, animal welfare agencies and farmers' associations provide support services to both members of the communities as well as transport service providers. There are other agencies that ensure the provision and maintenance of transport for example through constructing, importing, distributing, selling and repairing vehicles or vehicle parts. On their part, transport operators and their associations ensure the delivery of particular services to transport users of variable demographic, socio-economic and cultural background as well as physical disposition.

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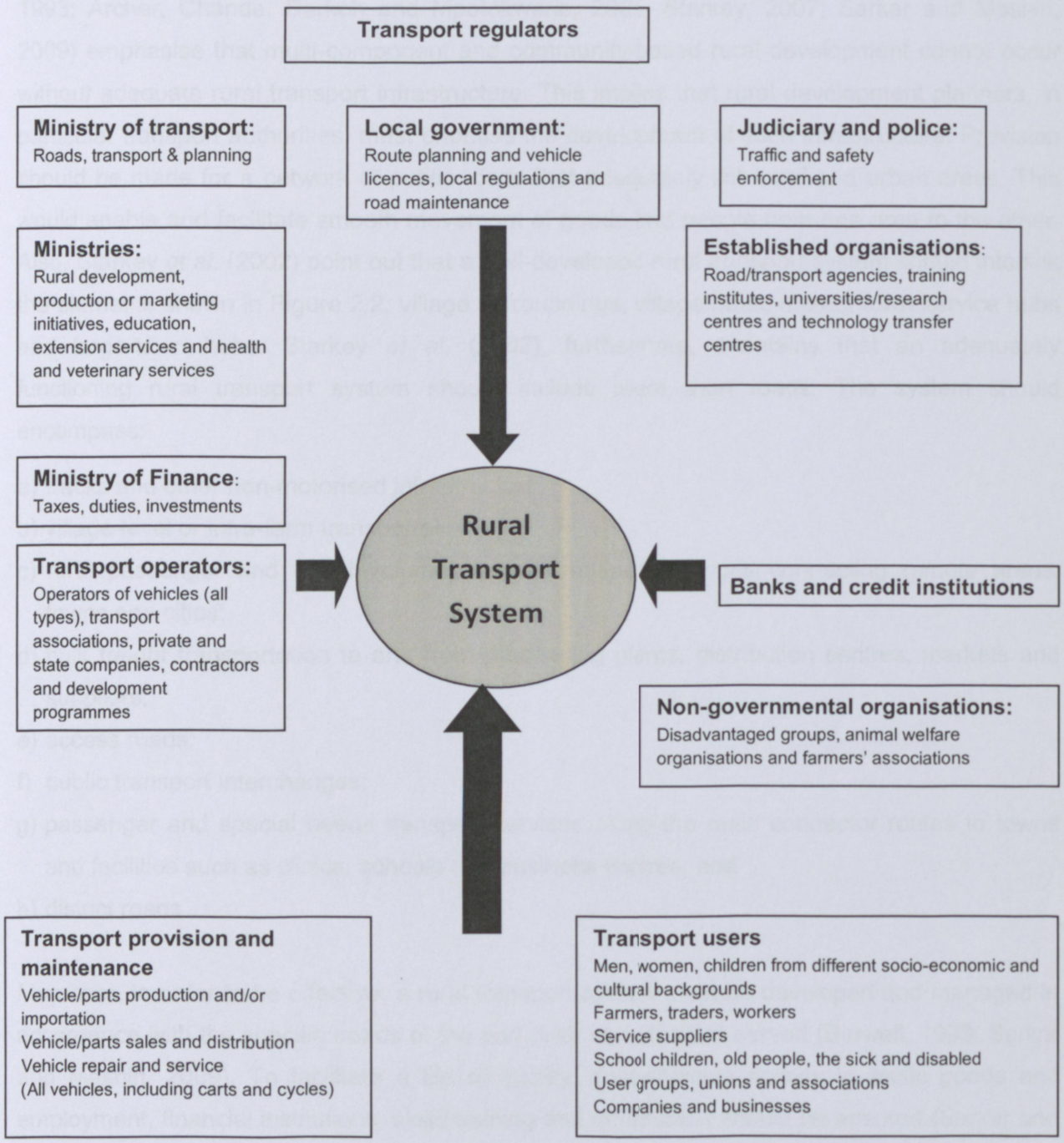


Figure 2.1: Outline of the key role players in rural transport systems (adapted from Starkey *et al*, 2002)

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International agencies such as the World Bank (2001, 2010) and various scholars (Barwell, 1993; Archer, Chanda, Darkoh and Mpotokwane, 2005; Starkey, 2007; Sarkar and Mashiri, 2009) emphasise that multi-component and community-based rural development cannot occur without adequate rural transport infrastructure. This implies that rural development planners, in particular transport authorities, must prioritise the development of such infrastructure. Provision should be made for a network of public roads that adequately link rural and urban areas. This would enable and facilitate smooth movement of goods and people from one area to the other. Also, Starkey *et al.* (2002) point out that a well-developed rural transport system should interlink the elements shown in Figure 2.2: village surroundings, village hubs, market town service hubs and large-town hubs. Starkey *et al.* (2002), furthermore, maintains that an adequately functioning rural transport system should include more than roads. The system should encompass:

a) tracks and other non-motorised infrastructure;
b) village-level or intra-farm transportation;
c) rural passenger and (small-volume) freight transport services connecting remote areas, towns and cities;
d) bulk freight transportation to and from processing plants, distribution centres, markets and suppliers;
e) access roads;
f) public transport interchanges;
g) passenger and special needs transport services along the main connector routes to towns and facilities such as clinics, schools and business centres; and
h) district roads.

Moreover, in order to be effective, a rural transport system must be developed and managed in accordance with the specific needs of the particular communities served (Barwell, 1993; Sarkar and Mashiri, 2009). To facilitate a life of quality, cost-effective access to basic goods and employment, financial institutions, skills training and information should be ensured (Sarkar and Mashiri, 2009). This is why the current study examined how LDVs could fit into the transport system of a rural area such as Vhembe District and enhance the quality of life of the residents.

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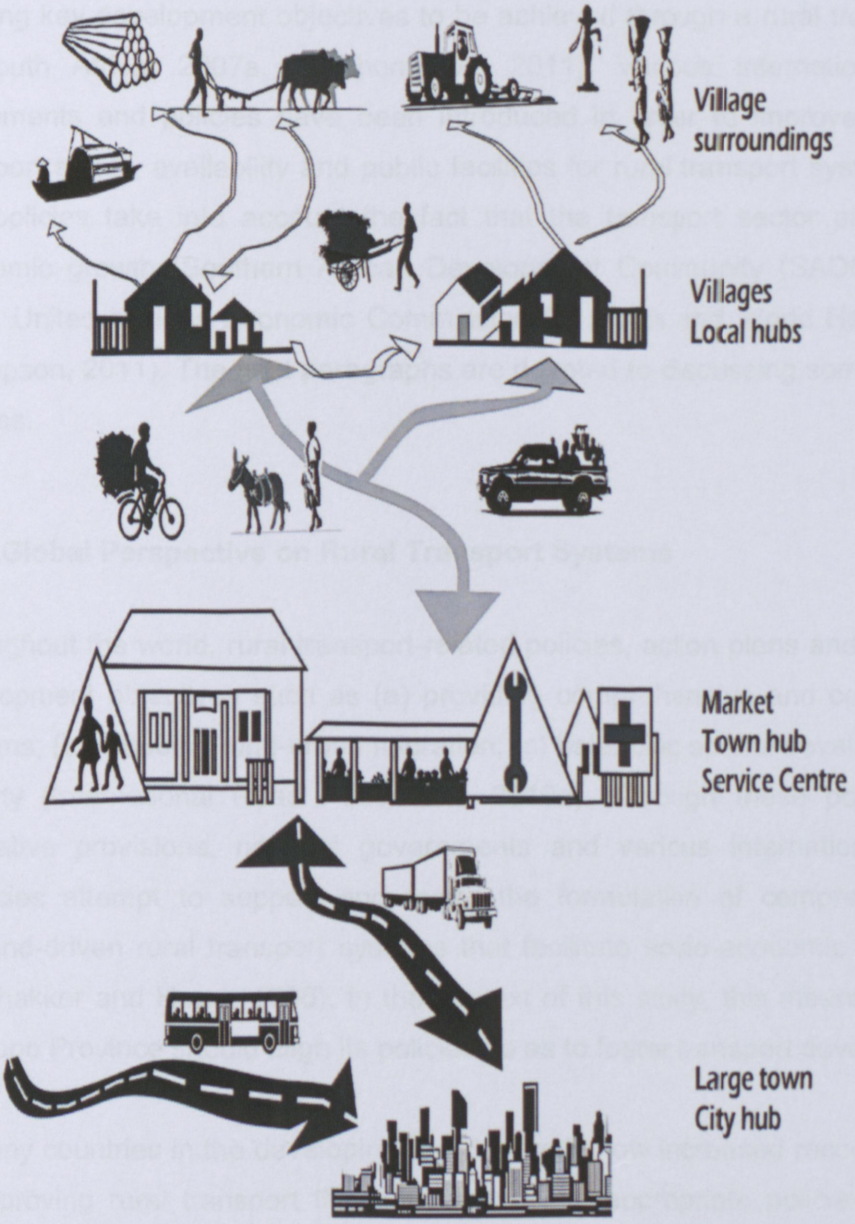


Figure 2.2: The key components of rural transport systems (adapted from Starkey *et al.* (2002)

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2.3 Policy and Legislative Framework on Rural Transport Systems

Rural transport policies and legislation take many forms, and in general, are components of a broader development policy. Policy and legislative stipulations provide the framework for defining key development objectives to be achieved through a rural transport system (Republic of South Africa, 2007a, b; Thompson, 2011). Various international, regional and local agreements and policies have been introduced in order to improve some aspects such as transport safety, availability and public facilities for rural transport systems. These agreements and policies take into account the fact that the transport sector plays a significant role in economic growth (Southern African Development Community (SADC), 1996; African Union, 2005; United Nations Economic Commission for Africa and World Health Organization, 2007; Thompson, 2011). The next paragraphs are devoted to discussing some of the agreements and policies.

2.3.1 Global Perspective on Rural Transport Systems

Throughout the world, rural transport-related policies, action plans and legislation tend to share development objectives such as (a) providing comprehensive and coordinated rural transport systems; (b) reducing rural-urban migration; (c) balancing spatial development; and (d) reducing poverty (International Road Federation, 2010a). Through these policies, action plans and legislative provisions, national governments and various international as well as regional agencies attempt to support and foster the formulation of comprehensive, integrated and demand-driven rural transport systems that facilitate socio-economic development (Carapetis, Beenhakker and Howe, 1988). In the context of this study, this means that Vhembe District in Limpopo Province should align its policies so as to foster transport development in the area.

In many countries in the developing world there is now increased recognition and attention paid to improving rural transport through for example appropriate policies and action plans. This recognition and attention seem to stem from the realisation that transport activity is a key ingredient of economic development and human well-being, and from the expectation that the need for such activity would intensify in especially the expanding economies of developing countries (Ribeiro, Kobayashi, Beuthe, Gasca, Green, Lee, Muromachi, Plotkin, Sperling, Wit and Zhou, 2007). Even today, much of the developing world is not motorised because of

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generally low incomes and the fact that most of the people do not have personal vehicles and access to public transport (Storey and Brannen, 2000; Ribeiro *et al.,* 2007). Given this situation, it is not surprising that rural transport services in developing countries are often inadequate due to low demand, short journeys, the generally limited ability of rural passengers to pay for transport, and consequently the fact that such services tend to be unprofitable and do not attract investment (Asian Development Bank, 2006).

Notwithstanding the abovementioned constraints, efforts towards strengthening rural transport systems occur in many parts of the world since this is important for socio-economic development. For instance, in California in the United States of America (USA) the government developed the Bus Rapid Transit (BRT) service to improve linkages between rural and urban communities. The service provides sustainable, fairly frequent, reliable and low cost passenger transport (Chen and Naycor, 2011; Psarros, Kepaptsoglou and Karlaftis, 2011). The facility promotes widespread movement of people, interconnection of rural villages, towns and cities, and widespread access to essential services (Kidder, 2006; Crossley *et al*, 2009; Belwal and Belwal, 2010; Butcher, 2011). This indicates that the adoption of a holistic approach to the establishment of rural transport systems is of paramount importance to socio-economic development.

In the United Kingdom (UK), a Demand-Responsive Transport (DRT) system was introduced to address the specific transport needs of rural communities (Laws, Enoch and Ison, 2009; Weir and McCabe, 2009). Cambodia is a test case for developing countries because pickups were introduced to transport passengers and goods in rural areas that were poorly-served because of the substandard road infrastructure (Ericson, 2011). The pickups are fitted with benches and roof racks to enable them to carry at least a dozen passengers on a single trip (Starkey *et al*., 2002).

The examples of measures taken to improve rural transport provision can be regarded as an admission of the immense challenges residents of remote areas in many parts of the world face with respect to movement of people and goods. The examples also suggest that overcoming such challenges requires a holistic approach that embraces the inputs of a diverse range of stakeholders.

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2.3.2 Regional Perspectives on Rural Transport Systems

Road safety, traffic congestion, air pollution, road maintenance and mobility problems in Africa and other developing regions are recognised key challenges of the 21st century (Peden *et al.*, 2004; AfriTest, 2012). Another challenge is the need to solve the transport-related problems of rural communities in developing countries (International Road Federation, 2008; 2010a, b; Sachs, 2012).

Evidence provided so far in this chapter shows that there is agreement that awareness of the specific transport problems of rural communities, active efforts to solve them, and the introduction of relevant transport policies and action plans are critical for establishing sustainable communities, promoting the health of community members and eradicating poverty (AfriTest, 2012; Sachs, 2012). Also widely embraced is the fact that the most effective solution to rural transport problems entails adoption of a comprehensive and integrated basket of policies and other measures that address the wide range of issues and constraints relating to access and mobility (World Bank, 2001). Care should also be taken to adopt a regional perspective, given the increasing interdependence of communities. At the same time efforts should be made to actively involve key stakeholders in provinces, cities, towns and villages when identifying, planning and instituting measures to improve rural people's access to essential facilities (Robinson and Banjo, 1999; Banjo *et al.*, 2012).

Developing regions are increasingly introducing policies, legislations and actions to improve rural transport (Thompson, 2011; AfriTest, 2012). For example, in Africa, the Kenyan government has developed an Integrated National Transport Policy (INTP), with a major focus on development of rural areas (International Road Federation, 2010). The policy recognises the importance of developing an adequate transport system that takes into consideration the fact that most people in the country reside in rural communities. In Asia, the Indian government also developed a transport policy for rural communities, with a rural access programme known as Pradhan Mantri Gram Sadak Yojana (PMGSY) being the anchor (International Road Federation, 2010). In Latin America, the Peruvian government adopted a Rural Transport Policy (PRTP) that focused on introducing measures that improve poor rural communities' access to basic social and economic services (International Road Federation, 2010a). Other examples are the National Land Transport Policy of Bangladesh and the Rural Transport Policy and Strategy of

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Madagascar (International Road Federation, 2010). These policies and strategies provide for the development of smooth connections among economic growth centres. In addition to this, the policies facilitate immediate and affordable means of transport to essential services, which helps reduce poverty. Furthermore, Cambodia's Ministry of Rural Development (MRD) has so far implemented rural road programmes based on policy statements designed to promote the establishment of adequate and sustainable rural transport systems (International Road Federation, 2010).

Finally, African countries are now in the forefront of developing policies and other measures that promote the improvement of rural transport services (Thompson, 2011). Noteworthy also is the fact that rural transport policies and action plans take into account their local contexts and needs.

2.3.3 South African Perspective on Rural Transport Systems

As reported in many parts of this chapter, the South African government has introduced a number policies and legislative frameworks in order to address some of the public transport challenges it faces. The policies are designed to ensure that skills and resources at local level are improved with various support mechanisms introduced to enable local government to deliver services (Vhembe District Municipality, 2011, 2012). Vhembe District can learn from similar institutions inside and outside the country.

Although the establishment of an adequate rural transport system is widely recognised by the relevant authorities in South Africa as essential for rural economic development, they also acknowledge that such development is currently limited mainly due to poor transport facilities in remote areas (Wosiyana, 2005). Since conventional public transport is unsuitable in especially fairly underdeveloped rural areas, the communities in question tend to use alternative transport modes such as LDVs but without paying attention to the safety of using the vehicles (Wosiyana, 2005). It is clear that decisions on integrating LDVs into the conventional passenger transport system must consider safety concerns and other factors.

Against the background highlighted above, the South African government and National Department of Transport (NDoT) in particular have committed themselves to enhance the rural

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transport system. This commitment is in line with the government's overall objective to improve the material conditions of rural communities (Presidency, 2000, 2001; Republic of South Africa, 2013). The same commitment is well-articulated in national policies and programmes such as the National Spatial Development Perspective (NSDP), National Road Infrastructure Strategic Framework (NRISF), National Rural Transport Development Strategy (NRTDS), Integrated and Sustainable Rural Development Programme (ISRDP), Integrated Development Programme (IDP), Community-based Public Works Programme (CBPWP), Local Economic Development (LED) Programme and National Development Plan Vision 2030 (Presidency, 2000, 2001; Republic of South Africa, 2003a, b; 2007a, b; 2013). The ISRDP and IDP in particular, are directed at implementing a rural development strategy that focuses on, amongst other things, the improvement of transport facilities. Also, it seeks to align strategic development priorities with the budgeting process and (transport) infrastructure development. A key dimension of the ISDP is the recognition of the need for ensuring coordination andprioritisationof municipal (transport) services (Republic of South Africa, 2007a, b). All these are efforts designed to improve rural transport.

Many other policy documents set out the specific principles for addressing rural transport problems. For example, the White Paper on National Transport (Department of Transport, 1996) emphasises the need for promoting (rural) transport and ensuring that it addresses user needs, including those of commuters in general but in particular special groups such as school children, people with disabilities and tourists. Also, there is the National Land Transport Strategic Framework, which is a working document known as a five-year plan (2006–2011) and aimed at guiding the delivery of transport services at national, provincial and local government levels(Republic of South Africa,2006, 2007). Apart from the policies, there are other strategies, programmes and Acts that have an important bearing on the delivery and regulation of rural transport in South Africa. These include (a) the National Freight Logistics Strategy; (b) the National Transport Master Plan; (c) the Road Infrastructure Strategic Framework for South Africa; (d) the Public Transport Strategy for South Africa; (e) the National Road Traffic Act 93 of 1996; (f) the National Land Transport Transitional Act 22 of 2000; and (g) the Provincial Land Transport Framework 2011/12–2015/16 (Republic of South Africa, 2006;2007a, b; 2011a, b). Central to these strategies, programmes and Acts is the need for ensuring that interventions consider the particular circumstances of rural communities.

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Notwithstanding the above efforts to strengthen rural transport, current legislative measures do not address the fact that residents of rural areas commonly use unconventional vehicles such as LDVs to access essential services that include places of work, shops, schools, clinics and hospitals. It was revealed in Chapter 1 that transport legislation in South Africa and in particular the National Road Traffic Act 93 of 1996 (NRTA) and the National Land Transitional Transport Act 22 of 2000 (NLTTA) prohibit the use of LDVs for the transport of people in a goods compartment for reward. Of major concern in this respect are Regulations 247 and 250 of the NRTA as well as section 31(1) (d) of the NLTTA.

Regulation 250 of the NRTA states clearly that "No person shall on a public road carry any person for reward in the goods compartment of a motor vehicle". With regard to "[c]ircumstances under which persons may be carried on goods vehicles", Regulation 247 of the NRTA stipulates that "[n]o person shall operate on a public road a goods vehicle conveying persons unless that portions of the vehicle in which such persons are being conveyed is enclosed to a height of at least:

(a) 350millimetres above the surface upon which such person is seated; or
(b) 900 millimetres above the surface on which such person is standing, in a manner and with a material of sufficient strength to prevent such person from falling from such vehicle when it is in motion".

The legislations quoted above imply that special exemption has been given to those who would like to convey people and goods in a goods compartment of a vehicle without reward or for business-related trips on condition that the structure of the vehicle concerned complies with the set requirements.

Section 31 of the NLTTA stipulates the kinds of vehicles that are permitted to carry passengers for reward and excludes LDVs. Furthermore, in terms of the Occupational Health and Safety Act 85 of 1993, vehicles that are used to transport employees such as LDVs or trucks, must have an adequate number of seats for the number of employees carried. The seats in question must be firmly secured. However, there is no clear requirement for the fitting of air bags, seatbelts and covered roofs. Also, the maximum number of people permitted to be conveyed is not limited. This omission gives operators of LDV and truck passenger services with some scope to compromise the safety of their passengers. Despite the legislative prohibitions on using LDVs for the conveyance of people for reward, and the fact that this form of passenger transport is

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classified as unsafe, it is commonly used in rural communities and is increasingly accepted as a mode of public transport in South Africa (Wosiyana, 2005). This situation shows that reform of current transport legislations is needed in order to accommodate rural people.

Another matter of concern is the fact that some legislative stipulations on passenger transport are not well aligned with each other. It can be argued that the legislations discriminate against rural commuters who use LDVs to reach essential services and also the operators who provide this form of transport. For example, in the specification of the types of vehicles that may be used for public transport services in section 31 of the NLTTA, it is stated that "operating licenses may only be issued for vehicles designed or lawfully adapted by a registered manufacturer … according to acceptable safety standards". The NLTTA, further exempts "special categories of vehicles" from the adaptations mentioned above in order "to cater for exceptional cases in rural areas, or exceptional cases in relation to tourist or courtesy services". These "special categories of vehicles" may be used to convey passengers and goods without an operating licence or permit. However, the relevant section does not specify that LDVs carrying passengers could be regarded as "special categories of vehicles" that can be issued an operating licence. Further complicating matters is the fact that Section 33(1) of the NLTTA stipulates that "no person may operate a road-based public transport service without holding the necessary permit or operating licence". A positive factor, though, is that the same Section 31(1) of the NLTTA provides some basis for the authorities to consider providing operators of LDV passenger services with licences. This is due to the fact that it states that the Minister of Transport, in consultation with MECs, may provide special permission for the issuing of such licenses.

The evidence presented above shows that LDVs are prohibited to serve as passenger transport and thus no operating licenses are issued for their use. This is the case notwithstanding the high demand for LDV passenger transport in areas lacking legal public transport services. Also, the fact that LDV operators provide an essential "public" transport service to special groups such as school children, students, teachers and lecturers on a daily basis in areas where other forms of transport such as taxis do not and cannot go is not taken into account. In this respect there is need to note that in terms of Section 44 of the NLTTA, the daily LDV-mediated conveyance of the groups of passengers listed above should be classified as public transport service. With this in mind, the relevant operators should be obliged to have the relevant licenses. Currently, LDV operators are not entitled to such licenses. Moreover, operating

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licenses stipulate routes to be followed, some of which are only accessible by LDVs or trucks. A multi-purpose transport mode, such as LDVs is essential, especially in rural and tough terrain.

2.4 Rural Transport Challenges

Apart from legislative and policy bottlenecks, there are various factors that inhibit the mobility of people in rural communities. The generally poorly developed and maintained transport systems in rural areas make the movement of residents difficult (Njenga and Davis, 2003; Archer *et al*, 2005; International Road Federation, 2008; Chakwizira, Nhemachena, Dube and Maponya, 2010). Villages located far away from a major road or highway are often least serviced. Paths and tracks serve as the principal means used to gain access to the villages (Dennis, 2001). Limited material resources in deep rural regions make it difficult to expand road networks and maintain those that exist (World Bank, 2001, 2010). Thus, it is not surprising that the road networks in most developing countries are in a poor state and in some cases, non-existent.

The fact that essential services are not necessarily provided within easy reach of rural communities makes it imperative to introduce appropriate interventions that address this challenge. Quite often, residents of rural areas have to travel much further than those in urban areas to reach basic health and educational services as well as markets. Accessing essential services is thus costly for rural residents most of whom are in generally very poor. As a result, residents in rural areas struggle to improve their living conditions. International agencies such as the World Bank (1999; 2001, 2010) and some scholars (Dennis, 2001; Archer *et al*., 2005) note that the range of suitable transport modes available in rural areas is small compared to towns and cities. Conventional motorised vehicles are seldom used because they are largely unaffordable. Also, they are not suited to the poorly developed transport infrastructure and rugged terrain in most rural areas. Faced with such challenges rural community members have no other choice besides frequently relying on LDVs, bicycles, animal-drawn carts and even animals such as donkeys to move around.

According to Robinson and Banjo (1999), Njenga and Davis (2003), and Banjo, Gordon and Riverson (2012), various managerial, regulatory and operational factors inhibit the cost-effective transportation of goods and people in rural areas. Governmental and legal regulatory frameworks are often not suited to the particular conditions of the regions concerned.

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Consequently, transport operators frequently take advantage of this challenge and exploit commuters who depend on their services (Harris, 2006; Kekana, 2009). Agencies responsible for developing and maintaining transport systems are also not necessarily skilled and committed to providing appropriate and safe transport services.

In South Africa, most people depend on public transport services. However, these services are often unavailable, unreliable and not necessarily safe and affordable (Wosiyana, 2005; Kekana, 2009; AfriTEST, 2012). However, the White Paper on National Transport (Department of Transport, 1996), Rural Transport Strategy for South Africa (Republic of South Africa, 2007a, b), Rural Transport Strategy Action Plan 2007–2014 (Republic of South Africa, 2007a, b) and Provincial Land Transport Framework 2011/12–2015/16 (Republic of South Africa, 2011a, b) recognise the need for transforming public transport into a safe, affordable, reliable and people-oriented service. It has also been suggested that government interventions need to include, amongst other things, transport planning, auditing, classification and the proclamation of road networks as revealed in Figure 2.3.

It is worth reiterating that the use of LDVs for public transport is not yet legally permitted and regulated in South Africa. Specifications for their safe use in conveying passengers are also not yet in place. Nevertheless, the use of LDVs as informal public transport has apparently become entrenched in the lives of people in many rural areas of South Africa, including in Vhembe District. A combination of factors seems to be driving the popularity of this transport in rural areas even though it is not clear what they are (Buffalo City Municipality, 2003; Wosiyana, 2005;Harris, 2006; Vhembe District Municipality, 2009). The need for improving the safety of passengers who use this service needs urgent attention (Wosiyana, 2005). The fact that operators tend to overload their vehicles makes the quest for solutions to the challenges stated above even more urgent. According to Chakwizira, Nhemachena, Dube and Maponya (2010), this situation is not unique to South Africa. Many authors (Archer *et al.,* 2005; Wosiyana, 2005; Ericson, 2011; Banjo et al, 2012) also report that similar conditions prevail in many other developing countries.

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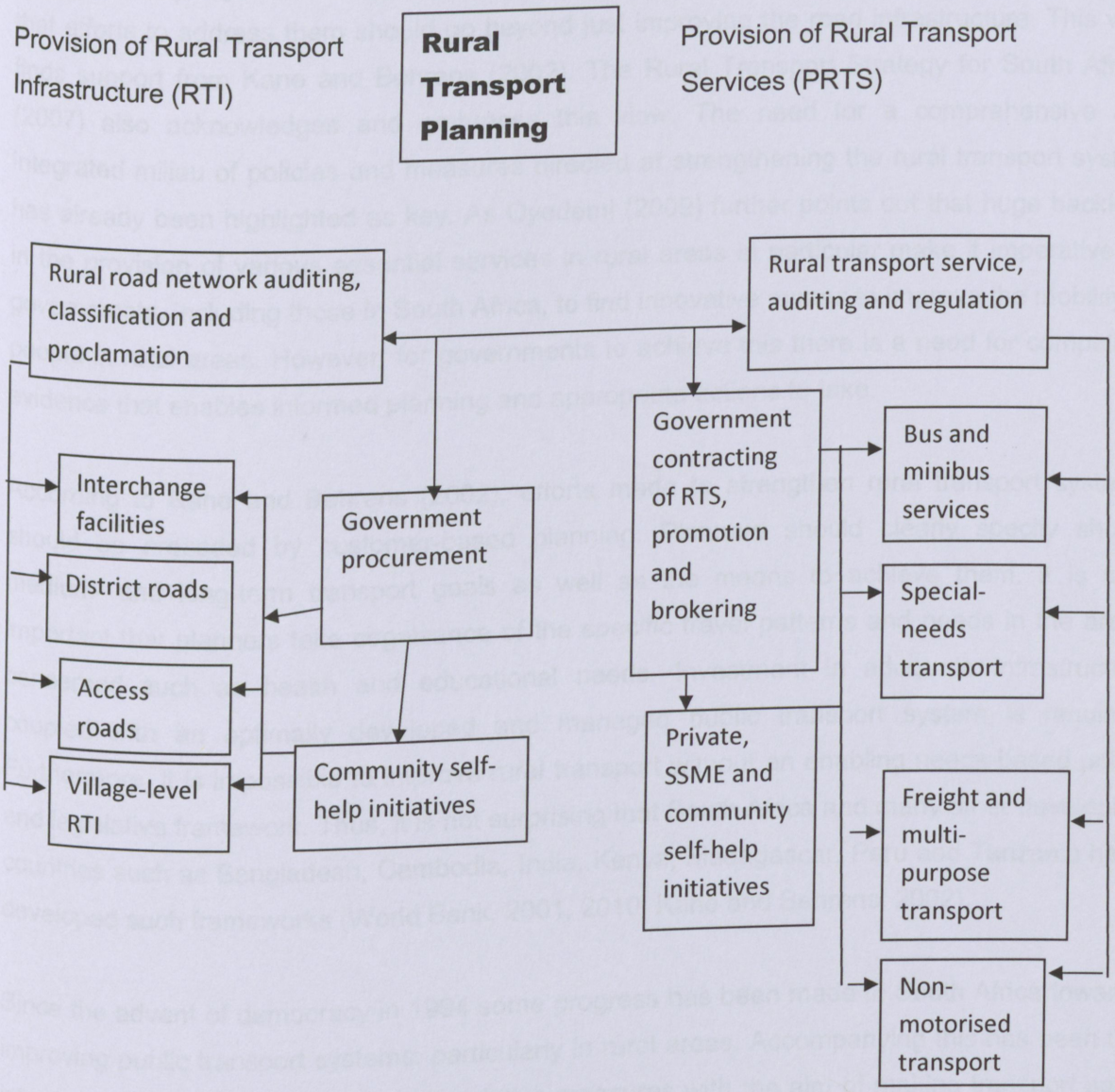


Figure 2.3: Scope of government interventions in the provision of rural transport infrastructure and services (Republic of South Africa, 2007b)

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2.5 Ways of Strengthening Rural Transport Systems

The preceding arguments suggest that the complexity of rural transport challenges demands that efforts to address them should go beyond just improving the road infrastructure. This view finds support from Kane and Behrens (2002). The Rural Transport Strategy for South Africa, (2007) also acknowledges and embraces this view. The need for a comprehensive and integrated milieu of policies and measures directed at strengthening the rural transport system has already been highlighted as key. As Oyedemi (2009) further points out that huge backlogs in the provision of various essential services in rural areas in particular make it imperative for governments, including those in South Africa, to find innovative means to improve the mobility of people in rural areas. However, for governments to achieve this there is a need for compelling evidence that enables informed planning and appropriate actions to take.

According to Kane and Behrens (2002), efforts made to strengthen rural transport systems should be preceded by customer-based planning. Planners should clearly specify short-, medium- and long-term transport goals as well as the means to achieve them. It is also important that planners take cognisance of the specific travel patterns and needs in the areas concerned such as health and educational needs. Investment in adequate infrastructure coupled with an optimally developed and managed public transport system is required. Furthermore, it is impossible to improve rural transport without an enabling needs-based policy and legislative framework. Thus, it is not surprising that South Africa and many other developing countries such as Bangladesh, Cambodia, India, Kenya, Madagascar, Peru and Tanzania have developed such frameworks (World Bank, 2001, 2010; Kane and Behrens, 2002).

Since the advent of democracy in 1994 some progress has been made in South Africa towards improving public transport systems, particularly in rural areas. Accompanying this has been the introduction of various policies and legislative measures with the aim of making transport safe, affordable and reliable. However, the provision of adequate passenger transport services in the rural areas of the country remains a major issue in development discourse. As scholars such as Wosiyana (2005) point out, the central role of adequate transport in rural socio-economic development necessitates the South African government to continue introducing initiatives to establish a sustainable rural transport system. Wosiyana (2005) and Ericson (2011) contend that since goods vehicles such as LDVs are used to convey people for reward in countries such

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as India, Kenya, Philippines and Singapore, it is crucial for the South African authorities and research community to explore the possibility and modalities of following suit. Scientific research that appreciates the fact that LDVs are already in use in South Africa, even though existing legislation prohibits their use, should provide useful pointers with respect to ways of strengthening LDV-mediated rural transport.

An opportunity worth taking advantage of is the fact that authorities in South Africa are increasingly recognising the potential of using LDVs as a form of passenger transport to accelerate socio-economic development in rural areas (Kekana, 2009). Preliminary indications that LDVs fill the gap that the lack of formal public transport in large parts of rural South Africa leaves; and that they provide an invaluable service to residents in remote rural villages informs this recognition (Buffalo City Municipality, 2003; Wosiyana, 2005;Kekana, 2009; Vhembe District Municipality, 2012). In various provinces and municipalities (including those in the rural areas of Limpopo) transport authorities are seeking ways of legitimising and formalising the use of LDVs for transporting passengers. Although there is acknowledgement of the need for amending existing national, provincial and municipal legislation to help integrate LDVs into the passenger transport system (Republic of South Africa, 2007a, b), it remains unclear what the amendments should be. In-depth scientific research has the potential to help clarify the issues concerned.

Starkey (2007) contends that efforts made to formalise LDV passenger transport should address safety concerns. Educational campaigns regarding safety and the implementation of safety regulations by both LDV operators and passengers have been proposed. Apart from this, safety regulations that are appropriate to the particular circumstances of the communities served should be developed, legislated and enforced. However, without reliable information, it is impossible to achieve this.

A positive factor that Wosiyana (2005) and Ericson (2011) highlight is that the South African Bureau of Standards (SABS) and the Department of Transport have initiated the development of safety standards for LDV passenger transport. Measures taken in other countries to transform LDVs into safe passenger-carrying vehicles provide a relevant starting point. It has been already reported in this chapter that in Cambodia for example, various modifications are made to standard pickups to increase their carrying capacity and safety (Ericson, 2011). The modifications include bars, canopies, removable tailgate seats and heavy-duty tyres. However,

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because Cambodia's topography differs from that of South Africa, it is unclear whether the Cambodian modifications would be suited to the diverse conditions in rural South Africa. However, this gives pointers regarding what to consider to ensure relevance, safety and cost-effectiveness. Clearly, whatever efforts will be made to adapt LDVs for passenger transport should heed the specific conditions in the areas to be served. Furthermore, efforts should be made to secure the inputs of various stakeholders including commuters.

Wosiyana (2005) and Sabandar (2007) also note that the South African authorities recognise that an optimal passenger-carrying transport service requires the careful interlinking of rural transport facilities and essential services as well as business centres, based on the explicit clarification of what is needed and why. Measures to integrate the LDVs into the mainstream transport system in which taxis and conventional buses are prominent should be seriously considered.

Lastly, the South African government's commitment to strengthening rural transport is reflected in the fact that six District Municipalities have already been earmarked for a pilot project to develop rural public transport action plans and interventions in various provinces of the country. The Districts are O.R. Tambo, Kgalagardi, Sekhukhune, UMkhanyakude, Thabo Mofutsanyane and Ehlanzeni. The initiative was launched on 10 February 2006 under the banner of the Integrated Rural Mobility and Access Programme. The Districts have been identified on account of their high social need index, development potential and proximity to economic opportunities (Republic of South Africa, 2007). The intention is to develop and test a transport system that connects the rural (trade) centres to higher-order settlements in those Districts. The aim of the project is to introduce multi-purpose/adapted vehicles for passenger transport services in order to improve access and mobility to education, health and economic opportunities.

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2.6 Summary of the Review of Literature

This review of relevant literature has highlighted that transport systems and legal frameworks in South Africa and other developing countries fail to adequately meet the needs of most rural communities. Most evident is the importance of a well-established and well-maintained transport system for accessing basic services and social networks, which ultimately helps reduce poverty. It has also been highlighted that in general rural communities have limited transport choices. This situation must be addressed. Because of this challenge, the communities rely on unconventional modes of passenger transport such as LDVs. Use of the LDVs is particularly evident in remote rural areas where there is poor formal road infrastructure. The advantages and disadvantages of using LDVs to transport passengers who reside in areas served by such poorly maintained road infrastructure have been highlighted. Most notable among the disadvantages is that the LDV transport service is not safe, mainly because of the absence of appropriate regulatory and legislative measures. Nevertheless, a distinct advantage is that the operators of LDV passenger transport commonly provide a more customer-friendly service than taxis and buses. For example, they often drop and pick passengers at their doorsteps.

This review of literature has also revealed that the use of LDVs to convey passengers is now widespread and an integral part of the lives of people in many rural communities within Vhembe District. The need for scientific research-informed interventions for strengthening this service is clearly desirable. Aspects that have been identified as worth considering when devising ways of strengthening the LDV passenger transport service include crafting appropriate policies, legislative frameworks and measures; development and enforcement of safety standards; investing in efforts seeking to ensure a customer-friendly transport service; and devising ways of integrating the LDV passenger transport service with the wider public transport system in the communities concerned. The next chapter focuses on the methodological procedures and techniques used in executing this study.

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CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

In line with the views of Mouton and Marais (1992), Babbie and Mouton (2001) as well as De Vos, Strydom, Fouché and Delport (2011), regarding the meaning of methodology, this chapter focuses on the approach used to answer the research questions. For the sake of coherence and as required in scientific research (Mouton and Marais, 1992), special attention is given to the reasoning behind the manner in which the research was done.

The study area is described prior to explaining the research design or general plan. Underpinning the research design for this study is the work of Leedy (1985), Mouton and Marais (1992), Strauss and Corbin (1998), Welman and Kruger (1992), Yin (1994), Babbie and Mouton (2001), Ritchie and Lewis (2003), Kumar (2005), Cresswell and Plano Clark (2007), Cresswell (2009), De Vos *et al*, (2011).

Also contained in this chapter is the population focused on in the study and the procedure for selecting the research participants. Specific techniques used to collect and analyse the data are outlined. At the end of the chapter is a tabulated summary of the characteristics of the process of data collection and analysis as well as the key variables and indicators, which take into account the research questions.

3.2 Description of the Study Area

As shown in Figure 3.1, Vhembe District is found in the northern part of Limpopo Province of South Africa. It shares borders with Botswana and Zimbabwe in the north-west, and Mozambique in the south-east. The District's 21 407 km^2 of land (Vhembe District Municipality, 2012) comprises four local municipalities, namely Makhado and Thulamela in the south and Musina and Mutale in the north. The main towns in the District are Thohoyandou found in Thulamela Local Municipality, Makhado (Makhado Local Municipality) and Musina (Musina Local Municipality). The District is a largely (99%) rural area (Vhembe District Municipality, 2012).

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Figure 3.1: Limpopo Province (Vhembe District Municipality)

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Vhembe District Municipality (VDM) was established in 2000 in terms of the Local Government: Municipal Structures Act 117 of 1998 and the Determination of Types of Municipalities Act of 2000 (VDM, 2012). It is named after a mountain range that stretches for about 130 km from west to east (Limpopo Tourism Agency, 2013). Vhembe District Municipality is classified as a Category C municipality with a Mayoral Executive system of governance and oversees the constituent Local Municipalities.

According to Statistics South Africa (STATSA) (2012), Vhembe District has a population of about 1 293 410. Women constitute approximately 54% of the population. Almost half of the people (47%) are less than 20 years old and about 59% are in the economically active age group (15–64 years). Thulamela Local Municipality contributes almost 48% to the overall population followed by Makhado (40%). The rest of the people reside in Mutale (7%) and Musina (5%). As is the case in the rest of Limpopo Province, the average population growth rate decreased from 1.6% during the period extending from 1996–2001 to 0.8% in 2001–2011 (Statistics South Africa, 2012).

Vhembe Districtis is made up of mainly under-resourced areas formerly known as the Venda and Gazankulu "homelands". These areas were established in terms of the Black Authorities Act 68 of 1951 during the apartheid era (Roefs, 2001; Brits, 2005; VDM, 2012). The limited resources, largely rural nature of the area and traditional (communal) land ownership in a substantial part of the District complicate commercial development and the provision of adequate basic services (VDM, 2012). The Municipalities in the District are struggling to overcome their inherited large backlog in the provision of essential services such as road infrastructure (Roefs, 2001; VDM, 2009, 2012). About 66% of the municipal road network, totalling 4 084 km, consists of gravel (VDM, 2012). Rough terrain, water erosion caused by the rainy weather and inadequate essential equipment and human resources hamper the upgrading and maintenance of the road infrastructure (Roefs, 2001; VDM, 2009, 2012).

Reliable public transport services are virtually non-existent, especially in the remote rural areas (VDM, 2009, 2012). As a result, residents tend to rely on informally operated light delivery vehicles (LDVs) for passenger transport service. Vhembe District Municipality (2009) notes that although detailed scientifically generated information is not available, it is "common knowledge"

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that communities in especially remote rural areas mostly use LDVs to travel to and from places where essential health, education and other services are provided.

Finally, VDM (2012) reveals that officially designated stands for picking up and dropping road commuters are limited. Currently, there are respectively 11 and 19 formal and informal taxi ranks, as well as 3 and 8 formal and informal bus ranks in Vhembe District. Due to the informal nature of the LDV passenger transport, there are no designated places for picking up and dropping commuters.

3.3 Research Design

This research is applied, especially considering its objective to develop a framework for a model for integrating LDVs into the rural passenger transport system in Vhembe District. Also, Bless and Higson-Smith (2000:153) contend that applied research focuses on "finding solutions to [the] specific concerns … facing particular groups of people". It is also exploratory and descriptive because little is known about the use of the LDV passenger service in the study area. The research questions underpinning this study centred around "getting to know" the nature of or dynamics or issues surrounding the LDV passenger service in the study area, together with the extent to which community members used this service.

The study adopted a mixed methods approach, as defined by Cresswell and Plano-Clark (2007), Cresswell (2009) and De Vos *et al.* (2011). Quantitative and qualitative research procedures and techniques, also referred to as structured (or standardised) and unstructured (or open-ended) procedures/techniques in methodological textbooks (Kumar, 2005), were "combined or 'mixed' to come up with a more complete picture of the research problem" (De Vos *et al.*, 2011:234). In line with the position that various pragmatic methodologists (Kumar, 2005; De Vos *et al.*, 2011) take, the questions posed in this study primarily influenced the decision to adopt a mixed methods approach. This recognised that a full answer to the questions on diverse issues such as the nature and extent of use of the LDV passenger transport required the application and triangulation of a range of data gathering and analysis methods. Such triangulation had the potential to enhance the validity and reliability of the data and conclusions drawn from the study in question. Cognisance was taken of the following arguments of Kumar (2005:12-14):

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1) "[S]structured [research procedures/techniques are] … more appropriate to determine the extent [or magnitude] of a … phenomenon … [and] unstructured [research procedures/techniques] to explore its nature"; and
2) although both quantitative and qualitative research attempt to identify similarities and variations (or differences) with respect to a particular phenomenon, the former research tends to focus on the magnitude of the variations while qualitative investigation deals with building a deeper understanding of the variations.

In response to the view of some methodologists that qualitative-quantitative research is "untenable" (De Vos *et al.*, 2011) because different philosophical paradigms or worldviews underpin quantitative and qualitative methodologies, this study adopted the Mouton and Marais (1990) as well as Kumar (2005) views that quantitative-qualitative research was acceptable because:

1) in general, qualitative research had quantitative nuances (for example, it uses numbers to summarise the data gathered) and *vice versa*;
2) "[a]ll research involves the description of both similarities and differences" (Mouton and Marais (1990:49) even though a particular investigation or an aspect of it may focus on differences (ideographic or qualitative research) and another study or an aspect of it on similarities (nomothetic or quantitative research);
3) both qualitative and quantitative research have specific inherent strengths and weaknesses; and
4) "[b]y employing different methods … in a single project we are, to some extent, able to compensate for the limitations of each" (Mouton and Marais, 1990:91).

Moreover, this study employed what De Vos *et al.* (2011:442) refer to as a triangulation mixed methods design, meaning "a one-phase design … [that] uses both quantitative and qualitative methods [or procedures and techniques] during the same time frame and with equal weight to best understand the phenomenon of interest". Three quantitative surveys and a qualitative case study in which focus group discussions with key informants, in-depth interviews, unobtrusive observations and a document study were applied in data collection. With respect to the case study, it is also important to note the following:

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a) Babbie (1973) statement that case studies facilitate "a comprehensive description … [of a phenomenon by] collect[ing] and examin[ing] as many data as possible regarding the subject";
b) the point made by Creswell (1998) that qualitative case studies describe "a case or cases ... [in the] larger context" in which this/these case(s) is/are situated. Yin (1994) supports this view; and
c) the fact that case studies are not necessarily qualitative in nature. Some quantitative research designs include case studies although the focus in such cases is mainly on quantitatively oriented issues and consequently, data collection and analysis in quantitative terms.

As is the case with triangulation mixed methods designs, the surveys and case study applied in this study were implemented during more or less same timeframe. Furthermore, although the adoption of a mixed methods design was primarily directed at "produc[ing] more complete" (De Vos *et al*. 2011:442) answers to the questions posed in the study, consideration was given to the point that such a design can also facilitate the development of well-validated answers. Neuman (1997:151) clarifies the latter point when noting that by "using different … data collection techniques … to examine the same variable … measurement improves … [as the respective datasets can be scrutinised for areas of convergence, and] getting identical measurements from … diverse methods implies greater validity than if a single or similar methods had been used".

3.4 Population and Sampling Procedures

Taking into account the study's concern with the nature and extent of the LDV passenger transport service and its integration with the formal passenger transport system in Vhembe District, the research population comprised various sets of key role players or groups. These included LDV operators, passengers and senior members of agencies dealing with transport issues. Among the latter group were municipal managers, community leaders and road traffic safety officers in the Thulamela, Mutale, Musina and Makhado Local Municipalities. Because little was known about the LDV transport service, the fact that the latter was regarded as illegal, the sensitive nature of the service and difficulty of identifying and recruiting research participants, purposive and snowball sampling techniques were used (Booyse, Schulze, Bester,

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Mellet, Lenner, Roelfse and Landman, 2002; De Vos *et al.*, 2002, 2005; Creswell, 2007). A set of sampling criteria was developed and used. The research participants were selected because they (a) reflected the key characteristics of each research group, (b) were knowledgeable about the issues being studied and (c) relevant agencies and/or fellow participants recommended the persons for interviews. Apart from these considerations, variation in socio-demographic characteristics, area of residence and/or place of work were also taken into account. In the case of the LDV operators, individuals who differed in terms of (a) the number of years they were involved in the LDV passenger transport service; (b) number of LDVs they operated; (c) the fees charged; and (d) the type of passengers transported were also considered. In addition, practical issues influenced the sample sizes. Among the issues were an inadequate research budget and difficulties in recruiting individuals who were accessible and willing to participate.

A pre-determined number of survey respondents (quota sample) was used in order to facilitate acceptable statistical analyses. Recruitment of participants for the in-depth interviews and focus group discussions stopped when the information solicited during the interviews reached saturation that is when it was clear that no new information was being gathered. The particular groups sampled and their respective sizes were as follows: The survey participants included 100 LDV users (commuter survey), 98 LDV operators (operator survey) and 69 senior members of other agencies, namely administrators, councillors and law enforcement agents (administrator, councillor and law enforcement survey). In both the commuter and operator surveys, 25 participants were selected in each one of the four local municipalities in Vhembe District. However, for the administrator, councillor and law enforcement survey, 20 participants were selected in Thulamela, 13 in Mutale, 16 in Makhado and 13 in Musina Local Municipalities. Also included in the latter survey were seven persons working for agencies that dealt with transport issues in Vhembe District.

The focus group discussions with key informants involved 111 participants and took place within villages or towns in each of the Local Municipalities. The participants in each focus group included representatives of the target groups, namely LDV commuters and operators as well as senior members of various stakeholders in the transport sector.

In Thulamela Local Municipality, a focus group discussion involving 16 people was held in Thohoyandou and one in Malamulele in which 10 people participated. With respect to Mutale

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Municipality, two focus group discussions were conducted, namely with 13 people at Tshilamba and nine in Masisi. In Makhado, four focus groups were carried out with seven, six, five and ten participants at Louis Trichardt, Levubu, Elim and Biaba, respectively. Lastly, in Musina Municipality focus group discussions were conducted with 19 people in Musina town and with 16 participants in Beitbridge.

As for these focus group discussions, each of the two discussion groups in Thulamela Local Municipality comprised LDV passengers and operators, a member of a local civic association, a member of a local taxi association, a member of a local bus association, a senior municipal road traffic officer and a farmer. Each of the four discussion groups in Makhado Local Municipality included the same type of participants as those in Thulamela, except that the Levubu group mostly comprised farmers, as the area is largely a farming district. The two groups in Mutale Local Municipality again included the same type of participants as those in the Thulamela groups, except that there was no farmer present. In the two groups in Musina Local Municipality the same type of people participated as those in the Thulamela groups, except that a representative of the local taxi association and of the farmers could not be recruited.

Sixty-eight in-depth interviews were conducted. Fourteen of them were in Thulamela Local Municipality, 21 in Mutale, 11 in Musina and 21 in Makhado. Interviewees were drawn from each one of the target research groups referred to above. Regarding the participants in these interviews, in Thulamela, 2 SAPS officers, 1 municipal councillor, 2 members of a local taxi association, 6 passengers and 3 operators of LDV transport and 1 transport planner were interviewed. (In Makhado, the interviewees were 5 SAPS members (1 in Biaba, 1 in Levubu, 1 in Makhado, 1 in Tshitale and 1 in Waterpoort), 2 municipal road traffic officers (1 in Makhado and 1 in Vuwani), 1 municipal councillor (Makhado), 3 members of the local taxi associations (1 in Biaba and 2 in Louis Trichardt), and 6 passengers as well as 4 operators of LDV transport in Biaba. In Mutale, the interviews took place at Tshilamba and included 1 SAPS officer, 1 municipal councillor, 12 passengers and 6 operators of LDV transport, and 1 local municipal road traffic officer In Musina, interviews were done in the town, Musina, and included 2 SAPS officers, 1 municipal councillor, 2 members of a local taxi association, and 4 passengers and 2 operators of LDV transport. Finally, the participants in the focus group discussions and in-depth interviews were mostly male, except the LDV passengers, among whom males and females

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were more or less evenly distributed. The interviewees were, furthermore, between 22 and 63 years of age, with most falling in the 35-55 age group. Most had completed at least Grade 10.

Apart from the studies carried out as indicated above, 15 observation sites were selected. Out of these, 4 were in Thulamela, 2 in Mutale, 2 in Musina and 7 in Makhado Local Municipalities. The sites were the key places in the Municipalities where residents and transport operators congregated to shop, do business, socialise and engage in other activities such as attending schools and clinics.

3.5 Data Collection

Various measures were adopted in the current study to facilitate ethically responsible or truthful, transparent and competent data gathering that would not harm anyone or make moral judgements (Sobel, 1978; Reiss, 1979; Bulmer, 1982; Denzin, Norman and Lincoln, 2000; De Vos *et al.*, 2011).This entailed peer review and documentation of the research process. The study was planned and executed in collaboration with experienced postgraduate research supervisors. A comprehensive research proposal was developed and accepted by the University of Venda Higher Degrees Committee. Thereafter, the University's Ethics Committee issued an ethical clearance certificate, which paved the way for data collection.

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Primary and secondary data were collected. In line with the dictates of the mixed methods design adopted in this study, the primary data were both qualitative and quantitative. Neuman (1997:7) defines data as "....the empirical evidence or information that one gathers carefully according to rules or procedures ... [and] can be quantitative ... [and thus] expressed as numbers ... or [can be] qualitative [and therefore] expressed as words, pictures, objects". Qualitative data were gathered during the conduct of the case study while the surveys generated quantitative data.

Various data gathering instruments or techniques were used. In the three surveys, interview-administered questionnaires (Appendix 1) with largely closed-ended questions were used. An interview or observation schedule (Appendix 1) guided data collection during the in-depth interviews, focus group discussions and unobtrusive observations of the qualitative case study.

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The appropriateness of the interview and observation schedules and questionnaires were pilot-tested using prospective members of the respective groups of research participants in each one of the Municipalities. Changes were then made to the data collection instruments, based on the results of the test. In the course of the pilot study, efforts were made to solicit support for the study and secure formal permission to carry out the fieldwork from relevant agencies such as community leaders, senior managers of VDM and representatives of bus and taxi associations. This helped to facilitate access to potential research participants.

Voluntary participation of the research participants was ensured. A few of the people who were invited to participate in the study declined because they were afraid of being involved in it. Cognisance was taken of the De Vos *et al*. (2002:65) view that "[o]btaining informed consent implies that all possible or adequate information on the goal of the investigation, the possible advantages, disadvantages and dangers to which respondents may be exposed, as well as the credibility of the researcher, be rendered to potential subjects … Emphasis must be placed on accurate and complete information so that subjects will fully comprehend the investigation and consequently be able to make a voluntary, thoroughly reasoned decision about their possible participation."

Before interviewing prospective participants, background information on the research and nature of the interviews was provided. The research participants were accorded an opportunity to ask any questions they had. They were assured that they could withdraw at any time during the interviews. Also, the researcher encouraged them to express their personal views as accurately and elaborately as they could. After informed consent was obtained, the researcher reiterated that the information provided would be treated as strictly confidential. When closing interview sessions, the researcher thanked the participants for their individual and collective contributions. With respect to the in-depth and focus group interviews, and to ensure accuracy and clarity, the researcher also summarised the main points made during the interviews and asked whether the participants wished to change or add anything.

In order to standardise and ensure reliability, especially taking into account that the researcher knew the study area well, it was desirable for him to administer the various sets of interviews personally. Furthermore, the researcher could speak and comprehend Tshivenda and Xitsonga, the languages spoken in the study area. Thus, the interviews were conducted in the relevant

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vernacular languages that the participants preferred. The researcher recorded the responses and translated it to English thereafter. In order to facilitate accurate recording of the interviews and observations, the researcher (a) made as many notes as possible during and/or immediately after each interview or observation; (b) used a tape recorder after interviewees had agreed to its use (some refused permission); and (c) took photos of observed scenes using a digital camera.

The in-depth, focus group and questionnaire interviews were conducted either late afternoon or early morning, as it was the proper time to get more participants in bus and taxi ranks. In the case of the in-depth interviews and focus group discussions, specific times were arranged in collaboration with the interviewees so that the interviews should not interfere with their scheduled programmes. Observations were made in each of the Municipalities during peak times, namely early morning, mid-day and late afternoon, except on Sundays. Questionnaires were administered during the busy four weeks preceding Christmas in order to get more divergent views from participants. The in-depth interviews, focus group discussions and observations were carried out during the time when residents resumed their routine activities after the Christmas holidays.

Considerable attention was focused on ensuring that the interviews were conducted in non-threatening and private settings which helped interviewees to relax and speak freely. Each interview or discussion lasted about an hour. The observations were done as unobtrusively as possible, especially in the case of those directly related to the as yet illegal LDV passenger transport service. Facilitation of focus group discussions was done in such a way that it ensured that every participant was accorded the chance to express his or her views. Cognisance was taken of indications that when participants in a focus group discussion were allowed and encouraged to agree and disagree with one another, more refined information on the issues concerned emerged (Kruger, 1988; Morgan, 1988; Stewart and Shamdasani, 1990; Frechtling and Westat, 1997; Patton, 2001).

Lastly, during the document study accessible literature was analysed. Also included were census data and the results of periodic analyses of broad socio-economic conditions in VDM.

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3.6 Data Analysis

As pointed out by Tukey and Wilk (1970:373), data analysis is a "highly interactive, iterative process, whose actual steps are selected segments of stubbly branching, tree-like patterns of possible actions". However, although the style of data analysis differs in qualitative and quantitative research, there are also similarities (Neuman, 1997; De Vos *et al.*, 2011). For example, both styles of data analysis entail the following:

a) inference, meaning reasoning and conclusions about the empirical data gathered;
b) a public process which involves documentation of data analysed and how the analysis was done;
c) comparison, implying that "social researchers compare features of the evidence they have gathered internally or with related evidence" (Neuman, 1997:419); and
d) clear and deliberate efforts aiming to reduce error.

Although this is the case, qualitative and quantitative data analyses differ in many respects. For example, standardised techniques are used in quantitative studies as opposed to qualitative research. According to Neuman (1997:419), "quantitative researchers choose from a specialized standardized set of data analysis techniques … [whereas in] qualitative [research] data analysis is less standardized … Researchers rarely know the specifics of data analysis when they begin a qualitative project". Moreover, the stage in the research process in which data are analysed differs in qualitative and quantitative research. In qualitative research, data analysis occurs in the course of collecting it. In contrast, in quantitative studies, data analysis takes place after conclusion of the data gathering process. Neuman (1997:420) clarifies the latter point as follows: "[Q]uantitative researchers do not begin data analysis until they have collected all of the data and condensed them into numbers. They then manipulate the numbers to see patterns or relationships. Qualitative researchers can look for patterns and relationships, but they begin analysis early in a research project, while they are still collecting data." There is need to note that the level of abstraction in qualitative and quantitative data analysis also differs.

Data analysis is less abstract in qualitative research when compared to quantitative studies. Again, Neuman (1997:420-421) points out that whereas quantitative analysis is "clothed in statistics, hypotheses and variables", qualitative analysis occurs "closer to raw data"; it categorises text into (interrelated) themes in order to "create a realistic picture of social life".

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Citing Creswell (1998), De Vos *et al.* (2002:340) adds that qualitative data analysis "can best be presented in a spiral image… The researcher moves in analytic circles rather than using a fixed linear approach. One enters with data made up of text or images … and exits with an account or narrative". In this study, the issues and characteristics of both qualitative and quantitative research were taken into consideration.

The Johnson and Onwuegbuzie (2004) (cited in De Vos *et al.*, 2011:447) strategy for data analysis proposed for use in mixed methods research was adopted in this study. Consideration was made of the fact that data analysis largely proceeded according to the following sequential steps: (a) reduction (organising, manipulating, categorising and summarising), using the technique of thematic content analysis in the case of the qualitative data. With respect to quantitative data, reduction involved computing descriptive statistics. As Kerlinger (1973:134) points out, the "purpose of analysis is [always] to reduce data … [into an] intelligible and interpretable form". The "reduced" data were then displayed in tables and transformed through applying numerical codes to the qualitative data and describing the quantitative data in narrative terms. Comparisons were made among the data in order to determine areas of convergence, logical consistency and the extent to which they complemented or refined one another. Lastly, the data were integrated into a coherent whole, taking into account the research questions.

Specifically and in line with the De Vos *et al.* (2002; 2005; 2011) views the data gathered through in-depth interviews and focus group discussions were analysed when collection was in progress. Detailed note-taking and in-depth probing of emerging issues facilitated insight on the issues concerned. Through repetitive reading of and reflection on the recorded notes, memo-writing in the margins of the recorded notes and constant comparison of various notes, the researcher developed a sense of each interview in its entirety. This process enabled the researcher to categorise the recorded text into themes and also integrate the themes into more general ones. The narrative raw data and the results of the thematic analysis of each interview were then stored in tabulated format as separate Microsoft Word documents in a computer. The latter helped to illustrate particular points in the eventual discussion of the findings. Subsequently, the themes distinguished in the various interviews were numerically coded taking into account geographical addresses where they took place.

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In order to ensure the integrity or trustworthiness of the described qualitative data analysis, the guidelines of Guba and Lincoln (1981) were used. Credibility, dependability, transferability and conformability of the data analysis were ensured through the following measures:

a) Prolonged engagement with interviewees, meaning that the researcher continued with the interviews and, in particular, the analysis process until no new insights emerged;
b) Member checking: during and at the closing of an interview the researcher checked with the participants whether the recorded data and inferences were correct;
c) Peer examination or debriefing: various peers, including academic supervisors and other researchers not directly involved in the study but knowledgeable about the subject checked the relevant processes;
d) Thick description: special care was taken to document the processes and recordings in as much detail as was practically possible; and
e) Self-reflection: in order to avoid bias, the researcher repeatedly read or listened to the recordings of the data and spent many hours thinking about them.

As was the case with in-depth interviews and focus group discussion datasets, the recorded observations were stored in a tabulated format as Microsoft Word documents in a computer. The data were categorised into themes, after which the latter were presented in tables. Some of the photos of the respective observational sites were taken to clarify and or support the recorded data. The photos were inserted in the presentation and discussion of the study's findings and also the data extracted from relevant documents relating to broad socio-economic conditions in Vhembe District.

Before subjecting the questionnaire responses to analysis, the researcher checked and edited each one of them together with the relevant respondent immediately after completing data. The responses of the checked sets of questionnaires were then captured and stored as Microsoft Excel spreadsheets in a computer. The latter were imported into the Statistical Package for Social Sciences (SPSS) version 22.0 for analysis. The data were then subjected to descriptive and to some extent inferential statistical analyses. The former focused on identifying frequency distribution patterns and the latter on relationships between key variables. The study's assumption that individual-oriented data was influenced by broader environmental circumstances, and the extent to which the questionnaire responses differentiated across the respondents' respective Municipalities of residence was explored through cross-tabulations and

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Chi-square tests. (Statistical hypothesis tests could not be done as such tests assume that the data tested were derived from probability samples and the data collected in this study were collected from non-probability samples.) In order to further examine the extent to which the individual-oriented data (survey data) differentiated in terms of the research population groups' broader environmental or socio-economic circumstances, selected sets of survey responses as well as selected census data on broad socio-economic conditions in the study area were imported into a Geographic Information Systems (GIS) computer software programme. The respective datasets were then mapped. (A GIS software programme can store and display in spatially referenced format (maps) at various levels (e.g. at the level of districts and neighbourhoods) and in an integrated manner different types of data (for example qualitative and quantitative data) (Drake, 1991). A restricted budget influenced the decision to restrict the GIS mapping to selected variables.

3.7 Conclusion

To place the presentation and discussion of the research findings in the next chapters (Chapters 4-6) in perspective, this chapter outlined the detailed manner in which the research was executed. Tables 3.1 and 3.2 below respectively summarise the data collection and analysis process as well as note the key variables and associated indicators of the study's three surveys. Because of the open-ended nature of qualitative data-gathering the relevant indicators of the issues of concern in the case of the focus group and in-depth interviews were not pre-outlined. Finally, it should be borne in mind that the findings are presented and discussed in different chapters to facilitate systematic attention to the research questions.

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Table 3.1: Summary of the main characteristics of the data collection and analysis process against the background of the research questions

Research questions	Target population	Type of data	Data sources	Data collection techniques	Data analysis techniques
To what extent are LDVs used to transport passengers?	LDV commuters and operators as well as other transport-related stakeholders	Primary data of a quantitative (categorical and continuous) nature	Surveys (3)	Interview-administered questionnaires	Frequency distributions (%) Measures of relationships/associations (cross-tabulations, chi-square tests)
		Primary data of a qualitative nature and secondary data of a quantitative nature	Case study	In-depth and focus group interviews Observations Documents on socio-economic conditions in the study area	Thematic analysis Mapping of data with the aid of Geographic Information Systems technology
What are the passenger transport options and choices available in Vhembe District?	LDV commuters and operators as well as other transport-related stakeholders	Primary data of a quantitative (categorical and continuous) nature	Surveys (3)	Interview-administered questionnaires	Frequency distributions (%) Measures of relationships/associations (cross-tabulations, chi-square tests)
		Primary data of a qualitative nature and secondary data of a quantitative nature	Case study	In-depth and focus group interviews Observations Documents on socio-economic conditions in the study area	Thematic analysis Mapping of data with the aid of Geographic Information Systems technology
To what extent are LDV users and operators aware that existing South African legislation prohibits the use of LDVs to transport passengers for reward?	LDV commuters and operators as well as other transport-related stakeholders	Primary data of a quantitative (categorical and continuous) nature	Surveys (3)	Interview-administered questionnaires	Frequency distributions (%) Measures of relationships/associations (cross-tabulations, chi-square tests)
		Primary data of a qualitative nature and secondary data of a quantitative nature	Case study	In-depth and focus group interviews Observations Documents on socio-economic conditions in the study area	Thematic analysis Mapping of data with the aid of Geographic Information Systems technology
To what extent are customers satisfied with the use of LDVs?	LDV commuters and operators as well as other transport-related stakeholders	Primary data of a quantitative (categorical and continuous) nature	Surveys (3)	Interview-administered questionnaires	Frequency distributions (%) Measures of relationships/associations (cross-tabulations, chi-square tests)
		Primary data of a qualitative nature and secondary data of a quantitative nature	Case study	In-depth and focus group interviews Observations Documents on socio-economic conditions in the study area	Thematic analysis Mapping of data with the aid of Geographic Information Systems technology
What modifications and other measures are needed to integrate LDV passenger transport with the formal public transport system in Vhembe District?	LDV commuters and operators as well as other transport-related stakeholders	Primary data of a quantitative (categorical and continuous) nature	Surveys (3)	Interview-administered questionnaires	Frequency distributions (%) Measures of relationships/associations (cross-tabulations, chi-square tests)
		Primary data of a qualitative nature and secondary data of a quantitative nature	Case study	In-depth and focus group interviews Observations Documents on socio-economic conditions in the study area	Thematic analysis Mapping of data with the aid of Geographic Information Systems technology

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(highlighted in bold) and indicators

Socio-demographic factors and research questions	Indicators		
	Commuter survey	**LDV operator survey**	**Administrator survey**
1. Socio-demographic factors	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income
2. What are the nature and extent of the use of LDVs to transport passengers?	Frequency of **LDV trips** per month Main **reason for LDV trips** Main **advantage of** travelling by **LDV** Main **challenge/difficulty** when travelling by **LDV** Typical **cost** of a round trip (to and from place of residence)	Number of **years operating** Number of **LDVs operating** Number of monthly **LDV trips** Main **reason** for LDV trips Typical **passengers** Main **advantage** of **LDV operation** Main **challenge/difficulty** in respect of **LDV operation** Typical **cost** of a round trip (to and from place of residence)	
3. What are the passenger transport options and choices available in Vhembe District?	Type of passenger **transport** mostly **available** in area of residence type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus** and **other** passenger transport services (besides LDV passenger services)	Type of passenger **transport** mostly **available** in area of residence Type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus**, **LDV** and **other** passenger transport services	Type of passenger **transport** mostly **available** in area of residence Type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus** and **other** passenger transport services (besides LDV passenger services)
4. To what extent are LDV users and operators aware that existing South African legislation prohibits the use of LDVs to transport passengers for reward?	**Knowledge** of transport laws/regulations	**Knowledge** of transport laws/regulations	**Knowledge** of transport laws/regulations
5. To what extent are customers satisfied with the use of LDVs?	Level of **satisfaction with LDV** passenger transport service		Level of **satisfaction with LDV** passenger transport service
6. What modifications and other measures are needed to integrate LDV passenger transport with the formal public transport system in Vhembe District?	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport service	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport

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CHAPTER 4 THE NATURE AND EXTENT OF THE USE OF LDVs IN VHEMBE DISTRICT

4.1 Introduction

This chapter focuses on the findings relating to the study's question: What are the nature and extent to which LDVs are used to transport passengers in Vhembe District? The findings are drawn from three main sources: the study's commuter and operator surveys and its qualitative case study (focus group and in-depth interviews, observations and documentary analysis).

The chapter first describes the demographic characteristics of the survey respondents. (The participants in the qualitative case study were demographically described in the previous chapter.) It then presents, analyses and interprets the relevant data gathered in the commuter and operator surveys and in the qualitative case study. The chapter concludes with a summary of the study's main findings on the nature and extent of the use of the LDV passenger transport service in Vhembe District and a discussion of their implications.

4.2 Demographic profile of the respondents in the commuter and operator surveys

The overall demographic profile of the users of the LDV passenger transport service who participated in this study's commuter survey was consistent with the largely female and youthful population (Statistics South Africa, 2012a, b) in Vhembe District. The respondents were predominantly females (54%) and almost half of them were in the younger age group (15-25 years) (49%). As would be expected, considering the comparatively many people in the younger age group, comparatively large proportions of the respondents in the commuter survey were single (never married) (45%) and had no fixed personal monthly income (37%).

Although the educational status by far most of the users of LDVs who participated in this study's commuter survey were fairly high (89% had a secondary school qualification and a few (2%) a tertiary educational qualification), many experienced economic hardship, consistent with what was the case in the general population in Vhembe District (Statistics South Africa, 2012a) and the wider Limpopo Province (Statistics South Africa, 2012a, b). This hardship was evident from the fact that a substantial proportion of the respondents either lived in households with no fixed monthly income (21%) or in households with a comparatively low average monthly income of between R500 and R999 (24%).

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The demographic profile of the respondents in the commuter survey differed across the four Local Municipalities in Vhembe District. In contrast with the other Local Municipalities, males (60%) dominated in Makhado. Thulamela (68%) and Mutale (56%) had larger proportions of 15-25 year olds than the other two Municipalities, largely consistent with what is the case in the general population in Vhembe District (Statistics South Africa, 2012a, b). Moreover and in line with the comparatively youthful Thulamela and Mutale survey samples, most of the respondents in these municipalities were single and still studying (68% in Thulamela and 56% in Mutale). Also, most of the respondents in Mutale (56%) and four-tenths in Thulamela (40%) indicated that they had no fixed monthly income.

In contrast with the demographic profile of the other two municipalities, the commuter respondents in Makhado and Musina were predominantly an older age group (60% in Makhado and 48% in Musina were 36 years or older) and married or single parents (64% in Makhado and 56% in Musina). Also, considerable proportions were employed (44% in Makhado and 36% in Musina), and had a fixed monthly income in the form of a salary/wages or through selling goods (60% in Makhado and 48% in Musina). See Table 4.1

The demographic profile of the operators of the LDV passenger transport service who participated in this study's operator survey was in various respects different to that of the users of their service who were included in the study's commuter survey. They were mostly males, in the prime of their life (between 36 and 50 years), married and had a secondary school education. Although most (59%) of them had a fixed personal monthly income through sales (59%), there were also indications of economic hardship. For example, most (54%) lived in households with a comparatively low average monthly income of R999 or less and the main source of income of a substantial proportion (32%) was a monthly grant. See Table 4.2.

Demographically, the operator respondents differed across the four Local Municipalities in Vhembe District. For example, in contrast with the situation in Makhado and Musina, a number of the respondents in Mutale (30%) and Thulamela (21%) were females. Whereas many (39%) in Makhado and Mutale were young adults (26-35 year olds), few were in this age group in the other two Municipalities. Far more respondents in Mutale (altogether 87%) than in the other Municipalities earned a fixed monthly income through sales.

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Table 4.1: Demographic statistics of the respondents in the commuter survey in the respective Local Municipalities in the Vhembe District of Limpopo Province

Descriptors or variables		Proportion of respondents (%) in				
		Makhado	Musina	Mutale	Thulamela	All
Sample size (n)		25	25	25	25	100
Proportion of females		40	52	64	60	54
Age category	a) ≤ 25 years	36	36	56	68	49
	b) 26-35 years	4	16	16	4	10
	c) 36-50 years	56	44	28	28	39
	d) > 50 years	4	4	0	0	2
Marital status	a) Single	28	28	56	68	45
	b) Single parent	12	20	12	12	14
	c) Married	52	36	20	20	32
	d) Divorced	4	8	12	0	6
	e) Widowed	4	8	0	0	3
Highest level of education	a) None/Primary school	16	16	4	0	9
	b) Secondary school	84	76	96	100	89
	c) Tertiary	0	8	0	0	2
Employment status	a) Still studying	28	16	56	68	42
	b) Housewife	0	12	8	4	6
	c) Unemployed	20	28	32	8	22
	d) Employed part/full-time	44	36	0	20	25
	e) Pensioner/Other	8	8	4	0	5
Average household income, R	a) None	4	16	44	20	21
	b) Not sure	44	16	8	48	29
	c) 1-500	8	20	0	0	7
	d) 501-5 000	44	48	48	20	40
	e) > 5000	0	0	0	12	3
Main source of personal monthly income	a) No fixed income	28	24	56	40	37
	b) Salary/Wages	44	20	0	20	21
	c) Spouse/Other relatives	4	16	24	4	12
	d) Sales/Other	16	28	8	28	20
	e) Grants	8	12	12	8	10

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Table 4.2: Demographic statistics of the operator survey respondents in the Local Municipalities in the Vhembe District of Limpopo Province

Descriptors or variables		Proportion of respondents (%)[x] in				
		Makhado	Musina	Mutale	Thulamela	All
Sample size (n)		26	25	23	24	98
Proportion of males		96	0	70	79	87
Age category	a) 26-35 years	39	16	39	4	25
	b) 36-40 years	31	64	57	54	51
	c) 41-50 years	31	20	4	33	22
	d) 46-50 years	0	0	0	2	2
Marital status	a) Single parent	0	4	4	8	4
	b) Married	100	92	91	92	93
	c) Divorced	0	4	0	0	1
	d) Widowed	0	0	4	0	1
Highest level of education	a) Primary school	0	4	0	0	1
	b) Secondary school	100	96	100	100	99
Employment status	a) Still studying	0	0	0	8	2
	b) Housewife	0	0	0	17	4
	c) Unemployed	0	8	9	0	4
	d) Employed part-time or full-time	92	92	83	46	79
	e) Pensioner	4	0	9	25	9
	f) Other	4	0	0	4	2
Average monthly household income, R	a) 100-499	4	44	22	4	18
	b) 500-999	19	36	44	46	36
	c) 1 000-4 999	58	20	30	50	40
	d) 5 000-9 999	19	0	4	0	6
Main source of personal monthly income	a) No fixed income	4	0	0	4	2
	b) Sales/Other	50	52	87	46	59
	c) Grants	39	32	4	50	32
	d) Refuse to answer	8	16	9	0	8`

[x] Total percentages vary between 99 and 100 due to rounding.

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4.3 Findings of the Commuter Survey on the Nature and Extent of the Use of the LDV Passenger Transport Passenger in Vhembe District

Tables 4.3 and 4.4 show the responses of the users of the LDV passenger transport service who participated in the study's commuter survey in Vhembe District to issues related to their use of this service, overall and per the respective Local Municipalities in the District. The first table (4.3) deals with the frequency with which the respondents took trips by LDV, their reasons for taking such trips and the cost of the trips; and the second table (4.4) with what they indicated as the main advantages and challenges of taking a trip by LDV.

The responses of the users of the LDV passenger transport service in this study's commuter survey showed that taking a trip by LDV was not an occasional but frequent occurrence. For example, substantial proportions of the respondents either indicated that they typically used the LDV transport service 5 days a week (Monday to Friday) (29%) or that they did so daily (27%). However, a cross-tabulation of the responses in terms of the Local Municipalities in which the survey participants resided showed that these responses varied across the respective Local Municipalities. A Chi-square test also found a strong statistical relationship ($P < 0.05$) between the frequency with which the respondents took a trip by LDV and the respective Municipalities in which they resided. (The detailed results of this Chi-square test as well as those of the tests noted in subsequent sections of this chapter are presented in Appendix 2.)

As shown in Table 4.3, most (52%) of the users of the LDV transport service interviewed in the commuter survey in Thulamela indicated that they took a trip by LDV five days a week (Monday to Friday), with a substantial proportion (36%) stating that they did so daily. In Makhado and Mutale the frequency with which the respondents took trips by LDV varied to a greater extent than in Thulamela. For example, the single largest proportion (28%) in Makhado took a trip daily and the two second largest groups did so either on weekends (20%) or during the week (20%). In Mutale, substantial proportions of the respondents either indicated that they took a trip daily (28%), or that they did so during weekdays (28%) or at the end of a month (28%). In Musina, taking a trip by LDV was particularly common at the end of a month (28%), and to a lesser extent on weekends (20%).

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Table 4.3: Frequency with which users of the LDV passenger transport service in the commuter survey took trips by LDV, the main reasons for these trips and the cost

Descriptors or variables		Proportion of respondents (%) in				χ^2	Statistical significance
		Makhado	Musina	Mutale	Thulamela		
Sample size (n)		25	25	25	25		
Usual/typical frequency of trips by LDVs						27.61	*
	Daily	28	16	28	36		
	3-4 days a week	8	12	0	0		
	Weekends	20	20	4	0		
	5 days a week (Monday to Friday)	20	16	28	52		
	Month-end	16	28	28	4		
	Once a month	4	8	12	8		
	Can't remember	4	0	0	0		
Usual/typical reason for taking a trip						30.03	***
	To go to work	36	16	0	24		
	To go to school	28	28	56	64		
	To go to shopping	8	28	36	8		
	To do business	20	20	4	0		
	Can't remember/other	8	8	4	4		
Usual/typical cost of a trip by LDVs						25.78	***
	R10-R20	20	20	24	68		
	R30-R40	60	64	48	16		
	>R50	20	16	28	16		

n = number of respondents; χ^2 = Chi-square; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$;

ns = not statistically significant.

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Table 4.4: Main advantages and challenges of using the LDV passenger transport service, as reported by users of this service in the commuter survey

Descriptors or variables		Proportion of respondents (%) in				χ^2	Statistical significance
		Makhado	Musina	Mutale	Thulamela		
Sample size (n)		25	25	25	25		
Main advantage of travelling by LDVs						7.32	ns
	Carried with luggage	24	28	36	8		
	Affordable price	36	36	32	32		
	No advantage	36	16	32	44		
	Can't say/other	4	20	0	16		
Main challenge/difficulty travelling by LDVs						11.15	ns
	Overload	52	36	56	48		
	Exposed to bad weather	12	24	20	0		
	Hard seats (steel/wood)	12	28	16	32		
	Standing for the entire trip	12	8	8	4		
	Can't say	12	4	0	16		

n = number of respondents; χ^2 = Chi-square; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$; ns = not statistically significant.

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The finding that the users of the informal LDV passenger transport service in this study's commuter survey in largely rural and poverty stricken Vhembe District used this service comparatively frequently demonstrated what was generally the case in South Africa regarding formal public transport: Most people depended on formal public transport services, however these services were not necessarily accessible and especially in the case of rural communities (Buffalo City Municipality, 2003; Wosiyana, 2005; Kekana, 2009; AfriTEST, 2012). The respondents' comparatively frequent use of the informal LDV passenger transport service was also consistent with the experience of rural communities in other parts of the world. For example, the World Bank (1999, 2001, 2010), Dennis (2001) and Archer *et al*. (2005) note that the range of suitable transport modes available in rural areas was generally small compared to towns and cities. Conventional motorised vehicles were seldom used because they were largely unaffordable and not suited to the poorly developed transport infrastructure and rugged terrain in most rural areas. Faced with such challenges rural community members had no other choice besides frequently relying on LDVs, bicycles, animal-drawn carts and even animals such as donkeys to move around.

Regarding the typical reasons for taking a LDV trip, by far most (94%) of the respondents in this study's commuter survey indicated that their typical reason why they took a LDV trip was to access essential services such as education, employment and markets. For example, going to school (44%), to shop (20%), to work (19%) and to do business (11%) were given as the typical reasons for taking a trip by LDV. The relevant responses varied across the respective Local Municipalities in which the respondents resided, though. A Chi-square test also found a strong statistical relationship ($P < 0.05$) between the reasons given for a trip by LDV and the Municipalities where the respondents resided.

Whereas going to school was mostly given as the typical reason for a LDV trip in Thulamela (64%) and Mutale (56%), going to work was particularly indicated by the respondents in Makhado (36%). The single largest proportions of respondents in Musina respectively indicated going to school (28%) and going to shop (28%) as their typical reasons for taking a LDV trip. The fact that most of the respondents in Thulamela and Mutale indicated going to school as the main reason for taking a trip probably related to the mostly youthful age of the respondents in these two Municipalities and the fact that (better) education facilities were close to and in town, resulting in students from especially rural areas having to make daily trips to schools. In Musina, the respondents tended to take a trip by LDV for a variety of reasons, namely to go to school, to go shopping and to a lesser extent to do business.

This study's above findings underlined that one of the key drivers of the use of the LDV passenger transport service in Vhembe District was the fact that residents were not necessarily within easy reach of essential services. Accessing essential services would thus be costly for them, especially when

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considering that they lived in a generally poverty stricken region and were personally subjected to economic hardship. As would therefore be expected, many respondents in this study's commuter survey indicated that the main advantage of using LDVs was the affordability (34%) of this service and the fact that they could carry their luggage with them (24%). This implies that the fee of R40 or less that far most (80%) of the respondents indicated as the cost of a round trip by LDV was reasonable. Most (68%) of the respondents in Thulamela indicated an even lower fee (R10 to R20) (Table 4.4).

A Geographic Information System (GIS) analysis also pointed to a link between the emphasis the respondents in this study's commuter survey placed on the affordability of the LDV passenger transport service and the poverty stricken region in which they lived. The GIS Unit of the Human Sciences Research Council in Pretoria matched the responses of those participants in this study's commuter survey who indicated that the main advantage of using the LDV passenger transport service was its affordability with 2011 census data on the level of poverty in Vhembe District. The level of unemployment among 15-64 year olds and the proportion of households in Vhembe District without access to running water were used as indicators of the level of poverty in the District. The results are presented in Figures 4.1 and 4.2.
Figure 4.1 shows that the respondents in the commuter survey who indicated that the main advantage of using LDV transport was its affordability particularly resided in Dzanani, Tshilamba and Beitbridge. Dzanani and Tshilamba were characterised by high levels of unemployment, estimated to be 40%-50% among the people 15-64 years old. The proportion of households in Dzanani without access to running water was also comparatively high (Figure 4.2).

The respondents in the commuter survey also indicated challenges attached to using the LDV passenger transport service (Table 4.4). Nearly half (48%) of all the respondents highlighted the fact that LDV operators overloaded their vehicles as the main challenge. A substantial proportion (22%) of all the respondents identified the hard seats of the vehicles as their main challenge. Exposure to bad weather was another fairly commonly identified challenge. Fourteen per cent (14%) of all the respondents indicated the latter factor as the main challenge they faced when using the LDV transport service, with substantial proportions in Mutale (20%) and Musina (24%), known for their extreme weather, stating the same.

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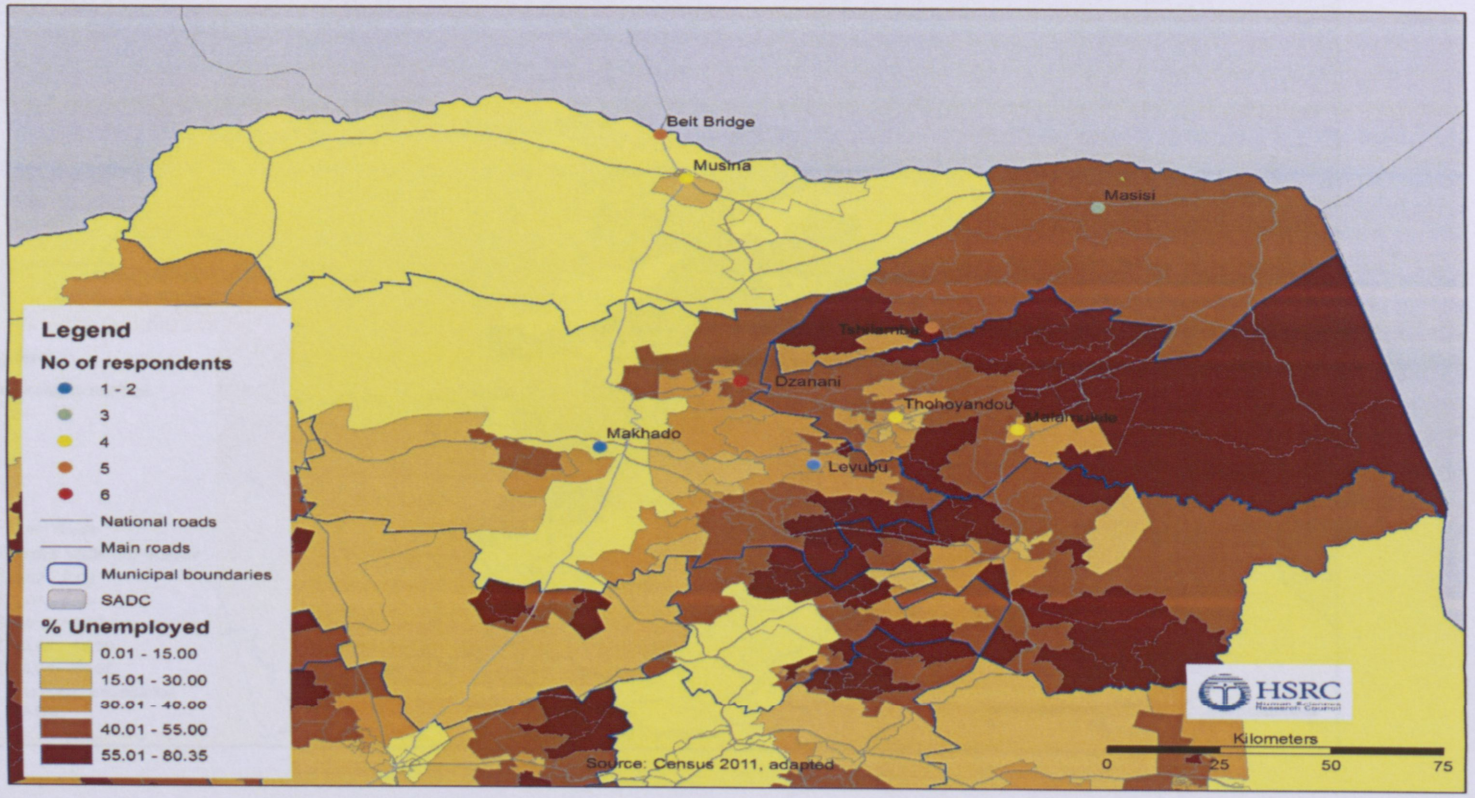


Figure 4.1: Overlay of users of LDV transport who indicated that its main advantage was its affordable price, and 2011 census data on the percentage of unemployed 15-64 year olds in Vhembe District

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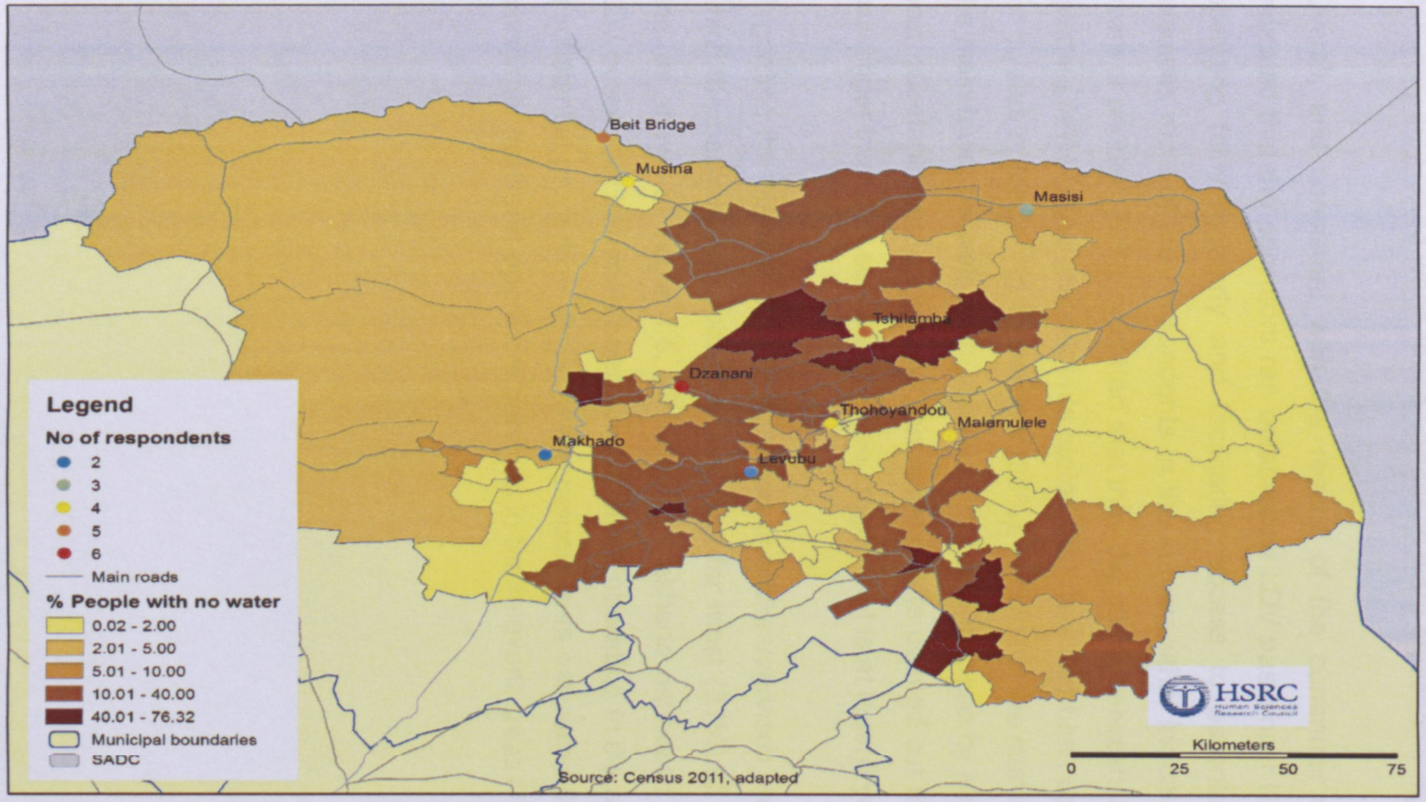


Figure 4.2: Overlay of users of LDV transport who indicated that its main advantage was its affordable price, and 2011 census data on the percentage of Vhembe households with no running water

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4.4 Findings of the Operator Survey on the Nature and Extent of the Use of the LDV Passenger Transport Service in Vhembe District

Tables 4.5 and 4.6 present the responses of the operators who participated in this survey, cross-tabulated with the specific Local Municipalities in which they resided respectively. In the next paragraphs, variations in the operators' responses across the respective Municipalities are generally only noted when these variations were statistically significant.

Overall, and consistent with the results of the commuter survey, the responses generally indicated that the operators ran established LDV passenger transport businesses, with vehicles operating fairly regularly and facilitating access to essential services to communities. For example, most of the respondents in the survey either indicated that they were operating for 5 years or shorter (76%), or stated that they did so for between 1 and 10 years (55%); nearly one-quarter (24%) of the respondents stated that they had been operating LDV passenger transport for 6 years or longer. In Thulamela (38%), known for the many government services provided in the main town, as well as in Mutale (26%) and in close by Musina (24%), known for its border post, substantial proportions of the respondents pointed out that they had been running a LDV passenger transport service for even longer, that is at least 6 years (Table 4.5).

Regarding the number of LDV transport operators/services operating in the respective areas in which the participating operators lived, by far most (87%) of the overall group of respondents and, as shown in Table 4.5, all those in Makhado estimated that there were between and 10 LDV passenger transport operators/services operating in the areas where they lived. In Musina, a substantial proportion (24%) of the respondents estimated that there were more than 10 LDV passenger transport operators/services in the relevant areas (Table 4.5).

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Table 4.5: Duration of LDV passenger transport service operations, frequency of LDV trips, and the extent of the LDV passenger transport service, as reported by the operators of the LDV passenger transport service in the operator survey

Descriptors or variables		Proportion of respondents (%) in:				χ^2	Statistical significance
		Makhado	Musina	Mutale	Thulamela		
Sample size (n)		25	25	25	25		
Number of years operating as LDV passenger transport service provider						15.38	ns
	< 1 year	42	28	52	33		
	1-5 years	46	48	22	29		
	6-10 years	12	24	17	21		
	> 10 years	0	0	9	17		
Number of LDV passenger transport services operating in the areas in which the respondents lived						7.76	ns
	1-5 LDVs	58	40	57	42		
	6-10 LDVs	42	36	30	42		
	> 10 LDVs	0	24	13	17		
Frequency of doing trips						27.69	**
	Daily	31	36	22	17		
	3-4 days a week	31	16	4	17		
	Weekends	23	20	0	17		
	5 days a week (Monday to Friday)	15	28	70	33		
	Month-end	0	0	13	17		

n = number of respondents; * = P < 0.05; ** = P < 0.01; *** = P < 0.001; ns = not statistically significant;

$\chi 2$ = Chi-square; total percentages vary between 99 and 101 due to rounding.

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Table 4.6: Type of passengers transported by the LDV passenger transport service, as well as the advantages and challenges of the service, as reported by the operators of the LDV passenger transport service in the operator survey

Descriptors or variables		Proportion of respondents (%) in				χ^2	Statistical significance
		Makhado	Musina	Mutale	Thulamela		
Sample size (n)		25	25	25	25		
Usual/typical passengers when doing LDVs trip						8.27	ns
	Workers	15	36	26	13		
	Pupils/Students	42	40	48	38		
	Shoppers	23	16	17	33		
	Business people	15	8	4	17		
Usual/typical cost of a round trip by LDV						6.35	ns
	R10-R20	15	16	17	13		
	R30-R40	54	36	65	54		
	More than R50	23	48	17	33		
	Other/No response	8	0	0	0		
Main advantage of operating an LDV passenger transport service						5.11	ns
	No joining fees needed	39	24	35	21		
	No permit needed	27	48	39	42		
	No route permit needed	35	28	17	38		
	Can't say	0	0	9	0		
Main challenges/difficulties experienced as an operator of an LDV passenger transport service						4.51	ns
	Not allowed to use public parking/facilities	27	32	44	21		
	Threats by legal transport operators	39	36	30	54		
	Constant harassment by law enforcement officers	35	32	26	25		

n = number of respondents; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$; ns = not statistically significant; $\chi 2$ = Chi-square;

Total percentages vary between 99 and 101 due to rounding.

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Concerning the frequency with which operators did trips by LDV, the single largest proportion (34%) of the overall group of respondents indicated that they did so during work/school days, that is from Monday to Friday (5 days a week). The second largest proportion (27%) did daily trips. Furthermore, a Chi-square test found a strong statistical relationship ($P<0.01$) between the relevant responses and the respective municipalities in which the respondents resided. Whereas the respondents in Thulamela (33%) also particularly indicated that they operated during the 5 weekdays, in Makhado, the respondents especially indicated that they operated daily (31%), 3 to 4 days a week (31%) and to a lesser extent on weekends (23%). In Musina, daily trips seemed to be particularly common (36%), probably relating to *inter alia* the fact that this Local Municipality has a generally very busy border post and has the second largest proportion of people in the Vhembe District Municipality according to 2011 census data (Statistics South Africa, 2012a,b). See Table 4.5.

Overall, the operators particularly indicated that the usual reasons for doing trips were to transport pupils/students (44%) and to a lesser extent workers (32%). Largely consistent with these reasons, the respondents especially indicated pupils/students (44%) as the usual passengers they transported. Substantial proportions identified workers (22%) and shoppers (22%) as their typical passengers.

Most (52%) of the operators indicated that they charged their passengers between R30 and R40 for a round trip. However, in Musina almost half (48%) of the respondents and substantial proportions in Thulamela (33%) and Makhado (23%) charged more than R50 per round trip (Table 4.6). The higher fees charged in these three Municipalities probably related to *inter alia* the fact that the average household income of their respective populations was higher than in the case of those in Mutale according to 2011 census data (Statistics South Africa, 2012a,b).

The unregulated nature of LDV passenger transport appeared to be an advantage to the operators. Among the overall group of respondents, nearly four-tenths (39%) indicated that the main advantage of operating LDV passenger transport was the fact that they did not have to acquire a permit to do so. For three-tenths the main advantage of operating the service was either that no joining fee was required or that they did not need a route permit.

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The single largest proportion (40%) of the respondents indicated that threats against them on the part of legal transport operators were the main challenge they faced. A substantial proportion (30%) of the overall group of respondents also indicated that the main challenge or problem they experienced was harassment by law enforcement officers. In Mutale the respondents particularly indicated that their main operational challenge was the fact that they were not permitted to use public transport parking facilities (44%) (Table 4.6).

4.5 Findings of the In-depth Interviews, Focus Group Discussions, Observations and Documentary Analysis on the Nature and Extent of the Use of the LDV Passenger Transport Service in Vhembe District

In this section the data gathered in the case study on the nature and extent of the LDV passenger transport service in Vhembe District are presented and discussed. The focus is first on the findings derived from in-depth interviews and focus group discussions. Then follows an overview of the observations made at key sites in the various local municipalities in Vhembe where transport operators and residents congregated. In conclusion the section notes the data gathered in an analysis of relevant and accessible local and international documents.

4.5.1 Findings of In-depth Interviews and Focus Group Discussions

Regarding the findings of the in-depth interviews on the nature and extent of LDV passenger transport in the various Local Municipalities in Vhembe District, Tables 4.7a and 4.7b present the general themes that emerged from the interviews and examples of the statements from which the themes were derived. In brief, the data gathered in the interviews confirmed the themes that emerged from the focus group discussions and key findings of the surveys on the issues concerned. The interviews also illustrated some of the issues mentioned in the focus group discussions and surveys in more detail, apart from adding information.

For example, the interviewees not only, as in the focus group discussions and relevant surveys, indicated that the use and operation of the LDV passenger transport service were a common and established practice even though the informality of the transport complicated estimation of the size of this practice, but also that LDV transport was expanding in Vhembe. Some of the interviewed operators also stated that they had "partnered" with other LDV transport operators

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by forming informal associations and developing informal regulatory practices to avoid friction among them.

Other issues that surfaced in the in-depth interviews were as follows: Some of the interviewed LDV transport operators stated that they were adamant to continue their service notwithstanding challenges such as being periodically stopped and fined by law enforcers. Some operators were considering discussing the possibility of legalising this transport with the relevant authorities, given indications that certain local authorities in Vhembe District were beginning to accept LDV passenger transport.

Regarding the advantages of LDV passenger transport for users, the interviewees indicated that users appreciated the comparatively quick response of operators when needed, and specifically the fact that they did not have to wait in long queues or for long periods to be served. The interviewees also pointed out that even though passengers were charged extra if they carried luggage with them on an LDV trip, the overall fee was still lower than in the case of formal taxi trips. In this respect an operator of a formal taxi service indicated that because formal taxi services were limited to particular routes, passengers ever so often had to use more than one taxi to reach their destination and therefore ended up paying "double" fees. Finally, it was also clear that although users of LDV passenger transport were ever so often subjected to discomfort, some operators took special care of their passengers. An interviewee, for example, stated: "We take good care of our passengers and in case they lose something we open a case at a police station if it is not found."

Regarding the focus group discussions, the statements of the participants highlighted that the use/operation of LDV passenger transport was an established practice in Vhembe District. As pointed out earlier, this theme also emerged in the in-depth interviews as well as in the commuter and operator surveys. In the latter surveys substantial proportions of the respondents for example indicated that they used/operated the service regularly, namely on 5 days a week or daily; and nearly one-quarter stated that they had been operating LDV passenger transport for 6 years or longer.

Furthermore, and in line with the findings of the commuter and operator surveys, the participants in the focus group discussions pointed out that the relevant service transported persons such as school children, workers, shoppers and people travelling to and from the Zimbabwean border.

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The point was made that LDV passenger transport not only assisted communities in accessing essential services, but was also a demand-driven and, more particularly, a customised service. For example, focus group participants noted that LDV passenger transport service operated in rural and farming areas as well as in small villages with poorly developed road networks; the fees of the service were affordable; the passengers could carry luggage with them; and the operators were prepared to pick passengers up and drop them off at their doors.
The participants in the focus group discussions also added to the surveys' findings the fact that LDV passenger transport was a profitable enterprise not only because it was in high demand but also because the service was not subjected to formal restrictions (not formally regulated) and the LDVs were cheaper to maintain than conventional taxis. A focus group participant in Mutale, for example, stated that it was "very expensive to maintain conventional taxis" whereas "LDVs are very cheap and easy to maintain". Another issue brought to the fore by the participants in the focus group discussions was the fact that the service provided employment and consequently livelihoods to people in an economically constrained environment (Vhembe District Municipality, 2012). For example, a participant in Makhado stated that operators of the relevant service were creating jobs and putting something on their tables.

However, the focus group participants underlined that operators and users of LDV passenger transport faced various challenges. For example, and in line with the survey findings, the focus group discussions highlighted the following points: Operators were on occasion "harassed" by law enforcers in the form of forced discontinuation of their service and the issuing of comparatively large fines; operators were also not permitted to use public parking facilities assigned to formal passenger transport services such as taxi and bus services; and passengers were subjected to discomfort such as overload, uncomfortable seats and no protection against bad weather. Some participants in the focus group discussions added that one of the disadvantages of LDV passenger transport was that because of its informal nature those injured in accidents would not be entitled to compensation from the Road Accident Fund.

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Table 4.7a: Themes that emerged from the statements of the participants in the in-depth interviews on the nature and extent of the use of LDV passenger transport in various local municipalities in Vhembe District

Themes	Examples of statements made by the participants in the in-depth interviews			
	Thulamela	Makhado	Mutale	Musina
Use/operation of **LDV** transport **common**, well-**established** and **increasing**. **LDV advantages**: **Demand-driven** service that collect and drop passengers/luggage at doors; **affordable**; **luggage safe; reliable**; can **customise vehicle** to offer optimal service and gain financially. **Reasons** for using/operating LDV transport: Operate to earn **income**; **no other transport**; provide **essential** service (to shop, go to work and school; operate where **roads** are **bad**; users do **not** wait in **long queues** and service is **quick**. **Cost of LDV transport**: Fee influenced by **distance** travelled and amount of **luggage**. **LDV passengers**: School children, civil servants, teachers, farm workers. shoppers, others.	**Operators of LDV transport:** I specialise in carrying school children of all grades; others carry farm workers and civil servants. There are a lot of LDVs, operating all over. Some of us (35) formed an organisation to get scholar permits. We use Hyundai half-trucks with covered canopies. I started to transport school children as there was no other transport. They pay monthly; it's not much but it keeps me going together with my pension. We always have a close relationship with the parents of the learners we transport and arrange affordable payment options. Because most taxis cannot carry school children from their homes to school, we pick them up from home and drop them at school every day. **Operators of taxis:** We are losing business because of pirate taxis – LDVs; they kill us, even operate in our areas. LDVs are all over. Most of their passengers used to be ours. Because LDV operators do not have permits they operate all over. We cannot operate in certain areas and as a result passengers have to pay double fees but not if they use LDVs. LDVs carry school children (often without a permit), teachers and any other passenger available. **Other stakeholders:** LDV transport operates all over in the morning and afternoon; there are a lot. It seems they provide a good service as people prefer them. In my village there is no transport; we use LDVs or donkey carts.	**Operators of LDV transport:** We are operating as there is no transport for people in the villages; roads are bad and not maintained, scaring away taxis. We have an informal "taxi" rank; serve areas where needed. LDV numbers increase; mostly used by villagers; about 20 in our area. After a recent increase we formed an organisation and agreed to load passengers on a first come first serve basis to avoid friction. We transport teachers, civil servants, learners and any other person; some pay weekly or monthly. We regulate ourselves as to the number of passengers we carry at a time. Before traffic officers stopped/charged us; now use us. We take good care of users; when they lose something, we open a case at police station if not found; not common for LDV users to lose property. **Users of LDV transport:** They always carry us with our luggage, though we pay for our luggage, but the price is good; you can be dropped at your door; they arrive on time. Where I'm staying there is no other transport to carry me and my stock in the morning and in the afternoon. **Operators of taxis:** School children are often carried by LDVs; there are a lot; LDVs offer what taxis can't like carrying passengers with abnormal loads and dropping passengers at their doors. **Other stakeholders:** LDV services operate from Gombani to Biaba and sometimes to Louis Trichardt, mostly on weekends or month-end. They provide a vital transport service to Makushu, Musekwa, and Maranikhwe. Difficult to give numbers, but LDVs are all over VDM, often carrying school children. It's not easy to stop LDVs as people use them regularly. In our area the roads are so bad only LDVs can drive there and survive. LDVs do justice to communities' transport needs.	**Other stakeholders:** There are many LDVs in our area. It is not easy for police officers to know the extent. LDVs transport learners and civil servants. **Operators of taxis:** Certain taxi operators and LDV operators have come to an agreement; taxis allow LDVs to use their rank facilities as long as they do not poach customers. Sometimes we take our customers to a certain point where they then board an LDV because we cannot go along the bad roads in the area or do not have a route permit for the area, especially in remote rural areas. LDV operators don't have to stick to particular parking facilities; are not formally regulated. **Operators of LDV transport:** Operation complicated by tension between us and certain taxi operators, scared of losing customers.	**Operators of taxis:** LDVs are many; carry villagers to and from town. Our own business is slow as people prefer LDVs, especially in Musina. LDVs carry people with their goods for a single payment; drop them at their doors which taxis can't do; go to villages where the roads are bad and a lot of people need transport; our fares are higher than LDV fees. **Operators of LDV transport:** I've been operating for almost 27 years and I have 3 LDVs; operate in towns, near farms, villages and border areas; people prefer LDVs because no transport. Many LDVs, but not easy to state numbers; operators increase during festive seasons or holidays. I run a LDV service because am boss, not regulated, no municipal fees; cheaper to maintain LDVs as roads bad; charge more for luggage and for dropping at doors. People use LDVs because carry everything they want for affordable fees. LDVs provide a better service than taxis. **Users of LDV transport:** We use LDVs as available, quick; no long queues, accept luggage, drop at doors; travel daily, month-end and long weekends to shop, do business, work, study. LDV cost depends on distance of trip and luggage. **Other stakeholders:** LDVs are a lot; they serve locals where no taxis or buses are. Numbers cannot easily be determined as LDVs not regulated and registered; no LDV association. LDVs illegal but at our doorsteps; try to police but situation out of hand; operators don't seem to mind when charged and fined on the spot and when vehicles are impounded. They carry passengers, especially learners, to and from rural areas or villages; have illegal parking places, even near police stations.

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Table 4.7b: Themes that emerged from the statements of the participants in the focus group discussions on the nature and extent of the use of LDV passenger transport in various local municipalities in Vhembe District

Themes	Examples of statements made by the focus group participants			
	Thulamela	**Makhado**	**Mutale**	**Musina**
Usage/operation of the LDV passenger service **common** and **well-established; school children, (government) employees, shoppers transported.** **Reasons for using/operating** LDV transport: LDVs are **cheap and easy to maintain**; LDVs can **manage** the **bad roads** in area. Use the LDV service because of the **affordable fees**, and because **no other services** are available. **Challenges** of using/operating LDV transport: Operating the service requires **no joining fee or registration**; service is more **profitable** than taxi service **No compensation** is given to passengers injured **in accidents**. LDVs are **overloaded** and **uncomfortable**; passengers **exposed** to bad weather, and **not** always **safe**	**Operators of taxi services**: We are losing customers, because of these illegal "bakkies". Even well-known churches these days are using these small trucks to carry school children. It is a big problem. The government needs to intervene. Our members have scholar transport permits, but they are not operating because there are no customers. The government is doing nothing. We are losing business every day. These LDV "bakkies" are not checked, they don't have papers and they are killing our business. **Operators of LDV transport:** I've been carrying school children for a long time; almost 12 years now without any problem. We cannot allow our family to starve. We are not forcing anyone to use our services, but because of our competitive prices and quality services, most school children prefer our service. **Users of LDV transport**: We have been using LDVs for a long time. Using LDVs is very cheap. There are no taxis or buses where I'm staying. LDV operators assist us; no one is going to stop us from using LDVs. **Operators of LDV passenger service:** You must know that we don't get a subsidy from the government, like bus operators.	**Operators of LDV transport:** I've two LDVs, and I've used these for almost three years now. The business is good compared to taxis. The good thing is there is no joining fee or registration; it's a free business for all. LDVs carry more passengers than conventional taxis. The reason we started this business is there was no other transport in the area. Our passengers appreciate what we are doing - we are providing the transport they need. We are also creating jobs and putting something on our own tables. The government cannot employ all of us. Our children are unemployed; there are no jobs for us and we are trying to make a living. **Users of LDV transport**: We have been using LDVs for such a long time. But operators tend to overload us and during summer one needs a rain coat as most LDVs are not covered; seats are not comfortable as of wood. But all in all LDVs are okay and reliable. **Other stakeholders:** Roads are bad, taxis are unreliable and buses do not even bother to service our area. LDVs are providing important services to our people.	**Operators of LDV transport:** I was once a taxi owner with three taxis, but now I've decided to operate LDVs only because it is good business. **Operators of taxis:** LDVs are providing transport to most people in rural areas. Taxi operators see this as an opportunity of change to operating LDVs as it is good business. The problem is our government is neglecting our roads; because of the bad roads taxis cannot be used; because of the poor roads taxi operators do not want to operate in rural areas. It is expensive to maintain conventional taxis, and most of us bought these taxis on credit and if you can't make enough, the vehicles are repossessed; thus it is better to change to an LDV service. **Operators of LDV transport:** As LDVs operators, we carry the burden to transport school children to various schools. LDVs are very cheap and easy to maintain. They also carry more passengers than conventional taxis and so make more money.	**Users of LDV transport**: I think LDVs are providing us with good services. I stay in a rural area where these good taxis like Quantums never come or operate in our area. When you ask them they say there is no road. If it is month-end and you get a chance to ride on a Quantum, one is not allowed to carry more than 30 kg of luggage and we are often squeezed together and sometimes overloaded. I've been travelling by LDV for a long time. The price of LDV trips is not as high as taxi trips. **Operators of LDV transport:** I've been operating LDVs since 2001, carrying people to Venetia mine and other parts of Musina, and there is no way I will go back to the taxi business. As LDV operators here at Musina, we are proving a service that taxis cannot provide. We transport people to farms, to the Zimbabwean border and to any place they want to go without any problems. Most customers they appreciate what we are doing as LDVs operators. I decided to operate LDVs because they are cheap to maintain, and I can operate anywhere and anytime; I can even operate in rural areas where the roads are poor, and there is no joining fee. I'm also intending to buy other "bakkies" because, to be honest, business is good, mostly during the end of the month and weekends. **Other stakeholders:** From our ward, we are saying viva LDVs; no one is going to stop them from operating.

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4.5.2. Findings of Observations

The findings on the observations made at key sites in the various local municipalities in Vhembe where transport operators and residents congregated are summarised in Tables 4.8a and 4.8b. To gain contextual understanding of the nature and extent of LDV passenger transport, the focus was not only on LDV passenger transport, but also on the kind of public facilities provided at the respective sites, the type of roads serving the sites, and the type of residential settlements in and around the sites.

The observations highlighted the following issues: LDV passenger transport operated at all the observed sites and so also bus and conventional taxi services. Metered taxi services operated in areas where comparatively large groups of people congregated, such as Thohoyandou and Beitbridge Border Post. There were train stations in Musina town and Louis Trichardt.

In contrast with the other transport services at the respective sites, LDV passenger transport was always available and more LDVs were available for passenger transport than other vehicles at a particular point in time. In addition, the modes of transport varied to some extent across the various types of settlements in and around the observed sites. For example, LDV transport as well as other informal means of transport such as donkey carts and tractors with trailers and to a lesser extent buses particularly operated in informal/rural settlements, whereas the faster modes of transport, such as conventional taxis and metered taxis, operated in proclaimed townships, business centres and towns.

All the observed sites had a number of passenger transport ranks, each formally or informally catering for a particular type of service. Informal LDV transport and taxi ranks were common at all the sites (see Figure 4.3 for a typical example of an LDV rank). There were informal bus ranks at some sites (Sibasa, Tshitale, Elim shopping centre, Levubu/Tshakhum, Wylliespoort intersection and Musina town) as well as formal taxi and bus ranks at sites situated in centres with a number of other essential public facilities. Only some of the formal transport ranks were well constructed, that is, clearly marked and provided with facilities such as shades. Such ranks were, for example, found in Thohoyandou, Malamulele, Saselamani, Eltivillas and Musina town. Thohoyandou had a recently completed intermodal transport rank with all the required facilities for buses and taxis, but it was not yet in use at the time of the present study. At Sibasa the

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construction of a state-of-the-art bus and taxi rank was in progress. There was also an unused state-of-the-art bus rank at Masisi in Mutale. Operators of taxis and LDVs at Masisi indicated to the researcher that the rank was not used because it was far from the main road and thus not good for business, while village people said that because the rank was in an isolated place far from the main road, it was not a convenient and safe place, especially at night.

There was a clear link between the typical LDV passengers and the public facilities and types of settlements around the respective sites, such as school children, shoppers, civil servants, farm and mine workers and, in the case of Beitbridge Border Post and Musina town, people travelling to and from Zimbabwe. Other frequent users of LDV transport were the "street" vendors who sold different kinds of goods at the markets and around taxi and bus ranks, and used LDV transport daily to ferry their goods to and from the places of sale.

Whereas LDVs operating in informal rural areas tended to carry a variety of passengers, those operating in towns and other formal settlements tended to ferry school children. Particularly noticeable also, and as illustrated in Figure 4.4, were LDV operators accepted heavy luggage such as hardware materials and in the process overloaded the vehicles as well as squeezed passengers closely together without necessarily providing (proper) seating , covering or standing for the entire trip.

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Table 4.8a: Summary of the key characteristics of sites where LDV passenger transport services operate in the main centres in the various local municipalities in Vhembe District (observations)

Sites	Public facilities at observational sites	Typical passengers of the LDV passenger transport service	Transport modes	Roads	Type of settlements
Thulamela Thohoyandou town centre (Central Business Area)	A shopping centre; essential services such as schools, medical facilities, law enforcement offices; an open market; a formal bus and taxi rank; various Informal ranks used by operators of the LDV service and by metered taxis	School children, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages	LDVs, buses, (metered) taxis, private cars	Municipal tarred and gravel roads in town that are connected to a tarred provincial and gravel district road	Town constituting the central business centre of Thulamela local municipality; includes the head offices of various agencies and businesses as well as the local and district municipal offices; surrounded by several proclaimed townships and rural villages
Sibasa	Various markets; an informal bus and taxi rank as well as various informal LDV transport ranks	School children, civil servants, informal vendors and other community members from surrounding villages	LDVs, buses and taxis	A gravel road to which various informal rural roads are connected	Largely an informal market place
Malamulele town centre	A shopping centre; an open market; a formal bus and taxi rank as well as informal LDV transport ranks	School children, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages	LDVs, buses, taxis and private cars	A tarred provincial road to which various gravel roads are connected	Situated along a provincial road; surrounded by rural villages and a proclaimed township
Makhado district Biaba	A shopping centre; an open market; a formal bus and taxi rank; and informal LDV transport ranks	School children, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages	LDVs, buses, taxis and private cars	A tarred provincial road to which a half-tarred district road is connected, with the latter linking Biaba, Louis Trichardt and some villages to the north; and gravel village/township roads	Centre includes a proclaimed township; surrounded by rural villages

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Table 4.8b: Summary of the key characteristics of sites where LDV passenger transport services operate in the main centres in the various local municipalities in Vhembe District (observations)

Louis Trichardt	A shopping centre; essential services such as schools, medical and law enforcement facilities; open market; formal bus and taxi rank; informal LDV transport ranks and a train station	School children, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages	LDVs, buses, taxis, private cars and trains	A tarred provincial road to which a number of tarred district roads and gravel village/municipal roads are connected	Centre includes a proclaimed township as well as a formal town and is surrounded by rural villages
Levubu/Tsha-khuma	Open markets; informal LDV transport, bus and taxi ranks	School children, farm workers, civil servants, informal vendors and other community members from surrounding villages	LDVs (particularly used by farm workers), buses, taxis and tractors with trailers	Gravel and to some extent tarred district roads	A largely farming area surrounded by rural villages
Wylliespoort Intersection	Markets; informal bus, taxi and LDV transport ranks	School children, civil servants, farm workers, informal vendors and other community members from surrounding villages	LDVs, buses, taxis and private cars	Tarred provincial road that link Sibasa, Musina and Louis Trichards; gravel village roads	A road intersection surrounded by (game) farms and rural villages
Mutale Masisi town centre	Essential services such as schools, medical facilities, a magistrate's office; SAPS station; markets; an unused formal bus rank; 2 formal taxi ranks; informal LDV transport and taxi ranks	School children, civil servants, informal vendors and other community members from surrounding villages	LDVs, buses, taxis, bicycles, donkey carts	Gravel roads connecting surrounding villages	A remote rural area surrounded by rural villages
Tshilamba town centre	A shopping centre; open market; essential services such schools, medical and law enforcement facilities; a formal bus and taxi rank; informal LDV transport and taxi ranks	School children, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages	LDVs, taxis, buses and private cars	A tarred provincial road and connecting gravel roads	Rural area surrounded by rural villages
Musina BeitBridge Border Post	An entry and exit point between Zimbabwe and South Africa with an immigration office; open market; a formal taxi rank; informal LDV transport and (metered) taxi ranks	Farm workers, civil servants, informal vendors, foreigners and other community members from surrounding villages as well as travelers to and from Zimbabwe	LDVs, (metered) taxis and private cars	A tarred provincial road linking South Africa with Zimbabwe; connecting gravel roads	A border post surrounded by rural villages and farms
Musina town centre	A shopping centre; basic facilities such as a magistrate's office, a home affairs office, schools and a SAPS station; an open market; a railway station; a formal bus rank and formal taxi rank; two informal bus ranks; informal LDV transport and (metered) taxi ranks	School children, farm and mine workers, civil servants, informal vendors and other community members (e.g. shoppers) from surrounding villages as well as travelers to and from Zimbabwe	LDVs, (metered) taxis, trains and private cars	A tarred provincial road that links South Africa with Zimbabwe and connecting gravel roads	A town that serves as the central business district of Musina local municipality; apart from the town, the area includes a proclaimed township, an informal settlement and is surrounded by rural villages

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Figure 4.3: Typical LDV passenger transport rank

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Figure 4.4: Learners transported by LDV/truck in Vhembe District

As shown in Figure 4.5 above, passengers such as school children were (on occasion) transported in trucks or LDVs without the necessary safety mechanisms (such as high side rails) to prevent them from falling off the vehicle during a journey.

Finally, the popularity of LDV transport should be viewed against the background of the predominantly rural villages surrounding the observed sites and the type of road networks servicing these sites. Although provincial and to a lesser extent district roads were generally tarred, the latter tended to be poorly maintained, fraught with potholes and without adequate road signs. Moreover, the roads connected to the provincial and district roads tended to be gravel roads, especially those connecting the villages surrounding the observed sites and those connecting the villages and the district/provincial roads.

4.5.3. Findings of Documentary Analysis

The findings of an analysis of relevant and accessible local and international documents were largely in line with the main factors that emerged in the survey and case study on the nature and extent of LDV passenger transport at a fee. More particularly, various documents highlighted that the use of unconventional means of transport such as LDVs to transport passengers at a fee tended to be an informal, common, demand-driven and established but not necessarily safe practice in rural areas in South Africa and in a number of other countries (Buffalo City Municipality, 2003; Interdesign, 2005; Wosiyana, 2005; Harris, 2006; Republic of South Africa, 2007a,b; Starkey, 2007; Kekana, 2009; Chakwizira, Nhemachena, Dube and Maponya, 2010; Haq and Schwela, 2012; Vhembe District Municipality, 2012). The relevant documents also indicated that detailed empirical data on LDV passenger transport were sparse.

Moreover, and as also found in the study's focus group discussions, the perused documents highlighted that the relevant authorities (e.g. law enforcers and municipal councillors) in South Africa and in various other countries were increasingly beginning to recognise the usefulness of using LDVs to transport passengers at a fee in rural areas. For example, the Rural Transport Strategy for South Africa (Republic of South Africa, 2007a,b) states: "[In] 'deep' rural areas … operators of LDVs (the so-called 'bakkie sector') … are the main service providers … There is a need to re-evaluate the regulatory mechanisms for light delivery vehicles (i.e. the vehicles being used for 'bakkie operations') … [and] facilitate the flexible, combined passenger and freight

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services currently being offered by most of these operators, whilst … ensuring compliance with … road safety standards". The strategy also notes that opportunities to access essential services such as "markets … schools, clinics and pension payout points are limited [in rural communities]… due to [for example] impassable roads [and a lack of] public transport services … with many in such a situation resorting to the use of light delivery vehicles for public transport". Furthermore, as part of the South African government's Integrated Rural Development Programme, efforts towards examining the need for and ways of formalising LDV passenger transport have been initiated in six rural district municipalities in various parts of the country (Republic of South Africa, 2007a,b). A public notice (number 68 of 2011) was also published in the Government Gazette, requesting relevant stakeholders to comment and/or make suggestions in respect of using LDVs and converting them into safe passenger-carrying vehicles. Moreover, Buffalo City Municipality in the Eastern Cape decided to allow the use of LDVs to carry passengers, indeed to function as a feeder service for legal passenger transport operators (Buffalo City Municipality, 2003).

4.6 Integrated Summary and Key Implications of the Findings on the Nature and Extent of the Use of the LDV Passenger Transport Service in Vhembe District

In general, the data gathered in this study on the nature and extent of the LDV passenger transport service in Vhembe District in Limpopo Province in South Africa confirmed in various ways the assumption that this service existed as part of an intricate interplay between the personal characteristics of the individuals using/operating this service and the conditions within the wider environment within which they lived. The findings were also generally consistent with the finding of William and White (2001) that economically constrained rural communities in England developed and maintained a transport-related social economy or informal public transport arrangements as a response to their transport and general economic constraints. Moreover, the findings clarified why LDVs have come to be known in various parts of South Africa as "survival taxis" (Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006).

In particular, this study's surveys and qualitative case study showed that the LDV passenger transport service was a common, established, regularly operating and sustainable enterprise in Vhembe District. It was also closely interwoven with the infrastructural and material constraints prevailing in the District generally and in remote rural areas in particular. Moreover, the data

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gathered showed that the LDV transport service was demand-driven and carefully customised to the particular needs of those served. In short, it was clear that the operation and use of LDVs for informal public transport were a reality and an established part of life in Vhembe District, as suspected by the relevant authorities in the District and pointed out by various agencies regarding various other rural areas in South Africa (Agran *et al.*, 1994; Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006; Laws, Enoch, Ison and Potter, 2009; Greater Tzaneen Municipality, 2011; Vhembe District Municipality, 2012).

For example, and regarding the extent to which the LDV transport service operated in Vhembe District, the participants in the case study indicated that it was difficult to estimate the exact size of the service because of its informal and illegal nature. They were adamant, though, that the operation and thus use of the service were not only widespread but were also growing in Vhembe District. Various participants in the in-depth interviews and focus group discussions echoed to some extent the following phrases: "LDVs are all over VDM"; "[n]umbers cannot easily be determined, as LDVs are not regulated and registered"; "LDV numbers increase"; and "[we as taxis] are losing business because of 'pirate taxis' – LDVs kill us, even operate in our areas". Furthermore, an interviewee in Makhado indicated that the area in which he lived had about 20 LDV transport operators.

The observations made at key sites in Vhembe District confirmed that the use/operation of LDV passenger transport was widespread. LDV transport occurred at all the sites alongside other transport services such as taxis and buses. In contrast with the other transport services at the respective observational sites, the LDV service was always available, passengers were continuously alighting or boarding the LDVs, and there were more LDVs than other public transport vehicles such as conventional taxis and buses at a particular point in time.

Regarding the nature of the LDV transport service, the results of this study showed that the service was not a recent practice. For example, most (55%) of the respondents in the operator survey indicated that they had been operating for between 1 and 10 years and a substantial proportion (24%) that they had been doing so for 6 or more years. The in-depth interviews and focus group discussions pointed out that the latter survey findings were an underestimation. An interviewee in Musina, for example, stated: "I've been operating for almost 27 years." The LDV transport service was also a regular rather than occasional feature in Vhembe District. For

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example, a substantial proportion (27%) of the respective participants in the commuter and operator survey indicated that daily trips occurred, with an even higher proportion (34%) of operators stating that they operated every day of the week (Monday to Friday). A participant in an in-depth interview also stated: "We use LDVs … daily, month-end and long weekends to shop, do business, work, [and] study."

The study showed that the LDV transport service was advantageous not only to customers but also to operators. While transporting passengers by LDV for reward was an essential, affordable and flexible service rendered to communities in especially remote areas, the service provided a livelihood to many residents in the poverty-stricken Vhembe District. For example, many of the participants in the commuter survey indicated that they used LDV transport mainly to access essential services, namely to go to school (44%), to the shops (20%), to places of work (19%) and to do business (11%). The participants in the operator survey confirmed this point; so also did participants in the in-depth interviews and focus group discussions. An interviewee who operated an LDV transport service, for example, stated: "I specialise in carrying school children … others carry farm workers and civil servants."

The participants in the in-depth interviews and focus group discussions also emphasised that the operation of the LDV service afforded many Vhembe District residents essential and sustainable livelihoods. For example, statements such as the following were made by interviewees: "I started to transport children as there was no other transport … [The income is] not much but it keeps me going together with my pension"; "I've been carrying school children for a long time … we cannot allow our family to starve"; "we are trying to make a living"; "LDVs are very cheap and easy to maintain …also carry more passengers than conventional taxis and so make more money".

Many of the users of the LDV transport service in the commuter survey also indicated that the main advantage of the service was its affordability (34%) and user-friendliness, in that it, for example, enabled them to carry their luggage with them (24%). Participants in the in-depth interviews and focus group discussions substantiated and elaborated on these points. The latter noted that LDV transport fees were lower than those of taxis and buses; LDV operators were prepared to pick them up and drop them at their doors; the LDV service was also reliable, quick to respond to requests for transport and did not entail waiting in long queues. For example, interviewees stated: "[LDV operators] always carry us with our luggage, though we pay for our

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luggage, but the price is good; you can be dropped at your door; they arrive on time"; "People use LDVs because they carry everything you want for affordable fees. LDVs provide a better service than taxis"; "We use LDVs, as they are available, quick; no long queues, [operators] accept luggage, drop at doors".

It should also be noted that while many participants in the operator survey indicated that the current unregulated nature of the LDV transport service was to their advantage in that it contributed towards the profitability of the enterprise and customisation, the findings of the qualitative study indicated that some operators were regulating themselves. Some LDV service operators also had (informal) agreements with formal and informal competitors to prevent friction and facilitate safety and access to (formal) public parking facilities. For example, interviewees stated the following: "After an increase in LDVs we formed an organisation and agreed to load passengers on a first come first served basis to avoid friction ... We regulate ourselves as to the number of passengers we carry at a time"; "Certain taxi operators and LDV operators have come to an agreement; taxis allow LDVs to use their rank facilities as long as they do not poach customers. Sometimes we take our customers to a certain point where they then board an LDV".

The surveys and qualitative case study also underlined that the use and operation of the LDV transport service in Vhembe District were not without challenges, mainly related to safety and comfort. For example, substantial proportions of LDV commuters indicated safety concerns and discomfort as challenges they faced when travelling by LDV. Forty-eight percent of the participants in the commuter survey, namely, indicated the tendency of LDV operators to overload the vehicles as the main challenge or the difficulty they faced when using the LDV transport service; 22% indicated the hard seats as their main challenge and 14% the fact that they were sometimes exposed to extreme weather. These findings were confirmed by the observations made at key sites in Vhembe District, the in-depth interviews and focus group discussions. An interviewee, for example, stated: "[O]perators tend to overload us and during summer one needs a raincoat, as most LDVs are not covered; seats are also not comfortable, are of wood."

The operators of the LDV transport service also faced challenges, largely related to parking facilities and harassment from their competitors in the formal public transport and law

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enforcement sectors. For example, and regarding the main challenges faced, 40% of the participants in the operator survey indicated that they were threatened by legal transport operators and 30% that law enforcers harassed them. Interviewees in the in-depth interviews and focus group discussions stated, for example, the following: "Operation is complicated by tension between us, and certain taxi operators [are] scared of losing customers"; "LDVs are illegal but at our doorsteps; try to police them but situation out of hand; operators don't seem to mind when charged and fined on the spot and when vehicles are impounded … [LDVs] have illegal parking places".

The findings of the surveys as well as the qualitative case study underlined in various ways the mentioned interrelationship between the use and operation of the LDV passenger transport service and the infrastructural and material constraints prevailing in the Vhembe District generally and in remote rural areas in particular. Regarding infrastructural issues, emphasis was placed on the poor roads and inadequate public transport services in Vhembe District and especially in remote rural areas. In line with official socio-economic statistics (Statistics South Africa, 2012a, b; Vhembe District Municipality, 2012a), the economically constrained conditions in Vhembe District were also highlighted as contributors to the development and sustainment of the LDV transport service in this district. For example, the participants in the in-depth interviews and focus group discussions made statements such as the following: "In my village there is no transport; we use LDVs or donkey carts"; "In our area the roads are so bad only LDVs can drive there and survive. LDVs do justice to communities' transport needs"; "Where I am staying there is no other transport to carry me and my stock in the morning and in the afternoon"; "We [taxis] cannot go along the bad roads … especially in remote rural areas"; "LDVs … serve locals where no taxis or buses are"; "The reason we started this business is there was no other transport in the area … We are also creating jobs and putting something on our tables … there are no jobs for us".

The above findings, in combination with the fact that the operation of an LDV passenger transport service is as yet illegal in South Africa in terms of the National Road Traffic Act 93 of 1996, point to the importance of strengthening the LDV passenger transport service in Vhembe District through the development and institution of people-oriented and context-sensitive policies and actions. Such strengthening efforts would also be consistent with the National Development Plan 2030 (Republic of South Africa, 2013) of the South African government, and the Millennium

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Development Goals (United Nations, 2000) to which the South African government has committed itself. Recommendations in respect of ways to strengthen LDV passenger transport in Vhembe District are therefore made in Chapter 7 of this study, based on all the data gathered. Finally, having explored the nature and extent of LDV passenger transport in Vhembe District in this chapter, the next chapter addresses transport options, and satisfaction with and awareness of legislation on LDV passenger transport.

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CHAPTER 5 TRANSPORT OPTIONS AND CHOICES, CUSTOMER SATISFACTION AND AWARENESS OF LEGISLATION ON LIGHT DELIVERY VEHICLE PASSENGER TRANSPORT

5.1 Introduction

The research findings on transport options in Vhembe District and level of satisfaction with the light delivery vehicle service constitute the focus of this chapter. Also included in this chapter are the findings relating to awareness of legislation on light delivery vehicles (LDVs) as passenger transport. The chapter ends with a summary of the findings.

5.2 Transport Options and Choices

Rural communities face serious challenges in terms of access to services, as the transport options available to them are limited (Rabirou, Anyanwele, Idowu and Williams, 2012). For that reason most rural communities resort to unconventional transport systems, which have been found to have a negative impact on development trajectories in most African countries by among others Starkey (2007). It was against this backdrop that transport options and choices in Vhembe District were investigated. The results are presented below.

Table 5.1 shows that the mode of passenger transport greatly varied in the municipalities in Vhembe District ($P < 0.001$). According to the users of LDV transport services who participated in this study's commuter survey, LDVs were the most commonly used means of passenger transport, although to a much lesser extent in Thulamela. The latter municipality had a wider choice of transport options. For example, 70% of the commuters indicated that taxis, LDVs and buses/mini-buses were all available and used. However, although LDVs are adapted to convey people and goods at a fee, this mode of transport has not been legalised to date.

What could be inferred from the above results was that LDVs were by far the dominant form of transport in at least three of the four local municipalities in Vhembe District due to a number of possible reasons such as poor transport-related infrastructure. Poor transport-related infrastructure made it difficult for conventional transport modes to service the areas affected, as acknowledged in the Rural Transport Strategy for South Africa (Republic of South Africa, 2007b). This strategy also noted that because rural areas in South Africa had serious backlogs

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in terms of transport-related infrastructure, they had to be serviced by unconventional means of transport such as LDVs. This study's finding that LDV transport was the dominant mode of transport in Vhembe District was therefore consistent with what was probably the case in other rural areas in the country, given that the three local municipalities are predominantly rural (Vhembe District Municipality, 2012).

Another reason for the finding that LDV transport was very common in particularly Makhado, Musina and Mutale could be the fact that some rural areas, such as Kutama and Alldays, were incorporated with Makhado and Musina respectively, without any proper planning and checking what type of infrastructures existed (Roefs, 2001). These two municipalities inherited poorly maintained road infrastructure and large portions of rural areas from the former TBVC states where modes of transport were mainly LDVs (Vhembe District Municipality, 2009; Roefs, 2001). However, in Thulamela with its fairly well established road infrastructure, mini-bus taxis, buses and LDVs were regarded by the LDV commuters who participated in this study as integral to passenger transportation services. What was clear, therefore, was that due to the specific spatial nature of communities, the availability of efficient modes of (non-)motorised transport to move goods and people from one geographical location to another could remain a challenge, as also noted by the International Transport Forum (2008) and the Development Support Monitor (2012).

The challenges in terms of infrastructure in Vhembe District could also be linked to the historical background of the area. As a homeland (a semi-autonomous state occupied by a particular people) it inherited a backlog in the provision of basic services such as proper roads and sanitation (Statistics South Africa, 2012a, b). Therefore passengers and especially learners of remote rural areas rely mostly on LDV transport to get to school daily. In other cases the LDVs were used by villagers in Vhembe District as feeder transport to routes plied by conventional transport operators, as was also noted by Buffalo City Municipality (2003), Harris (2006) and Kekana (2009).

A closer scrutiny of the results and in particular the study's qualitative data showed that in some parts of Vhembe District, such as Dzanani in Makhado Local Municipality and Alldays in Musina Local Municipality, LDV transport predominated. The common operation of LDVs in these areas could be due to the fact that poor transport networks and poverty necessitated the use of LDV transport even though it was against the law. Transport legislation in the country prohibits

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rendering this service, as LDVs are categorised as goods-carrying vehicles only. The National Road Traffic Act 93 of 1996 for example states: "No person shall on a public road carry any person for reward in a goods compartment of a motor vehicle." The National Land Transport Transitional Act 22 of 2000 also excludes LDVs from other passenger vehicles. As unregulated transport operators often become the law unto themselves, this scenario could fuel violence in the transport industry.

What is also critical in terms of transport planning is to gauge how satisfied are the commuters with the service being provided. A high level of satisfaction among customers would necessarily lead to their loyalty towards the relevant service, as was also noted by Kabirou *et al.* (2012). In this study's commuter survey, and as shown in Table 5.1, the level of satisfaction with the service that mini-bus/bus, taxi and LDV passenger transport rendered respectively was the highest in Thulamela and Musina Local Municipalities. This could be because the commuters had several options in these areas – all modes of road transport except rail were available. Where you have various players providing a particular service there is a high chance that the service providers would try by all means to meet the satisfaction of the clients.
Across all the municipalities, commuters' level of satisfaction with the LDV transport service rated from 64% in Makhado to 80% in Thulamela and Musina (Table 5.1). The levels of satisfaction with the passenger transport service in Musina, Mutale and Thulamela Local Municipalities were about equally high, but lowest in Makhado. This could be because LDVs in Makhado were mostly used to transport hardware materials and some learners in remote areas, as there were fewer options in the form of rail transport. The LDV owners were thus facing less competition and were hence unwilling to improve the quality of the service, as is also noted by Roefs (2001) and Harris (2006).

Significant inter-municipality differences were also observed for the levels of satisfaction with the bus ($P < 0.01$), taxi ($P < 0.01$) and passenger transport services other than buses, taxis and LDVs ($P < 0.001$). The levels of satisfaction with services of bus and taxi operators in Thulamela and Musina Municipalities were the same but higher than in Mutale and Makhado Municipalities. It was observed that the worst passenger transport service was rendered in Mutale Municipality (Table 5.1). This situation was not surprising, because Mutale Municipality was classified as the poorest and most remote rural area in Vhembe District (Vhembe District Municipality, 2009; Roefs, 2001).

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Table 5.1: Commuter perceptions of transport options and choices and level of satisfaction with specific types of services in Vhembe District

Descriptors or variables	Proportion of respondents (%) in				χ^2	Statistical significance
	Makhado	Musina	Mutale	Thulamela		
Sample size (n)	25	25	25	25		
Mode of transport mostly available and used in the area					35.57	***
Taxis	0	4	0	0		
LDVs/Bakkies	80	72	92	28		
Buses/Mini-Buses	6	8	0	2		
All of the above	14	16	8	70		
Level of satisfaction with LDV transport services	64	80	76	80	3.89	ns
Level of satisfaction with Bus/Mini-Bus transport services	36	56	20	56	10.96	**
Level of satisfaction with taxi transport services	32	60	20	60	13.34	**
Level of satisfaction with other transport services	24	24	8	56	17.18	***

n = number of respondents; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$; ns = not statistically significant; χ^2 = Chi-square.

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From the point of view of the LDV operators who participated in this study's operator survey, various modes of passenger transport were mostly available and used in each municipality. As shown in Table 5.2, 77% of operators in Makhado and 74% in Mutale indicated that LDVs were the most commonly available and used mode of passenger transport service in the respective areas. Generally consistent with the related views of the commuters, in Musina (52%) and especially in Thulamela (29%) municipalities, significantly lower proportions of operators indicated that LDVs were the most commonly available and used mode of passenger transport service. The reasons behind these observations could be linked to the poor infrastructure in these areas, which tended to deter formal transport operators to ply and service these areas. It could also be that there were fewer operators providing the LDV service in Musina and Thulamela municipalities, as these areas had relatively better transport infrastructure and thus more conventional transport operators than LDVs. Another important observation was that the level of satisfaction of the participating operators with conventional transport services (mini-buses/buses and taxis) was generally not very high across the study area, as shown in Table 5.2. This lack of satisfaction with conventional transport services could have justified the need for introducing LDVs as an alternative transport service.

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Table 5.2: Operator perceptions of transport options and choices as well as level of satisfaction with specific types of services in Vhembe District

Descriptors or variables	Proportion of respondents (%) in				χ^2	Statistical significance
	Makhado	Musina	Mutale	Thulamela		
Sample size (n)	25	25	25	25		
Mode of transport mostly available and used in the area					22.56	**
Taxis	0	24	17	46		
LDVs/Bakkies	77	52	74	29		
Buses/Mini-Buses	4	16	9	0		
All of the above	19	8	0	25		
Level of satisfaction with LDV transport services	65	60	74	79	2.53	ns
Level of satisfaction with bus/mini-bus transport services	46	68	61	58	2.60	ns
Level of satisfaction with taxi transport services	62	44	44	63	2.41	ns
Level of satisfaction with other transport services	62	40	70	63	4.92	ns

n = number of respondents; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$; ns = not statistically significant; χ^2 = Chi-square.

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Qualitative data gathered in this study indicated that LDVs were a critical mode of transport in Vhembe District for various reasons. The key statements made in in-depth interviews and focus group discussions in this respect are placed below. From these statements it was possible to distil the reasons why LDVs were fast evolving as an alternative mode of transport (as was also established by Chakwizira *et al.* (2010) with regard to Buffalo City Municipality). The relevant statements underline that LDV transport was widely available and used in all municipalities in Vhembe District, particularly in the remote areas. The following statement reflected the comments made in this respect by several participants in the in-depth interviews and focus group discussions: "As LDV operators here at Musina, we are providing a service that taxis cannot provide. We transport people to ZZ2 farms, to Musina border and to any place they want to go without any problems. Most of the customers appreciate what we are doing as LDV operators."

Commuters who participated in the in-depth interviews and focus group discussions reiterated the above remark that users of LDVs appreciated the good work done by this service, apart from noting that LDVs provide an essential service. One respondent, for example, said: "I think LDVs are providing us with good services. I stay in a rural area where these good taxis like Quantums never come or operate. When you ask them they say there is no road. If it is month-end and you get a chance to ride on a Quantum, one is not allowed to carry more than 30 kg of luggage and we are often squeezed together and sometimes overloaded. I've been travelling by LDV for a long time."

The fact, as indicated in the above findings, that community members in Vhembe District experienced serious transport challenges existed despite commitments by the South African government in terms of the Constitution of the Republic of South Africa, 1996 to ensure the delivery of adequate (rural) transport services. Specifically section 85(2) (b) of the Constitution mandates the Department of Transport to develop and implement appropriate transport policies. The White Paper on National Transport Policy (Department of Transport, 1996) was consequently drafted to facilitate safe, reliable, effective, efficient and integrated transport operations and infrastructure to best meet the needs of freight and passenger customers, and support the economic and social development strategies of the government.

In short, the White Paper emphasises the importance of providing customer-based public transport for all types of passengers. It is supported by the National Land Transport Strategic

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Framework 2006–2011 (NLTSF) (Republic of South Africa, 2006), which allows for the establishment of *inter alia* adequate public transport facilities on land. The Rural Transport Strategy for South Africa (RTSSA) (Republic of South Africa, 2007b) also recognises – in line with scholars such as Bryson and Howe (1992) – the importance of facilitating the mobility of rural communities. The RTSSA's focus is on the establishment of the following five transport-related pillars: rural transport infrastructure, rural transport services, non-motorised transportation, transport safety and regulation, and capacity building for monitoring purposes (Republic of South Africa, 2007b). It could be due to the mentioned transport-related challenges in rural areas that in some parts of the world like India intermediate means of transport such as LDVs, tractors and animal-drawn carts are used to strengthen the mobility of rural communities (International Road Federation, 2010).

However, a closer look into the reasons why the Vhembe communities used LDVs as an alternative source of transport indicated that there were other considerations at stake. For example, in Mutale Local Municipality, commuters did not have a wide selection of transport modes to choose from given the scarcity of conventional modes. As a result they used what was available and affordable, namely LDV transport. In Thulamela and other areas fast developing into towns with better infrastructure such as the border post at Musina, more transport modes were available. In these areas commuters' reliance on LDVs was probably more due to the flexibility of the operators and transport needs of the specific commuters. Some would have gone there to buy building materials and these could not be transported by the commuter buses. Further still, school children would probably rather go for LDVs as they have flexible times, can take them to their doorsteps and prior arrangements can be made so that payment can be made at the end of the week or month. These options were not available from any conventional transport operator.

The above discussion should also be viewed in the light of the National Land Transport Transition Act 20 of 2000 (NLTTA) (Republic of South Africa, 2000) in terms of the particular manner in which public transport services should be provided. Section 31(1) of the NLTTA, for example, specifies that only certain types of vehicles may be used when providing a public transport service, and operating licences may be issued to agents using vehicles designed or lawfully adapted by registered manufacturers to ensure the safety of passengers. However, although the NLTTA excludes the use of LDVs in the delivery of public transport services, section 44 stipulates that LDVs can be used to convey pupils, students, teachers and lecturers

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to and from educational institutions. The latter section – together with section 15(d) of the National Land Transport Transition Amendment Act 26 of 2006 (NLTTAA) (Republic of South Africa, 2007) – provides for the use of LDVs when no other appropriate or acceptable public transport is available and if the conditions set by a relevant MEC have been met. Pupils are also regarded as a special category of passengers, indeed are classified alongside people with disabilities as defined in section 1(1) of the NLTTA. In this respect it is also important to note that the National Scholar Transport Policy (Republic of South Africa, 2009a) accepts that pupils can be transported in various ways, for example by (school) bus, midi-bus or mini-bus, bicycle, animal-drawn vehicle and LDV (Republic of South Africa, 2009). However, the transportation of pupils by LDV has to comply with the mentioned stipulations in the NLTTA and NLTTAA. Against the above backdrop it could thereby be argued that LDVs are indeed recognised by the South African government as an alternative form of passenger transport, though they need to be regulated.

Underlying the previous discussions and national policies is the need to accept that LDVs are indeed an undeniable and essential stakeholder in transport service provision, especially in rural areas. The National Road Traffic Act 93 of 1996 (NRTA) (Republic of South Africa, 1996b) is another example of formal recognition of the need to consider the use of LDVs to transport passengers. The Act includes provisions for using LDVs to transport passengers, specifically in areas where there are few public transport options. For example, Regulation 247 of the NRTA stipulates the requirements in case one wants to use LDVs to transport people: (1) The portion of the vehicle in which people are to be conveyed should be enclosed, "using material of sufficient strength to prevent" passengers from "falling from … [the] vehicle when it is in motion"; (2) the top enclosure should be at least 350 millimeters above the seats or 900 millimeters above the surface on which passengers are standing; and (3) if goods are conveyed together with passengers, the latter should be placed in a separate goods compartment. This on its own suggests that ensuring the safety of the passengers takes priority over penalising LDV operators when transporting people. For that reason the modification of LDVs to meet the stated requirements is important.

The Occupational Health and Safety Act 85 of 1993 (Republic of South Africa, 1993) also acknowledges, as do this study's findings, that LDVs are an undeniable source of transport service in rural areas. It notes that vehicles (such as trucks or LDVs) are used to transport

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employees. The Act, however, just like the conclusions made in this thesis, concurs that LDVs should have an adequate number of seats for the number of employees carried, and the seats must be firmly secured. Also, and just like the conclusions drawn in this thesis, the Act indicates that the requirements regarding seating are important not only for the comfort of the passengers but also for their safety. However, matters are complicated by Regulation 250 of the NRTA, which states that the conveyance of passengers in the back of LDVs becomes an offence if it is done for commercial purposes, namely when passengers are transported for reward. While passengers are not protected by law when the LDVs in which they are transported at a fee are involved in a road accident, this should not prevent research to find innovative ways of insuring the passengers being transported are safe.

It should be acknowledged that the comfort and safety of LDV passengers have to be addressed. This is also pointed out by the National Land Transport Act (NLTA) 5 of 2009 (Republic of South Africa, 2009b). The Act defines an "adapted light delivery vehicle" in section 71 as a vehicle designed or modified by a registered manufacturer to carry persons in accordance with the relevant stipulations of the NRTA. Moreover, the NLTA recognises that an LDV could be used to transport passengers as long as the conditions specified in the NRTA, NLTTA and NLTTAA have been complied with. Section 72 of the National Land Transport Act also specifies that LDVs used to transport people attending educational institutions have to meet specific safety standards, before an operating licence may be issued. The main issue is the modification procedures as well as the regulatory framework thereof. However, few LDV owners would probably commit themselves to modifying their vehicles unless they were assured that their vehicles could be used in a formalised and sustainable business. Moreover, there is yet to be an established body to oversee the modification process. Perhaps the starting point is the acknowledgement of LDVs as a legal transportation service rather than the current scenario of arresting LDV operators for a criminal activity as specified in section 56 of the Criminal Procedure Act 51 of 1977 (Republic of South Africa, 1977).

There are encouraging indications for LDV operators in this regard, as the Department of Transport has already issued General Notice 68 of 2011, requesting written comments on the Second Draft of the Land Transport Regulations (Republic of South Africa, 2011a, b). In terms of section 13(1) of these regulations, adapted LDVs can be used to transport passengers, indeed used in a public transport service, on condition that the following specifications have

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been met: (1) the vehicles have been adapted to ensure passenger safety; (2) the vehicles have been homologated in terms of the specifications of the NRTA; (3) the vehicles do not carry more than nine passengers (including the driver) at a time; (4) the vehicles operate (i) where the roads are too bad (in the opinion of the relevant regulatory authority) to be used by other types of vehicles, or (ii) where there is no other appropriate public transport, and (iii) where failure to grant a particular operating licence will result in a shortage of public transport in the area concerned; and (5) the granting of an operating licence does not contravene any other provincial legislation. The above recommendations should serve as the platform for further engagement with respect to the use of LDVs. What is abundantly clear is that LDVs are here to stay and the way forward is to discuss how they can be fully integrated with the formal transport system.

The other theme that emerged from the research was that transport-related infrastructure was inadequate in the areas where LDVs operated. This was the case despite the general observation in this study that the government was building state-of-the-art transport facilities in Vhembe District. What could be concluded, therefore, was that current infrastructure improvements in Vhembe District were in favour of conventional transport operators. It should not be surprising, given that the law was not in favour of the use of LDVs as an alternative form of public transport. The study's findings also pointed out that some transport facilities were built without wide consultation with key stakeholders such as LDV operators.

For example, an LDV operator had this to say with respect to infrastructure provision: "The District has built the state-of-the-art bus and taxi rank, however people are not using it because it has been built far from the main roads and it is not safe." The latter comment augers well with this study's finding that the commuters used LDV transport because it was convenient. LDV operators picked passengers up and dropped them at their homes or anywhere else where convenient to their customers. The operators and commuters included in this study's qualitative investigations were in agreement that the bus and taxi rank in Mutale was far from the main road and intersection and in an isolated place where waiting passengers would not necessarily be safe.

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While the routes of legal transport operations were determined by transport permits or operating licences, LDVs and other informal transport operations were demand driven. It could be that this built a close relationship between operators and passengers, especially in the case of those who paid on a monthly basis. As one LDV transport operator put it: "Because most of the taxis cannot carry school children from their homes to school, we, as Hwala-Vhana members, we pick up each and every child (school children) from his/her home and drop him/her at the schoolyard every day. I think it is good to use our services because we don't pick up children at bus stops, but we pick them up at their homes every day and drop them at their schoolyards."

However, while the LDV passenger transport service had brought relief to some sections of the communities, the findings of this study pointed out that there were concerns that needed to be addressed. One concern that was that the LDV transport service could spark violence between the conventional transport operators who paid taxes and other fees and the LDV operators who start to operate without paying anything. During the research, one legal transport operators made the following statement: "We are losing customers, because of these illegal 'bakkies'. Even well-known churches these days are using these small trucks to carry school children. It is a big problem. The government needs to intervene. Our members have a scholar transport permit, but they are not operating because there are no customers … The government is doing nothing. We are losing business every day. These LDV 'bakkies' are not checked, they don't have papers and they are killing our business."

In the final analysis, there should be a regulatory framework for public transport to accommodate several aspects. The first aspect is a framework controlling entry into the market by new operators, and allocating routes to operators. The second aspect involves the regulation of routes through issuance of operating permits by a responsible authority. The current situation in Vhembe District, as pointed out in this study, shows a generally light-handed regulatory framework. The LDV operators in Vhembe enjoyed a large degree of autonomy in that they had a wide ambit for self-regulation, and the application and enforcement of laws were seldom strict. This implies that if informal passenger transport such as the LDV transport service was left un-attended, it might lead to conflict among the legal and illegal operators.

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Table 5.3: Themes that emerged from the statements of the participants in the focus group discussions and in-depth interviews on transport options and choices as well as the level of satisfaction with available transport in Vhembe District

	Examples of statements made by the participants in the focus group discussions and in-depth interviews			
Themes	**Thulamela Municipality**	**Makhado Municipality**	**Mutale Municipality**	**Musina Municipality**
Availability of transport Transport options and choices Area of operations *Facilities*	**Various transport stakeholders:** There are a lot of transport modes available and used, formal as well as informal modes, and this makes our business suffer. I think passengers have a lot to choose from; if they want to use buses, they can do so; if they want to use taxis, they can do so. Even informal transport such as LDVs and meter taxis are available. The quality and standard of our vehicles are so good, and the accident rate is very low. Overall I am satisfied with passenger transport services in this area. There is a lot of improvement in terms of infrastructure and also a client chooses the type of transport he/she wants to use. *Passenger transport is growing and the municipality is also building new facilities for us – bus and taxi ranks at Thohoyandou and Sibasa. The municipality has also built drop-off zones with lights around Thohoyandou; so one can say everything is on the right track.*	**Operators of LDV transport:** There is no formal operator who is serving the area here or providing services for the farm workers. The transport situation is not so good. In the village where I live, there are no taxis; only buses, one or two sometimes, and mostly during holidays or festive seasons. Village people from our village usually use LDVs as a means of transport. The former councillor also suggested that we as LDV operators should not stop from providing services to the communities. The roads in most of the areas are not maintained and taxis are very scared to operate there. Therefore we took it upon ourselves to provide a service to our community. LDVs are the most popular mode of transport and carry people, school children and goods. However, in townships, school children are often carried by taxis or buses. So far, the mostly used modes of transport in the villages are LDVs, because of the nature of the service we render to the communities. **Users of LDV transport:** *I am not at all satisfied with the transport situation. The road is so bad, and it scares transport operators. Therefore only LDVs and old buses operate in our area. I'm not satisfied. We cannot use taxis or buses.*	**Operators of LDV transport:** The transport system here seems to be fading day by day. The LDV operators transport a lot of passengers and tons of goods to rural areas. **Operators of taxis:** If the government could improve in maintaining the roads, then there would be more transport operators in the area. Public facilities are often erected far from people like the Masisi taxi and bus rank. It is far from the main roads. The District has built a state-of-the-art bus and taxi rank; however, people are not using it because it has been built far from the main roads and it is not safe. It is not used.	**Users of LDV passenger service:** I think it is time that the president of this country recognises the importance of LDVs as they are rendering an important service to us. We are going to organise commuters to boycott all Quantum and start using LDVs. We want LDVs now, away with these useless Quantums. So, is the government going to provide us with other alternative transport? There is no transport in our area, and we are poor; we cannot afford to buy our own cars. The government is neglecting our rural roads, scaring potential transport operators, so we are going to use LDVs even if it is illegal. We often use LDVs because they are easily available in our area. Again they are quick, and no need to be in a long queue like at the taxi ranks. The transport system is very bad. We resort to LDVs because they are available. Taxis and buses are only available here in town. There is only one taxi rank here in town and one in Beitbridge; so the facilities are few here.

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5.3 Awareness of South African Legislation on LDV Passenger Transport

While the above discussed results are underscored by some current legal instruments, not much is known in terms of the level of awareness of relevant legislation on the part of LDV passengers and operators. For this reason the level of awareness of relevant legislation was gauged among the LDV commuters, operators and administrators who participated in this study. As shown in Table 5.4, level of awareness among commuters regarding laws or regulations governing the use of LDV for a fee was low. Furthermore, four of the group of five respondents who indicated that they knew such legislation mentioned that municipal by-laws existed in this respect and the remaining respondent mentioned the National Road Traffic Act 93 of 1996 (NRTA). In contrast, most (56%) of the respondents in the operator survey indicated that they were aware of legislation on using LDVs to transport passengers for reward. This is a serious issue given that laws regarding this have been in existence for a long time.

In contrast, all the respondents (municipal councillors, law enforcers and other relevant government administrators) in this study's administrator survey stated that they were aware of legislation on the issue. They were also able to identify legislation (in) directly related to the LDV passenger transport service. For example, 23% of the overall group of respondents identified the National Road Traffic Act 93 of 1996, 28% the National Land Transport Transition Act 22 of 2000, 20% the Criminal Procedure Act 51 of 1977, and 29% indicated that certain by-laws existed.

While various stakeholders were aware that existing legislation prohibited the use of LDVs to transport passengers for reward, especially law enforcers and other authorities such as municipal councillors, they were hazy on the specific requirements. For example, a representative of the SAPS interviewed in this study's qualitative investigations stated: "The National Road Traffic Act (Regulation 250) prohibits using LDVs to transport passengers at a fee … those who do are committing a road traffic offence … [but] because there are few transport facilities, people continue committing this offence."

Some of the commuters and operators interviewed in this study's qualitative investigations also stated that they did not believe that the service was illegal, even though law enforcement officers ever so often stopped the LDV drivers and threatened to fine them and/or impound their

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vehicles unless they paid a bribe. For example, one operator of LDV transport commented as follows: "I really don't know whether there is a law against LDVs, but I just heard people saying that it is not allowed to carry passengers on LDVs ... I don't think there are really regulations or laws against the use of LDVs to transport passengers; officers just use scare tactics to get money from us ... We are not told that it is illegal to use LDVs to transport passengers at a fee; we are just stopped and given a warning about carrying passengers."

There were also operators of LDV transport who knew that the service was illegal, but stated that it did not bother them, as the law was not always enforced because some law enforcers also used their service. For example, one operator of LDV passenger transport stated: "I don't know a particular law against the use of LDVs to transport people, but people around here say it is not allowed to carry passengers on a 'bakkie'; however, there is no other form of transport in this area and the police also use some of us, so they can't charge us."

Perhaps the way forward with respect to the nature and extent of LDV transport, and largely consistent with the literature that influenced the conception of the present study, is further engagement with regard to the following key issues:

a) How best should the government efforts towards facilitating appropriate public transport services be re-directed;
b) What should be included in legislative measures on the use of LDVs to transport passengers for reward; and
c) How best should public awareness on the relevant legislation governing transport service provision be raised, bearing in mind existing infrastructure and passenger travel needs?

While various initiatives to ensure awareness of transport-related legislation have been launched, such as the Arrive Alive Campaign (Arrive Alive, 2012) and the Global Road Safety Partnership South Africa (2013) with respect to rural transport issues, there is still a lot to be done. This is because these initiatives have as yet not attended to road safety issues relating to the use of LDVs to transport passengers.

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Table 5.4: Awareness of South African legislation on the use of LDVs to transport passengers in various districts (local municipalities) in Vhembe District (commuter and operator survey responses)

Descriptors or variables	Proportion of respondents (%) in				χ^2	Statistical significance
	Makhado	Musina	Mutale	Thulamela		
Sample size (n)						
Commuters	25	25	25	25		
Operators	26	25	23	24		
Are you aware of any laws governing LDV transport service for a fee?(Commuter)					2.32	ns
Yes	8	0	0	12		
Are you aware of any laws governing LDV transport service for a fee?(Operator)					0.99	ns
Yes	62	56	57	50		
If yes, what are these laws/regulations?(Commuter)					2.32	ns
National Road Traffic Act 93/96	4	0	0	0		
By-laws	4	0	0	12		
Can't say	92	100	100	88		
If yes, what are these laws/regulations? (Operator)					0.99	ns
National Road Traffic Act 93/96	19	20	26	13		
National Land Transport Act 2000	15	8	13	17		
Criminal Procedure Act	8	28	4	8		
By-Laws	19	12	17	13		
Can't say	39	32	39	50		

n = number of respondents; * = $P < 0.05$; ** = $P < 0.01$; *** = $P < 0.001$; ns = not statistically significant; χ^2 = Chi-square.

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5.4 Integrated Summary and Key Implications of the Findings on Transport Options and Choices, Customer Satisfaction and Awareness of Legislation on LDV Passenger Transport in Vhembe District

In relation to the question of what the transport options and choices in Vhembe District were, this study's surveys and qualitative investigations revealed that LDVs were a common mode of passenger transport in all the local municipalities in Vhembe District. The situation differed across the various municipalities, though. LDVs were less common in especially Thulamela and to some extent in Musina. The latter two areas had a wider choice of passenger transport than the other municipalities. For example, 70% of the users of LDV transport in the commuter survey indicated that taxi, LDV and bus/mini-bus transport were all available and used in Thulamela.

In line with what has been found to be the case in various other parts in South Africa and abroad (Williams and White, 2001; Buffalo City Municipality, 2003; Starkey, 2007; Republic of South Africa, 2007b; International Transport Forum, 2008; Development Support Monitor, 2012), this study's results pointed to the following environment and individual-oriented reasons for the widespread availability and use of the LDV passenger transport service in Vhembe District. Regarding environmental issues, some of the apparent reasons for LDV transport were the generally poor transport infrastructure in especially remote rural areas, the socio-political roots of the huge backlog in the provision of essential basic services such as public transport in Vhembe District, (Roefs, 2001; Vhembe District Municipality, 2009) and widespread poverty (Statistics South Africa, 2012a, b). Another reason for the finding that LDV transport was very common was the fact that rural areas, such as Kutama and Alldays, were incorporated with Makhado and Musina Local Municipalities respectively, without any proper planning and checking what type of infrastructures existed (Roefs, 2001). The strong presence of LDVs in Vhembe District was also an indication of a lapse in law enforcement, given that the LDV passenger transport service was as yet illegal (Republic of South Africa, 1996, 2000).

Individual-oriented reasons for the prevalence of the LDV passenger transport service in Vhembe District especially surfaced in respect of the question of whether or not LDV transport customers were satisfied with it. In conjunction with one another the study's surveys and qualitative investigations underlined that the LDV passenger transport service was demand driven, indeed customers expressed satisfaction with the service in general. They concurred with the following points made by an LDV transport operator: "Because most of the taxis cannot carry school children from their homes to school, we, as Hwala-Vhana members, we pick up each and every child (school children) from his/her home and drop him/her at the schoolyard

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every day. I think it is good to use our services because we don't pick up children at bus stops, but we pick them up at their homes every day and drop them at their schoolyards."

Other important observations were: The operators' level of satisfaction with conventional transport services (mini-buses/buses and taxis) in the relevant municipalities was generally not high across the study area (Table 5.2) This lack of satisfaction with conventional transport services justifies the need for introducing LDVs as an alternative transport service. However, it should also be borne in mind that the commuters' level of satisfaction with the service of mini-buses/buses, taxis and LDV passenger transport was highest in Thulamela and Musina Local Municipalities (Table 5.1). This could be because the commuters had several options in these areas – all modes of road transport except rail were available. However, where various players provide a service, violence could erupt between the various service providers, given that they would probably try by all means to satisfy clients' needs, as noted by Kabirou *et al.* (2012). It would therefore be essential to integrate the LDV passenger transport service with current public transport regulatory frameworks.

This study's data on whether LDV users and operators in Vhembe District were aware that South African legislation prohibited the use of LDVs to transport passengers for reward provided another answer to why this service operated, apart from re-underlining the mentioned infrastructure challenges in Vhembe District. While various stakeholders were aware that existing legislation prohibited the use of LDVs to transport passengers for reward, they were hazy on the specific requirements with the exception of government officials such as municipal councillors and the SAPS. This calls for ensuring that all involved in LDV passenger transport are well acquainted with the requirements for the service.

The finding that community members in Vhembe District experienced serious transport challenges existed despite commitments by the South African government to ensure the delivery of adequate (rural) transport services. This commitment is reflected in the Constitution of the Republic of South Africa of 1996 and in transport-related documents such as the Rural Transport Strategy for South Africa (Republic of South Africa, 2007b), the White Paper on National Transport Policy (Department of Transport, 1996) and the National Land Transport Strategic Framework 2006–2011 (Republic of South Africa, 2006). The importance of ensuring adequate transport infrastructure in rural areas is also stressed by the Millennium Development Goals to which the South African government has committed itself, and by scholars such as Bryson and Howe (1992).

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In the light of the above findings, it is critical that current legislative regulatory frameworks provide for the LDV passenger transport service. A positive factor in this respect is that various policy documents recognise that LDV passenger transport exists in especially rural areas, complements conventional public transport services and is essential for meeting socio-development needs. Examples of such documents are the National Land Transport Transition Act 20 of 2000 (Republic of South Africa, 2000), the National Land Transport Transition Amendment Act 26 of 2006 (Republic of South Africa, 2006b) and the National Scholar Transport Policy (Republic of South Africa, 2009a).

Finally, the findings suggested that the way forward with respect to the nature and extent of LDV passenger transport, and largely consistent with the literature that influenced the conception of the present study, should be further engagement with regard to the following key issues:

a) How best should government efforts towards facilitating appropriate public transport services be re-directed;
b) What should be included in legislative measures on the use of LDVs to transport passengers for reward; and
c) How best should public awareness on the relevant legislation governing transport service provision be raised, bearing in mind existing infrastructure and passenger travel needs?

In the next chapter, the thesis turns to the study's findings on the modification of LDV passenger transport and its integration with the formal public transport system in Vhembe District. It then proposes a framework model for integrating LDVs with the public passenger transport system in Vhembe District, based on the results of the study.

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CHAPTER 6 NECESSARY MODIFICATIONS AND INTEGRATION OF LIGHT DELIVERY VEHICLES INTO THE FORMAL PUBLIC TRANSPORT SYSTEM IN VHEMBE DISTRICT

6.1 Introduction

As part of the overall study, the views of commuters, operators and administrators were determined regarding how light delivery vehicles (LDVs) could be improved and integrated into the public transport system in Vhembe District of Limpopo Province of South Africa. In order to address these issues it was crucial to find answers to the question: What must be improved with respect to the way LDV passenger transport services are rendered? It was also important to ascertain what are the necessary structural modifications that must be made to the vehicles for them to be legally permitted for use to provide transport service? In the next sections, the results are presented and discussed.

6.2 Formal Recognition of LDV Passenger Transport Service

This study's qualitative and quantitative investigations showed that key stakeholders such as commuters, operators and administrative officials in all four Local Municipalities in Vhembe District were generally in agreement that the LDV transport service should be legalised and officially integrated with the formal public transport system in Vhembe District. For example, the following comments were made by commuters: "The government should give these LDV operators permits as they are the only people who provide transport in our area. They can still work together with operators of other transport services and supply them with clients … It is in the hands of the government to consider formalising LDV transport, and it should change the current transport laws and regulations ensuring the service can formally operate as the main service provider in villages, as it is already doing so informally." A formally registered taxi operator in Makhado Municipality also stated: "The fact that the LDV transport service operates right in front of the authorities or law enforcement agencies without anything being done about them is not right. They operate illegally. The service needs to be controlled as is the case with us taxi operators whose operations are controlled. They must be forced to register and be issued permits as well. The different transport services should be treated the same." An LDV operator in Mutale Municipality added: "We [as LDV operators] have agreed amongst ourselves that we need to have good vehicles with canopies and we must listen to and do what our passengers want. We don't have an association, but we can still work together without any problem. The problem is our current government is neglecting our roads." A female commuter in Musina Municipality who used LDV transport echoed the sentiments of the latter operator. She

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commented as follows: "The government is neglecting our rural roads, thus preventing conventional transport operators to service villagers, so we are going to use the LDV service even though their service is illegal."

A theme, closely related to the research participants' view that the LDV transport service should be formally recognised by the authorities in Vhembe District, was the view that the formalisation of the service should be conditional. The interviewees indicated that there was a need for effective regulation, which would amongst other things prevent unnecessary conflict among the various types of transport services. Regulation would also ensure that some transport providers were not discriminated against. It should, however, also be noted that although there seemed to be consensus with respect to supporting formal recognition of the LDV passenger transport service, there were some dissenting voices. For example, a representative of the taxi service in Thulamela stated: "The LDV transport service should not become part of the formal public transport system as it is taking clients away from us. They operate illegally and the law should remain and be enforced."

As partly reported above, various supporters of the formal recognition of the LDV transport service, including providers of LDV transport, believed that regulation of the service would improve its quality. Also, they indicated that concrete efforts on the part of the government towards legalising and regulating the service were lacking, thus inhibiting proper regulation, quality service delivery and the prevention of unnecessary conflict among public transport operators. An LDV operator in Thulamela Municipality, for example, stated: "The government must give us permits and allow us to use public facilities. People must be given a chance to choose the transport they want to use. We are saying that we are prepared to work with anyone in this industry". In Makhado Municipality, an LDV operator claimed that "our former councillor promised us that we would be issued with operating permits because we are providing an essential service … [we] were even interviewed by a representative of SABC's current affairs programme but the issue is now just quiet … [we] need to be allowed to use public facilities like other transport operators … [on] our part, we have agreed that all vehicles should have side-rails and canopies so that the passengers do not get wet and fall off the vehicle … [we] have also agreed to comply with the regulations the government might come up with regarding the maximum number of passengers to be carried at any time … [so that] some operators do not overload passengers …[in fact we believe these] changes … will enhance safety and make it easy for us to provide satisfactory service".

As noted to some extent above, interviewees attributed the widespread use of LDV transport to poor road infrastructure in Vhembe District. A taxi operator in Mutale Municipality, for example,

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stated: "The current government is neglecting the rural areas and this forces us as taxi operators not to operate in rural areas. We have a good working relationship with LDV operators. So, why is the government not considering permitting LDVs to transport passengers? I hope it is possible." Lastly, a commuter in Musina Municipality expressed the following view: "It is important that the LDV transport service be given an opportunity to operate together with other passenger transport services such as taxis and buses to provide accessible, safe and affordable services to all communities, including to villagers. I think the Department of Transport should come up with a plan regarding transport that fits the needs of all people, not only those in towns. There are some communities such as those living on farms and in remote rural areas who can best be served by the LDV transport service."

All the LDV commuters who participated in the questionnaire-based survey said they could not tell what exactly regarding LDV passenger transport needed special attention. However, slightly more than a quarter of them (26%) believed that restricting the number of seats in the vehicles was necessary. Another fairly common view was that the vehicles should have canopies (23%). Moreover, the provision of generally comfortable and safe transporting conditions was noted by the LDV commuters in Mutale Municipality (24%) rather than in the other municipalities (12%-16%). This finding probably related to the rugged terrain and poor infrastructure of Mutale (Roefs, 2001; Vhembe Municipality, 2009). Furthermore, Makhado commuters (36%) rather than those in the other municipalities (8%-20%) mentioned the need to ensure that LDVs had covered canopies, probably because the Makhado commuters tended to be in the relatively older age group (36-50 years) and might therefore be more vulnerable to poor weather conditions than younger persons.

Given the informal nature of the LDV transport service and thus the absence of formally assigned parking facilities, it was clear why operators of LDV transport in the operator survey singled out parking facilities (51%) as the most important issue needing attention. There was also a considerable proportion (39%) that identified the issuing of permits as a matter that had to be addressed. The operators in Mutale seemed to prioritise the provision of canopies (32%), which were not surprising considering the extreme weather in this area. Equal proportions (32%) of the overall group of operators viewed provision of proper seats and the restriction of the seating capacity of LDVs as the most important structural changes needed.

Participants (municipal and other authorities in Vhembe District) in the study's administrator survey felt strongly that the issuing of permits (52%) and provision of parking facilities (48%) were matters needing special attention, thus recognising the inherited huge backlog in service provision in Vhembe District (Roefs, 2001; Vhembe District Municipality, 2009, 2012). Moreover,

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whereas all the participating administrators in Musina Municipality and by far most (86%) of those who responded on behalf of the Vhembe District Municipality singled out the issuing of permits as the most important issue to be addressed, those in the other Municipalities (63%-69%) emphasised the need for providing parking facilities. Largely in agreement with the operators of the LDV transport service in the study's operator survey, the interviewees in the administrator survey believed that the restriction of the seating capacity (39%) was the most important structural change needed in LDVs. Also worth noting was the fact that 45% of the administrators representing Thulamela Municipality identified the limiting of seating capacity of LDVs as the most important structural change needed.

By way of summary, and as shown in Table 6.1, the changes suggested by the participants in the study's three surveys as to what should be effected to make LDVs legally classified as passenger-carrying for a fee were largely the same across all the Municipalities in Vhembe District ($P > 0.05$). Worth noting, however, was that operators in the overall group of respondents in the four local Municipalities particularly believed that fitting proper seats (32%) and specifying seating capacity (32%) were the most important structural modifications needed if LDVs were to be formally integrated into the passenger transport system. Also, commuters expressed the same views as operators of LDV passenger transport service, in particular with respect to specifying the seating capacity. The need for having canopies was of particular importance in Makhado, Musina and Thulamela Municipalities. It was thus clear that key stakeholders in the LDV passenger transport service largely agreed that the safety and comfort of passengers as well as the provision of formal parking facilities in towns and other places where people congregate were needed to be addressed by the authorities when preparing policies/legal frameworks for formalising the LDV transport service.

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Table 6.1: Required structural changes to the vehicles used in the LDV transport service according to survey respondents

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Descriptors or variables	Proportion of respondents (%) in				χ^2	Statistical significance
	Makhado	Musina	Mutale	Thulamela		
Sample size (n)						
Commuters	25	25	25	25		
Administrators	16	13	13	20		
Operators	26	25	23	24		
The most important changes needed with regard to LDVs transporting passengers? (Administrators)¢					3.18	ns
a) To be issued with permit	38	100	31	35		
b) To use public facilities	63	0	69	65		
c)						
The most important structural changes needed with regard to LDVs transporting passengers? (Operators)¢¢					2.66	ns
a) Covered canopies	15	20	32	25		
b) Proper seats	35	32	27	33		
c) Specified seating capacity	35	32	27	33		
d) Good working conditions	15	16	14	8		
The most important structural changes needed with regard to LDVs transporting passengers? (Commuters)¢¢					6.50	ns
a) Covered canopies	36	28	8	20		
b) Proper seats	16	28	16	20		
c) Specified seating capacity	28	24	28	24		
d) Good working condition	12	16	24	16		

n = number of respondents; * = P < 0.05; ** = P < 0.01; *** = P < 0.001; ns = not statistically significant; χ^2 = Chi-square;
¢ = percentages vary between 99 and 101 due to rounding; ¢¢ = percentages do not total to 100 as the respondents who registered "Can't say" are not noted; ¢¢¢ = provision of generally comfortable and safe conditions.

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The proposed framework of this study's model for integrating LDVs into the public passenger transport system in VDM was based on the results of primary research and relevant secondary data analysis. Of particular interest was the investigation of the use of LDVs, and in particular how this practice could be regulated or modified in such a way that it could be integrated with formal public transport services. The basis of the model as well as its envisaged characteristics and products are covered in the next sections.

6.3.1 Pillars of the framework of the proposed model

The framework is provided so that empirically-based guidelines for integration and government intervention or regulatory processes can be formulated. This takes into account aspects such as the issuing of operating licences and/or route permits. Furthermore, there is need to ensure compliance with the related regulations of the South African Bureau of Standards (SABS), National Land Transport Act (NLTA), occupational health and safety (OHS) and National Road Traffic Act (NRTA).

The framework is in line with Notice 68 of 2011 (Republic of South Africa, 2011a, b) and the Rural Transport Strategy (Republic of South Africa, 2007a, b). Moreover, relevant suggestions of international scholars such as Starkey *et al*. (2002), Ericson (2011), Banjo *et al*. (2012) and Sachs (2012) as well as international agencies such as the World Bank (2010) and the World Health Organization (2010b) have been considered. Attention has also been given to the views of South African scholars such as Pretorius (1999), Wosiyana (2005) and Kekana (2009) regarding road safety. This implies that the framework is anchored on empirically-generated knowledge, views, needs and practices of rural road users and traffic safety authorities and scholars. Furthermore, rural transport regulations and enforcement policy frameworks as well as acknowledgement of the competition existing among operators and vehicles/vehicle manufacturers have been factored into the construction of the framework. Another facet is the need to facilitate LDV passenger transport operators to willingly comply with legislative regulations. Besides the legislative measures noted in especially section 13(1) of the Second Draft of the Land Transport Regulations (Republic of South Africa, 2011a, b) regarding how LDV passenger transport operators need to modify their vehicles before applying for and being granted an operating licence, an analysis of relevant documents highlighted many issues discussed in the sections that follow.

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In terms of the Rural Transport Strategy for South Africa(RTSSA) (Republic of South Africa, 2007a,b), testing systems for driving licences must be set up in rural areas in particular to ensure regular inspection of vehicles such as LDVs used in public transport operations. Moreover, the South African Bureau of Standards should certify that LDVs have been modified in terms of legislated safety and operational requirements. There are also quite a number of common modifications to LDVs that are generally required and/or made to facilitate safe carrying of passengers. These include welding bars for longitudinal chassis reinforcement to the relevant vehicle's underside; installing additional leaf springs to reinforce the rear suspensions; fitting heavy duty tyres; adding a rope or chain in order to increase the load capacity of the tailgate; fitting a canopy to increase load capacity and protect passengers from bad weather; and adding benches as well as roof racks (see for example Ericson, 2011).

6.3.2 Envisaged components of the proposed model

Implementation of the proposed framework is expected to generate various outputs. Among them are appropriate and prompt modification of LDVs and issuing of operating licences or route permits. In the long term, the model is envisaged to facilitate the systematic integration of LDV passenger transport with the public transport network in Vhembe District, the rural communities' access to essential services and, hopefully, socio-economic development in the district. Figure 6.1 shows the proposed model for facilitating the modification of LDVs for use in conveying passengers and integration of this transport with the public transport sector in Vhembe District.

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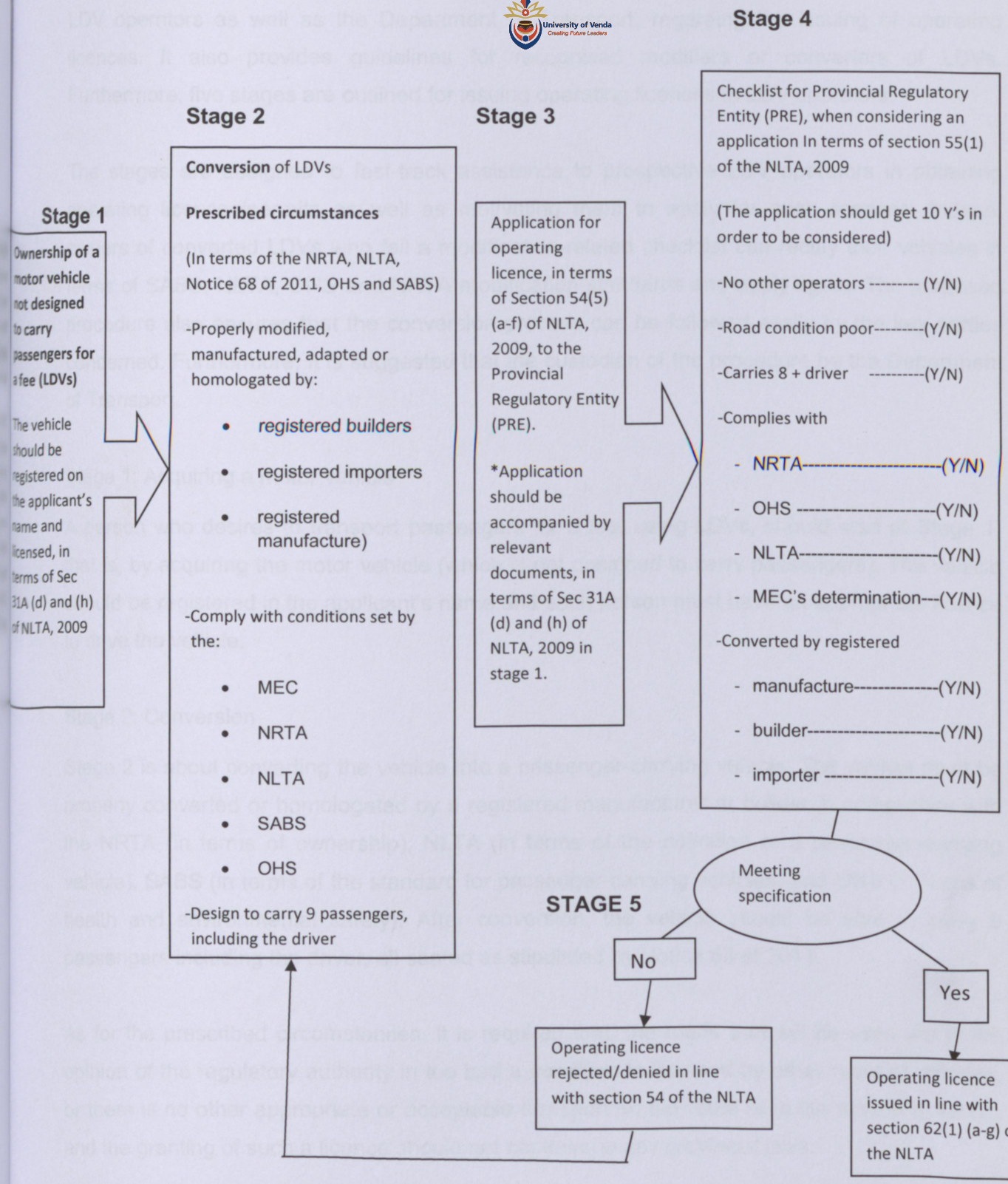


Figure 6.1: Proposed framework of a model for integrating light delivery vehicles into the passenger transport system in Vhembe District

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The model above *inter alia* sets out the process to be followed by key parties/sectors, which are LDV operators as well as the Department of Transport, regarding the issuing of operating licences. It also provides guidelines for recognised modifiers or converters of LDVs. Furthermore, five stages are outlined for issuing operating licences to LDV operators.

The stages are designed to fast-track assistance to prospective LDV operators in obtaining operating licences/permits as well as motivating them to apply for such licences. Indeed, owners of converted LDVs who fail a modification-related checklist can rectify their vehicles in terms of SABS, NLTA, OHS and NRTA modification standards and apply again. The proposed procedure also ensures that the conversion process can be followed easily by the key parties concerned. Furthermore, it is suggested that the custodian of the procedure be the Department of Transport.

Stage 1: Acquiring a motor vehicle

A person who desires to transport passengers for a fee, using LDVs, should start at Stage 1, that is, by acquiring the motor vehicle (which is not designed to carry passengers). The vehicle should be registered in the applicant's name and such person must have an appropriate licence to drive the vehicle.

Stage 2: Conversion

Stage 2 is about converting the vehicle into a passenger-carrying vehicle. The vehicle must be properly converted or homologated by a registered manufacturer or builder in compliance with the NRTA (in terms of ownership), NLTA (in terms of the definition of a passenger-carrying vehicle), SABS (in terms of the standard for passenger-carrying vehicles) and OHS (in terms of health and environmental safety). After conversion, the vehicle should be able to carry 9 passengers including the driver, all seated as stipulated by Notice 68 of 2011.

As for the prescribed circumstances, it is required that, the roads that will be used are in the opinion of the regulatory authority in too bad a condition to be used by other types of vehicles, or there is no other appropriate or acceptable transport on the route or in the area in question, and the granting of such a licence should not contravene any provincial laws.

Stage 3: Application for operating licence

At this stage the owner of a converted LDV should apply at the Provincial Regulatory Entity (PRE) for an operating licence, as stipulated by section 54(3) (application for a new license) of the NLTA. Section 54(5) of the NLTA further states that such application must be made on the

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basis of one application per vehicle, in the prescribed manner and on the prescribed forms, complemented by recommendations or documents that support the application, and accompanied by the fee determined by the MEC. The supporting documents should include, amongst others, a recommendation from the municipality, traditional leader or an NGO in the area.

In the application, the area of operation, the route as well as the point of departure and the end point should be indicated. The time of operation should also be specified in the application documents. The application should also include details of the owner and the vehicles. The application should be forwarded to the Department of Transport of that area.

Stage 4: Consideration of an application

After receiving an application, the Provincial Regulatory Entity will screen it according to the checklist. In terms of section 55(1) of the NLTA, it should be determined if there is a need for the service on the route for which the applicant has applied. If the route is adequately served, the application is refused; if it is not adequately served, a licence may be granted. The application should be disposed of if stakeholders' inputs indicate opposition to the service, but it can also be disposed of if no inputs were received from stakeholders.

The application must comply with all items on the checklist before an operating licence can be issued. An application must also contain documents such as a copy of the applicant's ID, vehicle documents and a recommendation letter from the ward councilor or other community leader in the area.

Stage 5: Approval or rejection of an application

Stage 5 deals with the approval or rejection of any application after its consideration in terms of sections 62(1), 55(1) and 57(1) of the NLTA. The outcome should be communicated formally to the applicant. If the applicant meets all requirements, an operating licence is issued to the vehicle and the applicant. The licence will contain details of the owner, vehicles and routes, as prescribed by section 62(1) (a-g) of the NLTA.

However, if a vehicle does not meet the requirements in the checklist, the owner/applicant is sent back to Stage 2 (only if the vehicle fails to meet the required standard), in order to attend to the disqualifying element/s. If the application fails because the area/route is adequately served, the application is disposed in terms of sections 55(1) and 57(1) of the NLTA, and the owner is informed of the services currently rendered in the area.

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6.4 Integrated Summary and Key Implications of the Findings on the Modification and Integration of the LDV Passenger Transport Service with Formal Public Transport in Vhembe District

This chapter focused on the study's findings regarding the development of a framework for a model for integrating the LDV passenger service with the formal public transport system in Vhembe District. It also noted the data gathered in relation to the research question: What modifications and associated measures might be needed to integrate LDV passenger transport with the formal public transport system in Vhembe District? In particular, after describing the relevant research findings, this chapter proposed a framework for a model in terms of which LDVs could be modified and integrated with the public transport system in Vhembe District.

In brief, the described findings underlined that key stakeholders in the LDV passenger transport service (passengers, operators and government representatives) tended to favour the legal recognition of this service as a form of public transport in Vhembe District. Various arguments in support of the legalisation of the service were presented. For instance, interviewees argued that it was critical to legalise the service, as it not only was an established practice but also an essential service in particularly areas with poor roads and no other form of public transport. This point was reflected in, for example, the following comment of an LDV commuter: "It is in the hands of the government to consider formalising LDV transport … it should change the current transport laws and regulations ensuring the service can formally operate as the main service provider in villages, as it is already doing so informally … The government is neglecting our rural roads, thus preventing conventional transport operators to service villagers, so we are going to use the LDV service even though their service is illegal." Some interviewees even complained that government officials had promised to put into motion processes to legalise the LDV transport service but had not kept this promise. An LDV operator, for example, made the following comment: "Our former councillor promised us that we would be issued with operating permits because we are providing an essential service. We were even interviewed by a representative of the SABC's current affairs programme but the issue is now just quiet."

However, participants emphasised that the legalisation of the LDV transport service should be conditional. Indeed, the service should be carefully regulated through, for example, registering operating services and issuing permits. Regulation should ensure that some transport providers are not discriminated against, quality service is rendered, and conflict between the operators of different services does not erupt. Interviewees also stressed that regulatory measures should facilitate the orderly integration of the LDV transport service with the formal public transport

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system in Vhembe District. In addition, care should be taken to ensure transport services provided in the needs of not only town dwellers but also rural communities. An LDV commuter expressed the latter two views as follows: "It is important that the LDV transport service be given an opportunity to operate together with other passenger transport services such as taxis and buses to provide accessible, safe and affordable services to all communities, including to villagers. I think the Department of Transport should come up with a plan regarding transport that fits the needs of all people, not only those in towns. There are some communities such as those living on farms and in remote rural areas who can best be served by the LDV transport service."

Moreover, the participants in the study's three surveys underlined that the safety and comfort of the users of the LDV service should be ensured. In fact, various structural changes to the vehicles used by service operators were suggested. These changes were largely consistent with the safety specifications in current legal frameworks focusing on public transport such as seating capacity and covered canopies. The suggested changes were also directly related to the challenges mentioned by users of the LDV service, namely that they had to travel in overloaded vehicles that also did not necessarily provide protection against extreme weather. Participants namely suggested that the LDVs should be fitted with canopies and proper seats and their seating capacity should be restricted. Another change suggested by the survey participants was that formal parking facilities should be provided for these LDVs.

To conclude, and consistent with the recommendations of international agencies (International Road Federation, 2008; Sachs, 2012), the above findings implied that processes directed at formalising the LDV passenger transport service should be approached in a holistic and demand-led or people-centred manner that focuses on the specific and variable needs that affected communities express. All key stakeholders should therefore participate in the development and implementation of policies and legal frameworks, and special care should be taken that no community, region or transport provider is disadvantaged or discriminated against. To avoid bias, the government should operate as the regulating body. This background informed the outlining of the model for integrating LDV passenger transport with the public transport system in Vhembe District. Figure 6.2 also shows an LDV modified for passenger transport in terms of South African legislation, with the next chapter summarising the study and making recommendations.

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Figure 6.1: LDV adapted in terms of the Second Draft of the Land Transport Regulations, issued for public comment in terms of Notice 68 of 2011 (Republic of South Africa, 2011a,b)

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7.1 Introduction

This chapter synthesises the main components of the study. The synthesis highlights the background to the study, the issues that justified the study's conception, the problem addressed, the key underlying assumption, the overall research objective and the associated questions. The theoretical underpinnings and methodological premises are also noted. An overview of the main findings and their implications, bearing in mind the research questions and overall objective, follows. The chapter concludes with a discussion of the study's significance, limitations and recommendations.

7.2 Background and Rationale of the study

The study was conceived against the background of preliminary indications of the vital service that light delivery vehicles (LDVs) rendered in rural passenger transport in South Africa and Vhembe District in particular, as well as abroad, notwithstanding legal and safety concerns (Williams and White, 2001; Wosiyana, 2005; Vhembe District Municipality, 2012). For example, there were indications that most learners in Vhembe District relied on the LDV transport service to travel to and from school. By virtue of its informal nature, LDV transport apparently had various ambivalent characteristics compared to formal public transport. The service was said to be more accessible to community members in especially remote villages, faster, cheaper and more reliable than formal passenger transport services. However, because the service was not officially regulated, operators had scope for neglecting the safety and comfort of their passengers. It also appeared that although LDV transport filled the gap between the demand and supply for public transport in Vhembe District, LDV operators faced increasing pressure to upgrade their services and have it integrated with the other passenger transport services in the area.

It was thus clear that the illegal practice of using LDVs to transport passengers deserved closer scrutiny. For example, it was necessary to investigate the suitability and extent of the use of LDVs as passenger transport in Vhembe District in depth. Secondly, given the disconnection between legislation and practical reality, there was a need to find ways to strengthen this service and integrate it with the mainstream transport system in Vhembe District. The findings were assumed to be critical in providing pointers for the drafting of a framework for a model that would enable the establishment of a demand-driven, safe and efficient LDV passenger transport service. It was also hoped that the results would inform a policy review and ultimately improve transport conditions in Vhembe District.

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The study was initiated against the background of the apparent widespread but as yet illegal use of LDVs to transport people for a fee in rural areas such as Vhembe District in the Limpopo Province of South Africa. Lack of reliable scientific data on various aspects of this service inhibited the development of appropriate interventions that would strengthen the LDV passenger transport service. However, there were indications that transport authorities in South Africa were considering the legalisation and consequently regulation of LDV passenger transport, especially in poorly serviced rural areas. For example, the Rural Transport Strategy for South Africa (Republic of South Africa, 2007a, b) states: "[In] 'deep' rural areas … operators of LDVs (the so-called 'bakkie sector') … are the main service providers … There is a need to re-evaluate the regulatory mechanisms for light delivery vehicles (i.e. the vehicles being used for 'bakkie operations') … [and] facilitate the flexible, combined passenger and freight services currently being offered by most of these operators, whilst … ensuring compliance with … road safety standards."

7.4 Key Assumption, Overall Research Objective and Research Questions

In this study, it was assumed that appropriately modified/adapted LDVs could be used as a suitable mode of rural passenger transport in Vhembe District. The overall objective of the study was therefore to develop a model for integrating LDVs with the public transport system in Vhembe District. Thus, to achieve this objective and in line with the understanding that LDVs played an important role in the lives of the communities in Vhembe District, the following research questions were set:

4) What are the nature and extent of the use of LDVs to transport passengers in Vhembe District?
5) What are the passenger transport options and choices available in Vhembe District?
6) To what extent are LDV users and operators in Vhembe District aware that existing South African legislation prohibits the use of LDVs to transport passengers for reward?
4) To what extent are customers satisfied with the use of LDVs as passenger transport in Vhembe District?
5) What modifications and associated measures might be needed to integrate LDV passenger transport with the formal public transport system in Vhembe District?

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The study took a systems perspective of rural road transportation as described by Pretorius and Mulder (1991) as well as Ratau (2008). This perspective is consistent with national transport policy in South Africa (Department of Transport, 1996; Republic of South Africa, 1996), and with the safe system and public health approach to road traffic safety of the World Health Organization (Peden *et al*., 2004).

In particular, the study adopted the view that rural road transportation is a systemic collection of physical, operational and managerial components. The physical component consists of, for example, vehicles (modes of transport) and the physical road environment such as road sections. Pedestrians, drivers and other road users make up the operational component. The managerial component entails the regulation of the physical and operational components through policy and other regulatory measures. In terms of the safe system approach to road traffic safety, the study accepted that rural road transport systems should "be designed to expect and accommodate human error … [by offering comprehensive] protection … to the road users involved … [focusing on] all aspects of road safety management" (Watkins, 2010:23).

In addition, and in line with the public health approach to road traffic safety (Peden *et al*., 2004; Ratau, 2008), the study accepted that an adequate rural road traffic safety management system provides for the comprehensive and integrated regulation of three interactive issues: human factors, vehicles and the (road) environment. Key human factors comprise the socio-demographic characteristics, knowledge, attitudes/views, needs and practices with regard to road traffic safety of people such as road users, transport planners and regulators. Environmental factors entail the road environment as well as the broad socio-economic conditions in the communities concerned.

Another aspect of the study is a conception of the individual-environment relationship that is consistent with the views expressed in public health oriented (road traffic safety) research projects (Kruger *et al*., 1998; Peden *et al*., 2004; Ratau, 2008). In particular, the researcher assumed that –

a) individuals live in a (social) environment which they influence but which also constrain their daily living;
b) the (social) environment is composed of similarities and differences; and
c) the socio-demographic characteristics, actions and beliefs of individuals are interrelated with the wider environment in which they live.

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Given the above exposition, the model generated by the study was anchored in the empirically identified knowledge, views, needs and practices of rural road users and road traffic safety authorities regarding LDV passenger transport, and in rural transport regulations and enforcement policies. In addition, attention had to be given to ways that the LDV passenger transport service could be integrated with the mainstream transport system in Vhembe District.

7.6 Methodological Premises

A mixed methods approach was adopted, using a "one-phase design ... [that] uses both quantitative and qualitative methods [or procedures and techniques] during the same time frame and with equal weight to best understand the phenomenon of interest" (De Vos et al., 2011:442). Hence the researcher conducted three quantitative surveys and a qualitative case study. The latter comprised focus group discussions with key informants, in-depth interviews, unobtrusive observations and a document study.

The research population comprised the following sets of research groups: LDV operators and passengers; and senior members of agencies (in) directly involved in transport issues (for example municipal authorities and law enforcement agents) in the Thulamela, Mutale, Musina and Makhado Local Municipalities. The research participants were sampled in a purposive manner, using the snowball technique and particular selection criteria, and included 100 LDV users (commuter survey), 98 LDV operators (operator survey) and 69 senior members of other relevant agencies (administrator survey) in Vhembe District. The focus group discussions with key informants involved 111 participants and took place at the main villages or towns in each of the local municipalities. The participants in each focus group included representatives of the main target groups. Furthermore, 68 in-depth interviews were done at key places where residents and transport operators congregated to shop, do business, socialise and engage in other activities (such as attending schools and clinics).

In the three surveys, interview-administered questionnaires with largely closed-ended questions were used. The in-depth interviews and focus group discussions as well as unobtrusive observations were guided by an interview/observation schedule. Regarding the document study, accessible documents were perused, including census data and the results of periodic analyses of broad socio-economic conditions in Vhembe District. Special care was taken to gather the data in an ethically responsible manner.

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Data analysis largely proceeded according to the following steps: The data were first "reduced" (organised, manipulated, categorised and summarised), using the technique of thematic analysis in the case of the qualitative data, and descriptive statistics in the case of the quantitative data. The "reduced" data were then displayed (for example in tables and graphs) and transformed (applying numerical codes to the qualitative data and describing the quantitative data in narrative terms). The data were subsequently compared to establish areas of convergence, logical consistency and the extent to which they complemented or refined one another. Finally, the data gathered were integrated into a coherent whole, based on the research questions.

Bearing in mind the assumption that individual data were influenced by broader environmental circumstances, the study explored the extent to which the questionnaire responses differentiated across the respondents' municipality of residence through cross-tabulations and Chi-square tests. Moreover, the GIS Unit of the Human Sciences Research Council in Pretoria matched the responses of those participants in the commuter survey who indicated that the main advantage of using the LDV passenger transport service was its affordability with 2011 census data on the level of poverty in Vhembe District. The rate of unemployment among 15-64 year olds and the proportion of households in Vhembe District without access to running water were used as indicators of the level of poverty in the district. Due to budget constraints, the GIS mapping was restricted to selected variables.

7.7 Main Research Findings

In general, the data gathered in this study on the *nature as well as extent of the LDV passenger transport service* in Vhembe District confirmed in various ways the assumption that this service existed as part of an intricate interplay between the personal characteristics of the individuals using/operating this service and the conditions in the wider environment in which they lived. The findings were also generally consistent with the finding of William and White (2001) that economically constrained rural communities in England developed and maintained a transport-related social economy or informal public transport arrangements as a response to their transport and general economic constraints. Moreover, the findings clarified why LDVs have come to be known in various parts of South Africa as "survival taxis" (Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006).

In particular, the quantitative and qualitative findings showed that the LDV passenger transport service was a common, established, regularly operating and sustainable enterprise in Vhembe

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District. It was also closely interwoven with the infrastructural and material constraints prevailing in the district generally and in remote rural areas in particular. Moreover, the LDV transport service was demand-driven and carefully customised to the particular needs of those served, as suspected by the relevant authorities in the district and pointed out by a number of agencies regarding various other rural areas in South Africa (Agran *et al.*, 1994; Buffalo City Municipality, 2003; Wosiyana, 2005; Harris, 2006; Laws, Enoch, Ison and Potter, 2009; Greater Tzaneen Municipality, 2011; Vhembe District Municipality, 2012). For example, the participants in the case study indicated that although it was difficult to estimate the exact size of the LDV transport service because of its informal and illegal nature, it was widespread and growing in Vhembe District. Some of the opinions drawn from participants are the following: "LDVs are all over VDM"; "[N]umbers cannot easily be determined, as LDVs are not regulated and registered"; "LDV numbers increase"; and "[We as taxis] are losing business because of 'pirate taxis' – LDVs kill us, even operate in our areas". An interviewee in Makhado indicated that the area in which he lived had about 20 LDV transport operators.

The observations made at key sites in Vhembe District confirmed that the use/operation of LDV passenger transport was widespread. LDV transport occurred at all the sites alongside formal public transport services such as taxis and buses. In contrast with the other transport services, the LDV service was always available, passengers were continuously alighting or boarding the LDVs, and there were more LDVs than other public transport vehicles at a particular point in time.

Regarding the nature of the LDV transport service, the results of this study showed that the service was not a recent practice. For example, most (55%) of the respondents in the operator survey indicated that they had been operating for between 1 and 10 years and a substantial proportion (24%) that they had been doing so for 6 or more years. The in-depth interviews and focus group discussions pointed out that the latter survey findings were an underestimation. An interviewee in Musina, for example, stated: "I've been operating for almost 27 years." The LDV transport service was also a regular rather than occasional feature in Vhembe District. For example, a substantial proportion (27%) of the respective participants in the commuter and operator survey indicated that daily trips occurred, with an even higher proportion (34%) of operators stating that they operated every day of the week (Monday to Friday). A participant in an in-depth interview also stated: "We use LDVs … daily, month-end and long weekends to shop, do business, work, [and] study."

The study also showed that the LDV transport service was advantageous to customers and to operators. While transporting passengers by LDV for reward was an essential, affordable and

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flexible service rendered to communities in especially remote areas, the service provided a livelihood to many residents in the poverty-stricken Vhembe District. For example, many of the participants in the commuter survey indicated that they used LDV transport mainly to access essential services, namely to go to school (44%), to the shops (20%), to places of work (19%) and to do business (11%). The participants in the operator survey confirmed this point; so also did participants in the qualitative investigations. An interviewee who operated an LDV transport service, for example, stated: "I specialise in carrying school children … others carry farm workers and civil servants." Regarding the income-generating characteristic of LDV transport, statements such as the following were made: "I started to transport children as there was no other transport … [The income is] not much but it keeps me going together with my pension"; "I've been carrying school children for a long time … we cannot allow our family to starve"; "[W]e are trying to make a living"; "LDVs are very cheap and easy to maintain … also carry more passengers than conventional taxis and so make more money".

Many of the users of the LDV transport service in the commuter survey also indicated that the main advantage of the service was its affordability (34%) and user-friendliness, in that it, for example, enabled them to carry their luggage with them (24%). Qualitatively interviewed research participants substantiated and elaborated on these points. They noted that LDV transport fees were lower than those of taxis and buses; LDV operators were prepared to pick them up and drop them at their doors; the LDV service was also reliable, quick to respond to requests for transport and did not entail waiting in long queues. For example, interviewees stated: "[LDV operators] always carry us with our luggage, though we pay for our luggage, but the price is good; you can be dropped at your door; they arrive on time"; "People use LDVs because they carry everything you want for affordable fees. LDVs provide a better service than taxis"; "We use LDVs, as they are available, quick; no long queues, [operators] accept luggage, drop at doors". It should also be noted that while many participants in the operator survey indicated that the current unregulated nature of the LDV transport service contributed towards the profitability of the enterprise and customisation, the qualitative findings indicated that some operators were regulating themselves. Some LDV service operators also had (informal) agreements with formal and informal competitors to prevent friction and facilitate safety and access to (formal) public parking facilities, with the service acting as a feeder of formal transport services.

The study, furthermore, showed that the LDV transport service in Vhembe District was subjected to various challenges. For example, substantial proportions of the users of LDV transport in the commuter survey indicated safety concerns and discomfort as challenges they faced when travelling by LDV. Forty-eight percent of the respondents indicated the tendency of

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LDV operators to overload the vehicles as the main challenge or difficulty they faced when using the LDV transport service; 22% indicated the hard seats as their main challenge and 14% the fact that they were sometimes exposed to natural elements. These findings were confirmed by the qualitative case study. On the other hand, the challenges of the LDV transport service operators largely related to parking facilities and harassment by competitors in formal public transport and law enforcers. For example, and regarding the main challenges faced, 40% of the participants in the operator survey indicated that they were threatened by legal transport operators and 30% that law enforcers harassed them. Interviewees in the qualitative case study stated: "Operation is complicated by tension between [LDV and taxi operators] … certain taxi operators [are] scared of losing customers"; "[Law enforcers] try to police [the LDV service] … but [the] situation [is] out of hand".

The surveys and the qualitative case study also underlined that the LDV passenger transport service was interrelated with the infrastructural and material constraints in Vhembe District generally and in remote rural areas in particular. Regarding infrastructural issues, emphasis was placed on the poor roads and inadequate public transport services there. In line with official socio-economic statistics (Statistics South Africa, 2012a, b; Vhembe District Municipality, 2012), the economically constrained conditions in Vhembe District were also highlighted as contributors to the development and sustainment of the LDV transport service in this district. For example, interviewees stated: "In my village there is no transport; we use LDVs or donkey carts"; "In our area the roads are so bad only LDVs can drive there and survive"; "Where I am staying there is no other transport to carry me and my stock in the morning and in the afternoon"; "The reason we started this business is there was no other transport in the area … We are also creating jobs and putting something on our tables … there are no jobs for us".

In relation to the question of what the *transport options and choices in Vhembe District* were, the findings revealed that LDVs were more common than other passenger transport options in Vhembe District. The situation differed across the various local municipalities, though. LDVs were less common in especially Thulamela and to some extent in Musina. The latter two areas had a wider choice of passenger transport than the other municipalities. For example, 70% of the LDV transport users in the commuter survey indicated that taxi, LDV and bus/mini-bus transport were all available and used in Thulamela.

Moreover, and in line with what has been found to be the case in various other parts in South Africa and abroad (Williams and White, 2001; Buffalo City Municipality, 2003; Starkey, 2007; Republic of South Africa, 2007b; International Transport Forum, 2008; Development Support Monitor, 2012), this study's results pointed to the following environment and individual-oriented

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reasons for the widespread availability and use of LDV passenger transport service in Vhembe District. Regarding environmental issues, and apart from the mentioned generally poor transport infrastructure, some of the apparent reasons for LDV transport were the socio-political roots of the huge backlog in the provision of essential basic services in Vhembe District and widespread poverty (Roefs, 2001; Vhembe District Municipality, 2009; Statistics South Africa, 2012a, b). The strong presence of LDVs in Vhembe District was also an indication of a lapse in law enforcement, given that the LDV passenger transport service was as yet illegal (Republic of South Africa, 1996, 2000).

Individual-oriented reasons for the prevalence of the LDV passenger transport service in Vhembe District especially surfaced in respect of the question of *whether or not LDV transport customers were satisfied* with it. In conjunction with one another the study's surveys and qualitative investigations underlined that the LDV passenger transport service was demand driven, indeed customers expressed satisfaction with the service in general. They concurred with the following points made by an LDV transport operator: "Because most of the taxis cannot carry school children from their homes to school, we, as Hwala-Vhana members, we pick up each and every child (school children) from his/her home and drop him/her at the schoolyard every day."

Other important observations were: The operators' level of satisfaction with conventional transport services (mini-buses/buses and taxis) in the relevant municipalities was generally not high across the study area. This lack of satisfaction with conventional transport services justified the need for introducing LDVs as an alternative transport service. However, it should also be borne in mind that the commuters' level of satisfaction with the service of mini-buses/buses, taxis and LDV passenger transport was highest in Thulamela and Musina Local Municipalities. This could be because the commuters had several options in these areas – all modes of road transport except rail were available. However, where various players provided a service, violence could erupt between them as they would probably try by all means to satisfy clients' needs, as noted by Kabirou *et al.* (2012). It would therefore be essential to integrate the LDV passenger transport service with current public transport regulatory frameworks.

This study's data on the question of *whether LDV users and operators* in Vhembe District *were aware* that *South African legislation prohibited the use of LDVs* to transport passengers for reward provided another answer to why this service operated, apart from re-underlining the mentioned infrastructure challenges in Vhembe District. While various stakeholders were aware that existing legislation prohibited the use of LDVs to transport passengers for reward, they were hazy on the specific requirements with the exception of government officials such as

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municipal councillors and the SAPS. This calls for ensuring that all involved in LDV passenger transport are well acquainted with the requirements for the service.

The above findings and the fact that the fee-charging LDV transport service was as yet illegal in South Africa in terms of the National Road Traffic Act 93 of 1996, pointed to the importance of strengthening this service in Vhembe District through the legal institution of people-oriented and context-sensitive policies and actions. Such strengthening efforts would be consistent with the National Development Plan 2030 (Republic of South Africa, 2013) of the South African government, and the Millennium Development Goals (United Nations, 2000). The strengthening of the LDV passenger transport service would also be in line with the commitments by the South African government to ensure the delivery of adequate (rural) transport services. This commitment is reflected in the Constitution of the Republic of South Africa of 1996 and in transport-related documents such as the Rural Transport Strategy for South Africa (Republic of South Africa, 2007b), the White Paper on National Transport Policy (Department of Transport, 1996) and the National Land Transport Strategic Framework 2006–2011 (Republic of South Africa, 2006). The importance of ensuring adequate transport infrastructure in rural areas is also stressed by scholars such as Bryson and Howe (1992).

A positive factor in terms of strengthening the LDV passenger transport service through appropriate regulatory frameworks and actions was that there were already policy documents that recognised that this service existed in especially rural areas in South Africa, complemented conventional public transport services and was essential for meeting socio-economic development needs. Examples of such documents are the National Land Transport Transition Act 20 of 2000 (Republic of South Africa, 2000), the National Land Transport Transition Amendment Act 26 of 2006 (Republic of South Africa, 2006b) and the National Scholar Transport Policy (Republic of South Africa, 2009a).

In conjunction with the above findings, the data gathered in this study on the question of *what modifications would be needed* to strengthen and, indeed, integrate the current LDV passenger transport service appropriately with the formal public transport system in Vhembe District, provided a basis for meeting its overall objective of drafting a framework for a model for facilitating the mentioned integration. In brief, the findings on the modifications needed underlined that key stakeholders in the LDV passenger transport service (passengers, operators and government representatives) tended to favour the legal recognition of this service as a form of public transport in Vhembe District. Various arguments in support of the legalisation of the service were presented by research participants.

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For instance, interviewees argued that it was crucial to legalise the service, as it not only was an established practice but also an essential service in areas with poor roads and no other form of public transport. This point was reflected in, for example, the following comment of an LDV commuter: "It is in the hands of the government to consider formalising LDV transport ... it should change the current transport laws and regulations ensuring the service can formally operate as the main service provider in villages, as it is already doing so informally ... The government is neglecting our rural roads, thus preventing conventional transport operators to service villagers, so we are going to use the LDV service even though their service is illegal." Some interviewees even complained that government officials had promised to put into motion processes to legalise the LDV transport service but had not kept this promise. An LDV operator, for example, commented: "Our former councillor promised us that we would be issued with operating permits because we are providing an essential service. We were even interviewed by a representative of the SABC's current affairs programme but the issue is now just quiet."

However, participants emphasised that the legalisation of the LDV transport service should be conditional. Indeed, the service should be carefully regulated through, for example, registering operating services and issuing permits. Regulation should ensure that no transport provider was discriminated against, quality service was rendered, and conflict did not erupt between the operators of different services. Interviewees also stressed that regulatory measures should facilitate the orderly integration of the LDV transport service with the formal public transport system in Vhembe District. In addition, the point was made that care should be taken to ensure transport services provided in the needs of not only town dwellers but also and especially rural communities. An LDV commuter expressed the latter two views as follows: "It is important that the LDV transport service be given an opportunity to operate together with other passenger transport services such as taxis and buses to provide accessible, safe and affordable services to all communities, including to villagers. I think the Department of Transport should come up with a plan regarding transport that fits the needs of all people, not only those in towns. There are some communities such as those living on farms and in remote rural areas who can best be served by the LDV transport service."

Moreover, the participants in the study's three surveys underlined that the safety and comfort of the users of the LDV service should be ensured. In fact, various structural changes to the vehicles were suggested. These changes were largely consistent with the safety specifications in current legal frameworks focusing on public transport (Republic of South Africa, 2010). The suggested changes were also directly related to the challenges mentioned by users of the LDV service, namely that they had to travel in overloaded vehicles that also did not necessarily provide protection against extreme weather. Structural changes suggested by survey

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participants were that the LDVs should be fitted with canopies and proper seats and their seating capacity should be restricted. Another change suggested by the survey participants was that formal parking facilities should be provided for these LDVs.

To conclude, and consistent with the recommendations of international agencies (International Road Federation, 2008; Sachs, 2012), the study's findings implied that processes directed at formalising the LDV passenger transport service should be approached in a holistic and demand-led or people-centred manner that focused on the specific and variable needs that the affected communities expressed. All key stakeholders should therefore participate in the development and implementation of policies and legal frameworks, and special care should be taken that no community, region or transport provider was disadvantaged or discriminated against. To avoid bias and ensure implementation, the government had to function as the regulating body. In line with its overall objective, this study drafted a framework for a model for integrating the LDV transport service with the formal public transport system in Vhembe District. The model is anchored in the empirically identified knowledge, views, needs and practices of rural road users, transport operators and relevant government agencies such as municipal councillors, the SAPS and other road traffic safety agents regarding LDV passenger transport, and in rural transport regulations and enforcement policies.

7.8 Significance and Limitations of the Study

Improved transportation has been widely pointed out in the literature, including in the Millennium Development Goals, as advantageous to socio-economic development (United Nations, 2000; African Union, 2005; International Road Federation, 2010a, 2010b, 2012; Watkins, 2010; World Bank, 2010;Thompson, 2011; Banjo, Gordon and Riverson, 2012; Sachs, 2012). Individuals as well as government and other relevant agencies should therefore benefit from the ground-breaking empirical evidence generated in this study on the nature and extent of the LDV passenger transport service in the wider transportation and socio-economic context in Vhembe District.

The findings also suggested areas for follow-up research regarding the nature and extent of LDV passenger transport, and largely consistent with the literature that influenced the conception of the study. These areas relate to the following questions:

a) How best should government efforts towards facilitating appropriate public transport services be re-directed?

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b) What should be included in legislative measures on the use of LDVs to transport passengers for reward?

c) How best should public awareness on the relevant legislation governing transport service provision be raised, bearing in mind existing infrastructure and passenger travel needs?

Moreover, given the general convergence between the data gathered and thus their integrity as well as the comprehensiveness of the questions posed and answered, the findings should provide a solid base for formalising the LDV passenger transport service in Vhembe District. However, although the study's proposed framework for a model for integrating the LDV passenger transport service appropriately with the public transport system in Vhembe District is based on the findings, its usefulness will have to be tested in the context within which it was developed, even the extent to which it could be applied in other areas in South Africa.

7.9 Recommendations

Given the empirical findings of the study and the literature review, the study generally recommends the following:

1) The development and implementation of a multipurpose public transport system in Vhembe District that provides for the use of LDVs alongside other forms of public transport, especially in remote rural areas: In such a system a variety of public transport services could operate together, share public parking facilities, feed into one another, and provide prospective passengers with opportunities to choose the transport mode that suits their needs and pockets.

2) The introduction of measures that ensure cost-effective public transport in Vhembe District: The current transport subsidy provided by the relevant authorities in Vhembe District to, for example, transport providers who serve pupils should be expanded to LDV and other passenger transport that cater for socio-economically disadvantaged groups, especially those residing in remote rural areas.

3) The introduction of flexibility in the issuing of operating licences and route permits: This will ensure that transport operators are not restricted to particular areas of operation and particular modes of transport.

Regarding LDV passenger transport in particular, the study recommends the following:

1) Follow-up studies should be done to examine whether the proposed modification and integration model for LDV passenger transport could be used by not only transport authorities in Vhembe District but also those in other (rural) areas in South Africa.

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2) Policy and legislative reforms are needed to allow LDVs to be used as passenger-carrying vehicles, with some conditions attached such as canopies, specified seating capacity, proper seats, route permits and other safety-related measures specified by the SABS and the occupational health and safety authorities.
3) Road traffic safety awareness campaigns should be developed and implemented to educate the public and in particular transport providers about road safety issues.
4) Modifications of vehicles such as LDVs should be done by registered manufacturers or panel beaters to ensure that the modifications meet safety requirements.
5) The issuing of operating permits and licences to LDV passenger transport operators should be considered by the relevant transport authorities. This will enable enforcement agencies to regulate the service and provide LDV operators with opportunities to use public and other facilities and prevent conflict between operators of various transport services. To facilitate the sustainability of LDV passenger transport, operators should be issued with a permit that caters for both pupils and other categories of passengers such as workers.

Finally, the safety and socio-economic and physical circumstances of passengers should be prioritised by transport authorities. The relevant authorities would also do well by taking cognisance of the following point made by Banjo, Gordon and Riverson (2012) in Working Paper 93 of the sub-Sahara Africa Transport Policy Programme (SSATP): "The commercial promise of Africa's … renaissance can be realized only if products [and people] actually get to markets [and other essential services]. Rural infrastructure, particularly roads and transport services, continues to constrain … incomes … People who cannot move themselves and their goods cannot pursue economic and social activities. They cannot access schools and health facilities. People who cannot move cannot move out of poverty."

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APPENDIX 1

Data Collection Instruments

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QUESTIONNAIRE*
LIGHT DELIVERY VEHICLE (LDV) COMMUTERS

Questionnaire no. [ ]

Date of interview...
Time of interview...

Informed consent

Fieldworker read out:

My name is..... I am one of several research assistants doing interviews with people living in this area. These interviews are part of a research project of a post-graduate student at the University of Venda. The project is investigating an important factor in people's lives, namely travel arrangements and conditions. It is especially interested in the **use of** Light Delivery Vehicles (**LDVs**) **to transport people at a fee**. The information you and others provide would assist transport agencies in improving the transport situation in this area.

We should therefore like to ask you some questions on the issues mentioned. It will take about 30 minutes. The questions are included in this form that I have with me and on which your answers will be recorded. You are welcome to look through the form before I ask you the questions. Your name will not be written anywhere on the form and you need not sign the form. Your answers will be held in strict confidence. It will be processed by computer in such a way that no personal identification is possible.

	Yes	No
Do you have any questions?	1	2
Will you do the interview?	1	2

Fieldworker, if "no", thank interviewee and terminate the interview; if "yes" continue as follows:

Thank you very much for agreeing to answer the following questions. The information you provide is extremely important, so try to answer as accurately as possible. You are not being tested and there are no right or wrong answers. You can at any time ask me to stop, repeat or explain a question.

* The response codes as well as the frequency of the responses to each question in the questionnaire are noted in separate columns.

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(1) Respondent's district (municipality) of residence (fieldworker complete)

Thulamela	01	25
Makhado	02	25
Mutale	03	25
Musina	04	25

N=100

(2) Place where respondent was interviewed (fieldworker complete)

Thohoyandou (Thulamele district)	01	12
Malamulele (Thulamele district)	02	13
Makhado CBD (Mkahado district)	03	7
Dzanani (Mkahado district)	04	14
Levubu (Mkahado district)	05	4
Tshilamba (Mutale district)	06	13
Masisi (Mutale district)	07	12
Musina CBD (Musina district)	08	11
Beit Bridge (Musina district)	09	14

N=100

(3) Capacity in terms of which the respondent participated (fieldworker complete)

SAPS	01	-
Road Traffic Safety Officer	02	-
Transport Planner	03	-
Municipal Councillor	04	-
Municipal Manager	05	-
LDV Commuter/Passenger	06	100
LDV Operator	07	-

N=100

(4) Gender of respondent (fieldworker complete)

Male	01	46
Female	02	54

N=100

(5).How old are you?

15- 20 years	01	43
21- 25 years	02	6
26- 35 years	03	10
36- 40 years	04	17
41- 45 years	05	14
46- 50 years	06	8
51-55 years	07	1

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56-60 years	08	1
>60 years	09	-

N=100

(6) Are you …

Single (never married)?	01	45
a single parent?	02	14
Married?	03	32
Divorced?	04	6
Widowed?	05	3

N=100

(7) What is your highest educational qualification?

None	01	3
Primary school: Grade 7/ Std 5 or lower	02	6
Grade 8/ Std 6 (Form 1)	03	14
Grade 9/ Std 7 (Form II)	04	28
Grade 10/ Std 8 (Form III, NTC I)	05	25
Grade 11/ Std 9 (Form IV, NTC II)	06	15
Grade 12/ Std 10 (Form V, NTC III)	07	7
Diploma	08	2
B. Degree	09	-
Honours/Master's Degree	10	-
Doctor's Degree (Non-Medical)	11	-
Other	12	-
Refuse to answer	*99*	-

N=100

(8) Which of the following describes your main work situation best?

Pupil/student	01	42
Housewife	02	6
Pensioner (aged/ retired/ sick)	03	4
Unemployed	04	22
Employed part time	05	7
Employed full time +	06	13
Self-employed – part time	07	2
Self-employed – full time	08	3
Other	9	1
Refuse to answer	*99*	-

N=100

(9) What is the average monthly household income of the household of which you are currently a member?

No fixed income	01	21
R1 – R99	02	1
R100 – R499	03	6
R500 – R999	04	24

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R1,000 - R4,999	05	16
R5,000 – R9,999	06	3
R10, 000 or higher	07	-
Uncertain	*08*	27
Refuse to answer	*99*	2

N=100

(10) What, if any, was your main source of income in the past month?

Receive no money on a fixed basis	01	37
Salary or wages from a job (including self-employment)	02	21
Spouse or other family member(remittances)	03	12
Friend(s)	04	11
Sales	05	7
Grant from government and/or another agency	06	10
Other	07	1
Refuse to answer	*99*	1

N=100

(11) Relate to Operators
(12) Relate to operators

Section 2

(13) How often do you usually/typically take a trip by LDV?

Daily	01	27
3-4 days a week	02	5
Weekend	03	11
Monday to Friday	04	29
Month-end	05	19
Once a month	06	8
Can't remember/say	*99*	1

N=100

(14) Relate to operators
(15) Relate to operators

(16) What is the usual/typical reason you take a trip by LDV?

To go to work	01	19
To go to school	02	44
To do shopping	03	20
To do business	04	11
Other	05	5
Can't remember/say	*99*	1

N=100

(17) What mode/type of transport, would you say, is mostly available in the area where you live?

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Taxis	01	1
Light Delivery Vehicles (LDVs) ("bakkies")	02	67
Mini-buses	03	3
Buses	04	1
All of the above	05	28
Can't say	*99*	-

N=100

(18) How much does a round/return trip (to and from your home) by LDV usually/typically cost you in Rand?

R10- R20	01	33
R30-R40	02	47
>R50	03	13
Other	04	7

N=100

(19) What mode/type of transport do you mostly use?

Taxis	01	-
LDVs	02	69
Mini-buses	03	2
Buses	04	2
All of the above	05	27
Can't remember/say	*99*	-

N=100

(20) Why do you mostly use the abovementioned mode/type of transport? (Open-ended question.)

Only available transport	01	81
Can't say	*02*	19

N=100

(21) Relate to operators

(22) What would you say is the main advantage of travelling by LDV as a passenger? (Open-ended question.)

Carried with luggage	01	24
Dropped at gate/workplace	02	3
Affordable price	03	34
No advantages	04	32
Can't say	*99*	7

N=100

(23) Relate to operators

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(24) What is the main challenge/difficulty you experience when travelling by LDV? (Open-ended question.)

Overload	01	48
Exposed to bad weather	02	14
Hard seats, made of wood/steel	03	22
Standing for the entire trip	04	8
Can't say	99	8

N=100

(25) Thinking about the areas where you usually travel, are you or are you not satisfied with the **taxi** transport services?

Very satisfied	01	5
Satisfied	02	38
Dissatisfied	03	36
Very dissatisfied	04	15
Can't say	99	6

N=100

(26) Thinking about the areas where you usually travel are you or are you not satisfied with the **LDV** transport services?

Very satisfied	01	27
Satisfied	02	48
Dissatisfied	03	20
Very dissatisfied	04	2
Can't say	*99*	3

N=100

(27) Thinking about the areas where you usually travel, are you or are you not satisfied with the **bus** transport services?

Very satisfied	01	11
Satisfied	02	31
Dissatisfied	03	32
Very dissatisfied	04	21
Can't say	*99*	5

N=100

(28) Thinking about the areas where you usually travel, are you or are you not satisfied with the transport services **other** than those mentioned?

Very satisfied	01	7
Satisfied	02	21
Dissatisfied	03	35
Very dissatisfied	04	29
Can't say	*99*	4

N=100

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(29) Are you aware of any laws or regulations governing the practice of transporting passengers by LDV for a fee?

Yes	01	5
No	02	84
Can't say	*99*	11

N=100

(30) If yes, what are these laws/regulations? (Open-ended question.)

National Road Traffic Act 93 of 96	01	1
National Land Transport Transition Act 2000	02	-
Criminal Procedure Act 51 of 1977	03	-
By-laws	03	4
Can't say	*99*	95

N=100

(31) What would you say is the most important issue, if any, regarding the way LDV passenger transport services operate that needs attention? (Open-ended question.)

Issuing of permits	01	-
Use public facilities	02	-
Can't say	*99*	100

N=100

(32) What would you say is the most important structural change needed, if any, regarding the vehicle used in the LDV passenger transport service? (Open-ended question.)

Covered canopies	01	23
Proper seats	02	20
Specification of seating capacity	03	26
Provision of generally comfortable and safe conditions	04	17
Can't say	*99*	14

N=100

Once again, thank you for talking to me.

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QUESTIONNAIRE*

OPERATORS OF LIGHT DELIVERY VEHICLES (LDVs)

Questionnaire no. [ ]

Date of interview:
Time of interview...

Informed consent

Fieldworker read out:

My name is ..... I am one of several research assistants doing interviews with people living in this area. These interviews are part of a research project of a post-graduate student at the University of Venda. The project is investigating an important factor in people's lives, namely travel arrangements and conditions. It is especially interested in the **use of** Light Delivery Vehicles (**LDVs**) **to transport people at a fee**. The information you and others provide would assist transport agencies in improving the transport situation in this area.

We should therefore like to ask you some questions on the issues mentioned. It will take about 30 minutes. The questions are included in this form that I have with me and on which your answers will be recorded. You are welcome to look through the form before I ask you the questions. Your name will not be written anywhere on the form and you need not sign the form. Your answers will be held in strict confidence. It will be processed by computer in such a way that no personal identification is possible.

	Yes	No
Do you have any questions?	1	2
Will you do the interview?	1	2

Fieldworker, if "no", thank interviewee and terminate the interview; if "yes" continue as follows:

Thank you very much for agreeing to answer the following questions. The information you provide is extremely important, so try to answer as accurately as possible. You are not being tested and there are no right or wrong answers. You can at any time ask me to stop, repeat or explain a question.

Signature.....

* The response codes as well as the frequency of the respective responses to each question in the questionnaire are noted in separate columns.

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(1) Respondent's district (municipality) of residence (fieldworker complete)

Thulamela	01	24
Makhado	02	26
Mutale	03	23
Musina	04	25

N=98

(2) Place where respondent was interviewed (fieldworker complete)

Thohoyandou (Thulamela district)	01	12
Malamulele (Thulamela district)	02	12
Makhado CBD (Makhado district)	03	9
Dzanani (Makhado district)	04	12
Levubu (Makhado district)	05	5
Tshilamba (Mutale district)	06	13
Masisi (Mutale district)	07	10
Musina CBD (Musina district)	08	14
Beit Bridge (Musina district)	09	11

N=98

(3) Capacity in terms of which the respondent participated (fieldworker complete)

SAPS	01	-
Road Traffic Safety Officer	02	-
Transport Planner	03	-
Municipal Councillor	04	-
Municipal Manager	05	-
LDV Commuter/Passenger	06	-
LDV Operator	07	98

N=98

(4) Gender of respondent (fieldworker complete)

Male	01	85
Female	02	13

N=98

(5).How old are you?

15- 20 years	01	-
21- 25 years	02	-
26- 35 years	03	24
36- 40 years	04	50
41- 45 years	05	22
46- 50 years	06	2
51-55 years	07	-
56-60 years	08	-
>60 years	09	-

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N=98

(6) Are you …

single (never married)?	01	-
single parent?	02	4
married?	03	92
divorced?	04	1
widowed?	05	1

N=98

(7) What is your highest educational qualification?

None	01	-
Primary school: Grade 7/Std 5 or lower	02	1
Grade 8/ Std 6 (Form 1)	03	4
Grade 9/ Std 7 (Form II)	04	27
Grade 10/ Std 8 (Form III, NTC I)	05	41
Grade 11/ Std 9 (Form IV, NTC II)	06	12
Grade 12/ Std 10 (Form V, NTC III)	07	13
Diploma	08	-
B. Degree	09	-
Honours/Master's Degree	10	-
Doctor's Degree (Non-Medical)	11	-
Other	12	-
Refuse to answer	*99*	-

N=98

(8) Which one of the following describes your main work situation best?

Pupil/student	01	2
Housewife	02	4
Pensioner (aged/ retired/ sick)	03	9
Unemployed	04	4
Employed part time	05	-
Employed full time	06	-
Self-employed – part time	07	40
Self-employed – full time	08	37
Other	09	2
Refuse to answer	*99*	-

N=98

(9) What is the average monthly household income of the household of which you are currently a member?

No fixed income	01	-
R1 – R99	02	-
R100 – R499	03	18
R500 – R999	04	35
R1,000 - R4,999	05	39

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R5,000 – R9,999	06	6
R10, 000 or higher	07	-
Uncertain	08	-
Refuse to answer	*99*	-

N=98

(10) What, if any, was your main source of income in the past month?

Receive no money on a fixed basis	01	2
Salary or wages from a job (including self-employment)	02	3
Spouse or other family member(remittances)	03	-
Friend(s)	04	-
Sales	05	3
Grant from government and/or another agency	06	31
Other	07	54
Refuse to answer	*99*	8

N=98

(11) How many years have you been operating a LDV passenger transport service?

<than a year	01	38
1-5yrs	02	36
6-10yrs	03	18
>10yrs	04	5
Can't say	*99*	1

N=98

(12) How many LDV passenger transport operators/services would you say are operating in the area where you live?

1-5 LDVs	01	48
6-10 LDVs	02	37
11-15 LDVs	03	13
>15 LDVs	04	-

N=98

Section 2

(13) How often do you usually/typically do a trip?

Daily	01	26
3-4 days a week	02	17
Weekend	03	15
Monday to Friday	04	33
Month-end	05	7
Once a month	06	-

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Can't remember	*99*	-

N=98

(14) What is the usual/typical reason you do a trip?

To transport workers	01	31
To transport pupil/student	02	43
To transport passengers	03	24

N=98

(15) Who are usually/typically the passengers on the trips you do?

Workers	01	22
Pupil/student	02	41
Shoppers	03	22
Business	04	11
Other	05	2
Can't remember	*99*	1

N=98

(16) Relate to passengers

(17) What mode/type of transport is mostly available in the area where you live?

Taxis	01	14
Light Delivery Vehicles (LDVs)/bakies	02	50
Mini-buses	03	2
Buses	04	-
All of the above	05	32
Can't remember/say	*99*	1

N=98

(18) How much (in Rand) do you usually/typically charge for a round/return LDV trip?

R10- R20	01	15
R30-R40	02	51
>R50	03	30
Other	04	2

N=98

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(19) What mode/type of passenger transport service would you say is mostly used in the area where you live?

Taxis	01	21
LDVs	02	57
Mini-Buses	03	4
Buses	04	3
All of the above	05	13
Can't remember/say	*99*	-

N=98

(20) Why, would you say, is the abovementioned mode/type of transport mostly used in the area where you live? (Open-ended question.)

Only available transport	01	82
Can't say	*02*	16

N98

(21) What, would you say, and thinking of the service you operate, is the main advantage of operating a LDV passenger transport service? (Open-ended question.)

No joining fee needed	01	29
No permit needed	02	38
No route permit needed	03	29
Can't say	*99*	2

N=98

(22) Relate to passengers

(23) What is the main challenge/difficulty you experience as an operator of a LDV passenger transport service? (Open-ended question.)

Not allowed to use public facilities	01	30
Threat of violence by legal operators	02	39
Constant harassment by police	03	29
Can't say	*99*	-

N=98

(24) Relate to passengers

(25) Thinking about the areas where you usually travel, are you or are you not satisfied with the **taxi** transport services?

Very satisfied	01	16
Satisfied	02	36
Dissatisfied	03	30
Very dissatisfied	04	13
Can't say	*99*	3

N=98

(26) Thinking about the areas where usually travel, are you or are you not satisfied with the **LDV** passenger transport services?

Very satisfied	01	20
Satisfied	02	48
Dissatisfied	03	20
Very dissatisfied	04	10
Can't say	*99*	-

N=98

(27) Thinking about the areas where you usually travel, are you or are you not satisfied with the **bus** transport services?

Very satisfied	01	17
Satisfied	02	40
Dissatisfied	03	27
Very dissatisfied	04	14
Can't say	*99*	-

N=98

(28) Thinking about the areas where you usually travel, are you or are you not satisfied with the transport services **other** than those mentioned?

Very satisfied	01	10
Satisfied	02	47
Dissatisfied	03	36
Very dissatisfied	04	5
Can't say	*99*	-

N=98

(29) Are you aware of any laws/regulations governing the practice of transporting passengers by LDVs for a fee?

Yes	01	55
No	02	41
Can't say	*99*	2

N=98

(30) If yes, what are these laws/regulations? (Open-ended question.)

National Road Traffic Act 93 of 96	01	19
National Land Transport Transition Act 2000	02	13
Criminal Procedure Act 51 of 1977	03	12
By-laws	03	15
Can't say	*99*	39

N=98

(31) What would you say is the most important issue, if any, regarding the way LDV passenger transport services operate that needs attention? (Open-ended question.)

Issuing of permits	01	38
Use of public facilities	02	50
Can't say	*99*	10

N=98

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(32) What would you say is the most important structural change needed, if any, regarding the vehicle used in the LDV passenger transport service? (Open-ended question.)

Covered canopies	01	22
Proper seats	02	31
Specification of seating capacity	03	31
Generally comfortable and safe conditions	04	13
Can't say	*99*	1

N=98

Once again, thank you for talking to me

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QUESTIONNAIRE*
ADMINISTRATOR, COUNCILLORS AND LAW ENFORCEMENT AGENTS

Questionnaire no. [ ]

Date of interview...

Time of interview…

Informed consent

Fieldworker read out:

My name is ..... I am one of several research assistants doing interviews with people living in this area. These interviews are part of a research project of a post-graduate student at the University of Venda. The project is investigating an important factor in people's lives, namely travel arrangements and conditions. It is especially interested in the **use of** Light Delivery Vehicles (**LDVs**) **to transport people at a fee**. The information you and others provide would assist transport agencies in improving the transport situation in this area.

We should therefore like to ask you some questions on the issues mentioned. It will take about 30 minutes. The questions are included in this form that I have with me and on which your answers will be recorded. You are welcome to look through the form before I ask you the questions. Your name will not be written anywhere on the form and you need not sign the form. Your answers will be held in strict confidence. It will be processed by computer in such a way that no personal identification is possible.

	Yes	No
Do you have any questions?	1	2
Will you do the interview?	1	2

Fieldworker, if "no", thank interviewee and terminate the interview; if "yes" continue as follows:

Thank you very much for agreeing to answer the following questions. The information you provide is extremely important, so try to answer as accurately as possible. You are not being tested and there are no right or wrong answers. You can at any time ask me to stop, repeat or explain a question.

Signature_____

* The response codes as well as the frequency of the respective responses to each question in the questionnaire are noted in separate columns.

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Section 1

(1) Respondent's district (municipality) of residence (fieldworker complete)

Thulamela	01	20
Makhado	02	16
Mutale	03	13
Musina	04	13
Vhembe District Municipality	05	7

N=69

(2) Place where respondent was interviewed (fieldworker complete)

Thohoyandou (Thulamela district)	01	21
Malamulele (Thulamela district)	02	6
Makhado CBD (Makhado district)	03	7
Dzanani (Makhado district)	04	6
Levubu (Makhado district)	05	3
Tshilamba (Mutale district)	06	13
Masisi (Mutale district)	07	-
Musina CBD (Musina district)	08	13
Beit Bridge (Musina district)	09	-

N=69

(3) Capacity in terms of which the respondent participated (fieldworker complete)

SAPS	01	17
Road Traffic Safety Officer	02	25
Transport Planner	03	8
Municipal Councillor	04	10
Municipal Manager	05	9
LDV Commuter/Passenger	06	-
LDV Operator	07	-

N=69

(4) Gender of respondent (fieldworker complete)

Male	01	35
Female	02	34

N=69

(5).How old are you?

15- 20 years	01	1
21- 25 years	02	2
26- 35 years	03	8
36- 40 years	04	21
41- 45 years	05	19
46- 50 years	06	13
51-55 years	07	5

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56-60 years	08	-
>60 years	09	-

N=69

(6) Are you …

single (never married)?	01	3
single parent?	02	18
married?	03	39
divorced?	04	9
widowed?	05	-

N=69

(7) What is your highest educational qualification?

None	01	-
Primary school: Grade 7/ Std 5 or lower	02	-
Grade 8/ Std 6 (Form 1)	03	1
Grade 9/ Std 7 (Form II)	04	-
Grade 10/ Std 8 (Form III, NTC I)	05	-
Grade 11/ Std 9 (Form IV, NTC II)	06	6
Grade 12/ Std 10 (Form V, NTC III)	07	7
Diploma	08	43
B. Degree	09	24
Honours/Master's Degree	10	1
Doctor's Degree (Non-Medical)	11	-
Other	12	-
Refuse to answer	*99*	-

N=69

(8) Which one of the following describes your main work situation best?

Pupil/student	01	-
Housewife	02	-
Pensioner (aged/ retired/ sick)	03	-
Unemployed	04	-
Employed part time	05	1
Employed full time	06	68
Self-employed – part time	07	-
Self-employed – full time	08	-
Other	09	-
Refuse to answer	*99*	-

N=69

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(9) What is the average monthly household income of the household of which you are currently a member?

No income	01	-
R1 – R99	02	-
R100 – R499	03	-
R500 – R999	04	-
R1,000 - R4,999	05	1
R5,000 – R9,999	06	68
R10, 000 or higher	07	-
Uncertain	08	-
Refuse to answer	*99*	-

N=69

(10) What, if any, was your main source of income in the past month?

Receive no money on a fixed basis	01	-
Salary or wages from a job (including self-employment)	02	69
Spouse or other family member(remittances)	03	-
Friend(s)	04	-
Sales	05	-
Grant from government and/or another agency	06	-
Other	07	-
Refuse to answer	*99*	-

N=69

[11] Relate to Operators
[12] Relate to operators

Section 2

[13] Relate to passengers and operators
[14] Relate to operators
[15] Relate to operators
[16] Relate commuters

(17] What mode/type of transport, would you say, is mostly available in the area where you live?

Taxis	01	6
Light Delivery Vehicles (LDVs)/"bakkies"	02	2
Mini-buses	03	-
Buses	04	-
All of the above	05	61
Can't remember/say	*99*	-

N=69

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[18] Relate to operators and commuters

(19) What mode/type of transport, would you say, is mostly used in the area where you live?

Taxis	01	5
LDVs	02	-
Mini-buses	03	-
Buses	04	-
All of the above	05	64
Can't remember/say	*99*	-

N=69

(20) Why, would you say, is the abovementioned mode/type of transport mostly used? (Open-ended question.)

Only available transport	01	69
Can't say	*02*	-

N=69

[21] Relate to operators
[22] Relate to passengers
[23] Relate to operators
[24]Relate to passengers

(25) Thinking about the areas where you usually travel, are you or are you not satisfied with the **taxi** transport services?

Very satisfied	01	10
Satisfied	02	26
Dissatisfied	03	33
Very dissatisfied	04	-
Can't say	*99*	-

N=69

(26) Thinking about the areas where you usually travel, are you or are you not satisfied with the **LDV** passenger transport services?

Very satisfied	01	2
Satisfied	02	15
Dissatisfied	03	52
Very dissatisfied	04	-
Can't say	*99*	-

N=69

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(27) Thinking about the areas where you usually travel, are you or are you not satisfied with the **bus** transport services?

Very satisfied	01	2
Satisfied	02	54
Dissatisfied	03	13
Very dissatisfied	04	-
Can't say	*99*	-

N=69

(28) Thinking about the areas where you usually travel, are you or are you not satisfied with transport services **other** than those mentioned?

Very satisfied	01	2
Satisfied	02	67
Dissatisfied	03	-
Very dissatisfied	04	-
Can't say	*99*	-

N=69

(29) Are you aware of any laws/regulations governing the practice of transporting passengers by LDVs for a fee?

Yes	01	69
No	02	-
Can't say	*99*	9

N=69

(30) If yes, what are these laws/regulations? (Open-ended question.)

National Road Traffic Act 93 of 96	01	16
National Land Transport Transition Act 22 of 2000	02	19
Criminal Procedure Act 51 of 1977	03	14
By-laws	03	20
Can't say	*99*	-

N=69

(31) What would you say is the most important issue, if any, regarding the way LDV passenger transport services operate needing attention? (Open-ended question.)

Issuing of permits	01	36
Use of public facilities	02	33
Can't say	*99*	-

N=69

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(32) What would you say is the most important structural change needed, if any, regarding the vehicle used in the LDV passenger transport service? (Open-ended question.)

Covered canopies	01	11
Proper seats	02	27
Specification of seating capacity	03	19
Generally comfortable and safe conditions	04	12
Can't say	*99*	-

N=69

Once again, thank you for talking to me.

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IN-DEPTH AND FOCUS GROUP INTERVIEW SCHEDULE/GUIDE

1. Before commencing with interview, note interviewee's gender, place (district) of residence, occupation and, if applicable, place of work.
2. Introduction:

2.1 I'd like to thank you for agreeing to the interview and wish to stress that what you say will be held in strict confidence. Your names will, for example, not be written down nor mentioned in any way.

2.2 Before we start, however, I would also like to ask your permission to use a tape recorder and take notes during the interview. This will ensure the accurate recording of the information provided by you. I'd also like to mention that the purpose of this interview is to gather information regarding:

a) The extent to which LDVs are used to convey passengers and goods.
b) Existing passenger transport options and choices in the Vhembe district.
c) The level of customer satisfaction with the use of LDVs to convey passengers.
d) The level of awareness amongst users and operators about legislature that prohibits the use of LDVs as passenger transport services.
e) Possible type of modifications and other measures needed to integrate LDVs into the formal public transport system in VDM.

3. Could you tell me a bit more about yourself, e.g. your age, educational and work situation?
4. How would you describe passenger transport options and choices in the Vhembe district, the area and place where you live?
5. What modes of transport do you personally use when you travel in Vhembe and in the place where you live and work? What mode of transport do you mostly use and why?
6. Overall, do you think people in Vhembe and in the place where you live are or are not satisfied with available passenger transport services? Are you personally satisfied or not satisfied with the relevant services?
7. What are your views on the quality of the work rendered by (a) road traffic safety officials; (b) bus operators and drivers; (c) conventional taxi operators and drives: (d) bus and taxi associations; and (e) LDV operators and drivers?
8. Do you know of any legislation and/or regulations pertaining to the use of LDVs to transport passenger? If so, could you name the legislation/regulations?
9. What, if any, modifications and other measures related to the LDV passenger transport service are needed in your view?

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OBSERVATION SCHEDULE/GUIDE

1. Place of observation (district, village/town, particular place)
2. Facilities in the area
3. Type and quality of roads in the area
4. Surrounding villages/towns
5. Typical modes of passenger transport available
6. Typical type of passengers transported
7. Circumstances/conditions in which passengers are transported in LDVs, including the type of passengers transported

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APPENDIX 2

MEASURES OF (THE SIZE OF) AN EFFECT OR RELATIONSHIP

The analysis of the cross-tabulation of two categorical variables will tell whether or not the variables are related. This is achieved by means of the *Pearson Chi-squared test* for independence.[1] The *effect size index* in such cases, Cramer's V, is determined as a function of the Pearson Chi-squared statistic as follows:

$$\text{Cramer's V} = \sqrt{\frac{\chi^2}{N(k-1)}}$$

Where N is the sample size and k is the smaller of the number of rows or columns. (It should be borne in mind that it is useful to not only provide information about statistical significance or, for that matter, practical significance but also about the magnitude of an observed statistically/practically significant effect or relationship. "Statistical significance is concerned with whether a research result is due to chance or sampling variability; practical significance is concerned with whether the result is useful in the real world."[2])

Since larger tables tend to produce bigger Chi-squared values without necessarily meaning that the relationship is stronger, the guidelines for the interpretation of the value of Cramer's V differ as the table becomes larger. The following guidelines have been suggested:

	k=2	k=3	k=4	k=5	k=6
Small effect	0.1	0.07	0.06	0.05	0.04
Medium effect	0.3	0.21	0.17	0.15	0.13
Large effect	0.5	0.35	0.29	0.25	0.22

1 Cohen, J. (1988). *Statistical Power Analysis. Second Edition.* Academic Press, Inc., New York.
2 Kirk, R.E. (1996). Practical significance: a concept whose time has come. *Educational and Psychological Measurement, 56*, 746-759.

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Pearson Chi-square test results

Q11 * Q1 Cross-tabulation[OPP] ("can't say" category omitted to avoid too many cells with no or 1 response)

How many years have you been operating a LDV passenger transport service? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q11	< than a year	Count	8	11	12	7	38
		% within Q1	33.3%	42.3%	54.5%	28.0%	39.2%
	1-5 yrs	Count	7	12	5	12	36
		% within Q1	29.2%	46.2%	22.7%	48.0%	37.1%
	6-10 yrs	Count	5	3	4	6	18
		% within Q1	20.8%	11.5%	18.2%	24.0%	18.6%
	>10yrs	Count	4	0	1	0	5
		% within Q1	16.7%	0.0%	4.5%	0.0%	5.2%
Total		Count	24	26	22	25	97
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	15.377[a]	9	.081
N of Valid Cases	97		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is 1.13.

Q12 * Q1 Cross-tabulation[opp]

How many LDV passenger transport services would you say are operating in the area where you live? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q12	1-5 LDVs	Count	10	15	13	10	48
		% within Q1	41.7%	57.7%	56.5%	40.0%	49.0%
	6-10 LDVs	Count	10	11	7	9	37
		% within Q1	41.7%	42.3%	30.4%	36.0%	37.8%
	11-15 LDVs	Count	4	0	3	6	13
		% within Q1	16.7%	0.0%	13.0%	24.0%	13.3%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	7.761[a]	6	.256
N of Valid Cases	98		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 3.05.

Q13 * Q1 Cross-tabulation[COM] ("can't remember" category omitted)

How often do you usually/typically take a trip?(Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q13	Daily	Count	9	7	7	4	27
		% within Q1	36.0%	29.2%	28.0%	16.0%	27.3%
	3-4 days a week	Count	0	2	0	3	5
		% within Q1	0.0%	8.3%	0.0%	12.0%	5.1%
	Weekend	Count	0	5	1	5	11
		% within Q1	0.0%	20.8%	4.0%	20.0%	11.1%
	Monday to Friday	Count	13	5	7	4	29
		% within Q1	52.0%	20.8%	28.0%	16.0%	29.3%
	Months-end	Count	1	4	7	7	19
		% within Q1	4.0%	16.7%	28.0%	28.0%	19.2%
	Once a Month	Count	2	1	3	2	8
		% within Q1	8.0%	4.2%	12.0%	8.0%	8.1%
Total		Count	25	24	25	25	99
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	27.610[a]	15	.024
N of Valid Cases	99		

a. 16 cells (66.7%) have expected count less than 5. The minimum expected count is 1.21
.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.528	.024
	Cramer's V	.305	.024
N of Valid Cases		99	

Large practical significance

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Q13 * Q1 Cross-tabulation[OPP]

How often do you usually/typically do a trip? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q13	Daily	Count	4	8	5	9	26
		% within Q1	16.7%	30.8%	21.7%	36.0%	26.5%
	3-4 days a week	Count	4	8	1	4	17
		% within Q1	16.7%	30.8%	4.3%	16.0%	17.3%
	Weekend	Count	4	6	0	5	15
		% within Q1	16.7%	23.1%	0.0%	20.0%	15.3%
	Monday to Friday	Count	8	4	14	7	33
		% within Q1	33.3%	15.4%	60.9%	28.0%	33.7%
	Months-end	Count	4	0	3	0	7
		% within Q1	16.7%	0.0%	13.0%	0.0%	7.1%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	27.694[a]	12	.006
N of Valid Cases	98		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is 1.64.

Symmetric measures[OPP]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.532	.006
	Cramer's V	.307	.006
N of Valid Cases		98	

Large practical significance

Q14 * Q1 Cross-tabulation[OPP]

What is the usual/typical reason you do a trip? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q14	To transport workers	Count	5	8	8	10	31
		% within Q1	20.8%	30.8%	34.8%	40.0%	31.6%
	To transport pupil/student	Count	11	11	10	11	43
		% within Q1	45.8%	42.3%	43.5%	44.0%	43.9%
	To transport passengers	Count	8	7	5	4	24
		% within Q1	33.3%	26.9%	21.7%	16.0%	24.5%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests[OPP]

	Value	df	p
Pearson Chi-Square	3.189[a]	6	.785
N of Valid Cases	98		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.63.

Q15 * Q1 Cross-tabulation[OPP] ("other" category omitted)

Who are usually/typically the passengers on the trips you do? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q15	Workers	Count	3	4	6	9	22
		% within Q1	12.5%	16.0%	27.3%	36.0%	22.9%
	Pupil/student	Count	9	11	11	10	41
		% within Q1	37.5%	44.0%	50.0%	40.0%	42.7%
	Shoppers	Count	8	6	4	4	22
		% within Q1	33.3%	24.0%	18.2%	16.0%	22.9%
	Business	Count	4	4	1	2	11
		% within Q1	16.7%	16.0%	4.5%	8.0%	11.5%
Total		Count	24	25	22	25	96
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	8.270[a]	9	.507
N of Valid Cases	96		

a. 4 cells (25.0%) have expected count less than 5. The minimum expected count is 2.52.

Q16 * Q1 Cross-tabulation[COM] ("other" and "can't remember" categories omitted)

What is the usual/typical reason you take a trip?(Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q16	To go to work	Count	6	9	0	4	19
		% within Q1	25.0%	39.1%	0.0%	17.4%	20.2%
	To go to school	Count	16	7	14	7	44
		% within Q1	66.7%	30.4%	58.3%	30.4%	46.8%
	Go for shopping	Count	2	2	9	7	20
		% within Q1	8.3%	8.7%	37.5%	30.4%	21.3%
	To do business	Count	0	5	1	5	11
		% within Q1	0.0%	21.7%	4.2%	21.7%	11.7%
Total		Count	24	23	24	23	94
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	30.033[a]	9	.000
N of Valid Cases	94		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is 2.69.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.565	.000
	Cramer's V	.326	.000
N of Valid Cases		94	

Large practical significance

Q18 * Q1 Cross-tabulation[COM] ("other mount" category omitted)

How much does a round/return trip (to and from your home) usually/typically cost you in Rand? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q18	R10-R20	Count	17	5	6	5	33
		% within Q1	81.0%	20.8%	26.1%	20.0%	35.5%
	R30-R40	Count	4	15	12	16	47
		% within Q1	19.0%	62.5%	52.2%	64.0%	50.5%
	>R50	Count	0	4	5	4	13
		% within Q1	0.0%	16.7%	21.7%	16.0%	14.0%
Total		Count	21	24	23	25	93
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	25.781[a]	6	.000
N of Valid Cases	93		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 2.94.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.527	.000
	Cramer's V	.372	.000
N of Valid Cases		93	

Large practical significance

Q18 * Q1 Cross-tabulation[OPP]

How much (in Rand) do you usually/typically charge for a round/return trip? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q18	R10-R20	Count	3	4	4	4	15
		% within Q1	12.5%	16.7%	17.4%	16.0%	15.6%
	R30-R40	Count	13	14	15	9	51
		% within Q1	54.2%	58.3%	65.2%	36.0%	53.1%
	>R50	Count	8	6	4	12	30
		% within Q1	33.3%	25.0%	17.4%	48.0%	31.3%
Total		Count	24	24	23	25	96
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square tests[OPP]

	Value	df	p
Pearson Chi-Square	6.347[a]	6	.385
N of Valid Cases	96		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 3.59.

Q21 * Q1 Cross-tabulation[OPP] ("can't say" category omitted)

What would you say, and thinking of the service you operate, is the main advantage of operating a LDV passenger transport service? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q21	No joining fees	Count	5	10	8	6	29
		% within Q1	20.8%	38.5%	38.1%	24.0%	30.2%
	No permit	Count	10	7	9	12	38
		% within Q1	41.7%	26.9%	42.9%	48.0%	39.6%
	No route permit	Count	9	9	4	7	29
		% within Q1	37.5%	34.6%	19.0%	28.0%	30.2%
Total		Count	24	26	21	25	96
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	5.115[a]	6	.529
N of Valid Cases	96		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.34.

Q22 * Q1 Cross-tabulation[COM] ("dropped at gate/workplace" (n=3) and "can't say" categories omitted)

What would you say is the main advantage of travelling by LDV as a passenger? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q22	Carried with luggage	Count	2	6	9	7	24
		% within Q1	9.5%	25.0%	36.0%	35.0%	26.7%
	Affordable price	Count	8	9	8	9	34
		% within Q1	38.1%	37.5%	32.0%	45.0%	37.8%
	No advantages	Count	11	9	8	4	32
		% within Q1	52.4%	37.5%	32.0%	20.0%	35.6%
Total		Count	21	24	25	20	90
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	7.322[a]	6	.292
N of Valid Cases	90		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.33.

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Q23 * Q1 Cross-tabulation[OPP]

What is the main challenge/difficulty you experience as an operator of a LDV passenger transport service? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q23	Not allowed to use public facilities	Count	5	7	10	8	30
		% within Q1	20.8%	26.9%	43.5%	32.0%	30.6%
	Threat of violence by legal operators	Count	13	10	7	9	39
		% within Q1	54.2%	38.5%	30.4%	36.0%	39.8%
	Constant harassment by police	Count	6	9	6	8	29
		% within Q1	25.0%	34.6%	26.1%	32.0%	29.6%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	4.516[a]	6	.607
N of Valid Cases	98		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.81.

Q24 * Q1 Cross-tabulation[COM] ("can't say" category omitted)

What is the main challenge/difficulty you experience when travelling by LDV? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q24	overload	Count	12	13	14	9	48
		% within Q1	57.1%	59.1%	56.0%	37.5%	52.2%
	exposed to bad weather	Count	0	3	5	6	14
		% within Q1	0.0%	13.6%	20.0%	25.0%	15.2%
	Hard seats,made of woods/steel	Count	8	3	4	7	22
		% within Q1	38.1%	13.6%	16.0%	29.2%	23.9%
	standing for the entire trip	Count	1	3	2	2	8
		% within Q1	4.8%	13.6%	8.0%	8.3%	8.7%
Total		Count	21	22	25	24	92
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	11.157[a]	9	.265
N of Valid Cases	92		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is 1.83.

Q25new * Q1 Cross-tabulation[COM] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the taxi transport services? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q25new	Satisfied	Count	15	8	5	15	43
		% within Q1	65.2%	34.8%	20.8%	62.5%	45.7%
	Dissatisfied	Count	8	15	19	9	51
		% within Q1	34.8%	65.2%	79.2%	37.5%	54.3%
Total		Count	23	23	24	24	94
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	13.343[a]	3	.004
N of Valid Cases	94		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.52.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.377	.004
	Cramer's V	.377	.004
N of Valid Cases		94	

Medium practical significance

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Q25new * Q1 Cross-tabulation[OPP] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the taxi transport services? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q25new	Satisfied	Count	15	16	10	11	52
		% within Q1	62.5%	61.5%	50.0%	44.0%	54.7%
	Dissatisfied	Count	9	10	10	14	43
		% within Q1	37.5%	38.5%	50.0%	56.0%	45.3%
Total		Count	24	26	20	25	95
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	2.414[a]	3	.491
N of Valid Cases	95		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.05.

Q26 * Q1 Cross-tabulation[COM] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the LDV passenger transport services? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q26new	Satisfied	Count	20	16	19	20	75
		% within Q1	87.0%	64.0%	79.2%	80.0%	77.3%
	Dissatisfied	Count	3	9	5	5	22
		% within Q1	13.0%	36.0%	20.8%	20.0%	22.7%
Total		Count	23	25	24	25	97
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	3.896[a]	3	.273
N of Valid Cases	97		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.22.

Q26Cross-tabulation[OPP] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the LDV passenger transport services? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q26new	Satisfied	Count	19	17	17	15	68
		% within Q1	79.2%	65.4%	73.9%	60.0%	69.4%
	Dissatisfied	Count	5	9	6	10	30
		% within Q1	20.8%	34.6%	26.1%	40.0%	30.6%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	2.536[a]	3	.469
N of Valid Cases	98		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.04.

Q27 * Q1 Cross-tabulation[COM] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the bus transport services? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q27new	Satisfied	Count	14	9	5	14	42
		% within Q1	63.6%	39.1%	20.0%	56.0%	44.2%
	Dissatisfied	Count	8	14	20	11	53
		% within Q1	36.4%	60.9%	80.0%	44.0%	55.8%
Total		Count	22	23	25	25	95
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	10.957[a]	3	.012
N of Valid Cases	95		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.73.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.340	.012
	Cramer's V	.340	.012
N of Valid Cases		95	

Medium practical significance

Q27new * Q1 Cross-tabulation[OPP] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the bus transport services? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q27new	Satisfied	Count	14	12	14	17	57
		% within Q1	58.3%	46.2%	60.9%	68.0%	58.2%
	Dissatisfied	Count	10	14	9	8	41
		% within Q1	41.7%	53.8%	39.1%	32.0%	41.8%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	2.605[b]	3	.457
N of Valid Cases	98		

b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.62.

Q28new * Q1 Cross-tabulation[COM] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with other transport services? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q28new	Satisfied	Count	14	6	2	6	28
		% within Q1	63.6%	27.3%	8.7%	24.0%	30.4%
	Dissatisfied	Count	8	16	21	19	64
		% within Q1	36.4%	72.7%	91.3%	76.0%	69.6%
Total		Count	22	22	23	25	92
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

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	Value	df	p
Pearson Chi-Square	17.181[a]	3	.001
N of Valid Cases	92		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.70.

Symmetric measures[COM]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.432	.001
	Cramer's V	.432	.001
N of Valid Cases		92	

Medium practical significance

Q28Cross-tabulation[OPP] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with other transport services? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q28new	Satisfied	Count	15	16	16	10	57
		% within Q1	62.5%	61.5%	69.6%	40.0%	58.2%
	Dissatisfied	Count	9	10	7	15	41
		% within Q1	37.5%	38.5%	30.4%	60.0%	41.8%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	4.925[a]	3	.177
N of Valid Cases	98		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.62.

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Q17n * Q1 Cross-tabulation[COM] ("can't remember" category omitted; combined "Mini-buses" and "Buses" categories)

What mode/type of transport would you say is mostly available in the area where you live? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q17n	Taxis	Count	0	0	0	1	1
		% within Q1	0.0%	0.0%	0.0%	4.0%	1.0%
	LDVs/Bakkies	Count	7	20	23	17	67
		% within Q1	28.0%	80.0%	92.0%	68.0%	67.0%
	Buses/Mini-buses	Count	0	2	0	2	4
		% within Q1	0.0%	8.0%	0.0%	8.0%	4.0%
	All of above	Count	18	3	2	5	28
		% within Q1	72.0%	12.0%	8.0%	20.0%	28.0%
Total		Count	25	25	25	25	100
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	39.356[a]	9	.000
N of Valid Cases	100		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .25.

Symmetric measures[COM]

		Value	Approx. Sig.	
Nominal by Nominal	Phi	.627	.000	
	Cramer's V	.362	.000	Large practical significance
N of Valid Cases		100		

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Q17n * Q1 Cross-tabulation[OPP] ("can't remember" category omitted; combined "Mini-buses" and "Buses" categories)

What mode/type of transport would you say is mostly available in the area where you live? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q17n	Taxis	Count	4	1	3	6	14
		% within Q1	16.7%	3.8%	13.0%	24.0%	14.3%
	LDVs/Bakkies	Count	13	16	13	8	50
		% within Q1	54.2%	61.5%	56.5%	32.0%	51.0%
	Buses/Mini-buses	Count	0	0	2	0	2
		% within Q1	0.0%	0.0%	8.7%	0.0%	2.0%
	All of above	Count	7	9	5	11	32
		% within Q1	29.2%	34.6%	21.7%	44.0%	32.7%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	14.741[a]	9	.098
N of Valid Cases	98		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .47.

Q19n * Q1 Cross-tabulation[COM] ("can't remember" category omitted; combined "Mini-buses" and "Buses" categories)

What mode/type of transport do you mostly use? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q19n	LDVs/Bakkies	Count	7	20	23	19	69
		% within Q1	28.0%	80.0%	92.0%	76.0%	69.0%
	Buses/Mini-buses	Count	1	1	0	2	4
		% within Q1	4.0%	4.0%	0.0%	8.0%	4.0%
	All above	Count	17	4	2	4	27
		% within Q1	68.0%	16.0%	8.0%	16.0%	27.0%
Total		Count	25	25	25	25	100
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	31.771[a]	6	.000
N of Valid Cases	100		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.00.

Symmetric measures[Com]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.564	.000
	Cramer's V	.399	.000
N of Valid Cases		100	

Large practical significance

Q19n * Q1 Cross-tabulation[OPP] ("can't remember" category omitted; combined "Mini-buses" and "Buses" categories)

What mode/type of transport do you mostly use? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q19n	Taxis	Count	11	0	4	6	21
		% within Q1	45.8%	0.0%	17.4%	24.0%	21.4%
	LDVs/Bakkies	Count	7	20	17	13	57
		% within Q1	29.2%	76.9%	73.9%	52.0%	58.2%
	Buses/Mini-buses	Count	0	1	2	4	7
		% within Q1	0.0%	3.8%	8.7%	16.0%	7.1%
	All of above	Count	6	5	0	2	13
		% within Q1	25.0%	19.2%	0.0%	8.0%	13.3%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	30.377[a]	9	.000
N of Valid Cases	98		

a. 9 cells (56.3%) have expected count less than 5. The minimum expected count is 1.64.

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Symmetric measures[OPP]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.557	.000
	Cramer's V	.321	.000
N of Valid Cases		98	

Large practical significance

Q29 * Q1 Cross-tabulation[COM] ("can't say" omitted)

Are you aware of any laws or regulations governing the practice of transporting passengers by LDV for a fee? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q29	yes	Count	1	2	2	0	5
		% within Q1	5.6%	9.1%	8.3%	0.0%	5.6%
	no	Count	17	20	22	25	84
		% within Q1	94.4%	90.9%	91.7%	100.0%	94.4%
Total		Count	18	22	24	25	89
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	2.322[a]	3	.508
N of Valid Cases	89		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 1.01.

Q29 * Q1 Cross-tabulation[OPP]

Are you aware of any laws or regulations governing the practice of transporting passengers by LDV for a fee? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q29	yes	Count	12	16	13	14	55
		% within Q1	50.0%	64.0%	56.5%	58.3%	57.3%
	no	Count	12	9	10	10	41
		% within Q1	50.0%	36.0%	43.5%	41.7%	42.7%
Total		Count	24	25	23	24	96
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	.998[a]	3	.802
N of Valid Cases	96		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.82.

Q30 * Q1 Cross-tabulation[OPP]

If yes, what are these laws/regulations? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q30	NRTA 93/96	Count	3	5	6	5	19
		% within Q1	12.5%	19.2%	26.1%	20.0%	19.4%
	NLTA 2000	Count	4	4	3	2	13
		% within Q1	16.7%	15.4%	13.0%	8.0%	13.3%
	CRIMINAL PROCEDURE ACT	Count	2	2	1	7	12
		% within Q1	8.3%	7.7%	4.3%	28.0%	12.2%
	BY-LAWS	Count	3	5	4	3	15
		% within Q1	12.5%	19.2%	17.4%	12.0%	15.3%
	Can't say	Count	12	10	9	8	39
		% within Q1	50.0%	38.5%	39.1%	32.0%	39.8%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	10.578[a]	12	.565
N of Valid Cases	98		

a. 15 cells (75.0%) have expected count less than 5. The minimum expected count is 2.82.

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Q31 * Q1 Cross-tabulation[OPP]

What would you say is the most important issue regarding the way LDV passenger transport services operate needing attention? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q31	To be issued with permit	Count	9	9	9	11	38
		% within Q1	37.5%	34.6%	39.1%	44.0%	38.8%
	To use public facilities	Count	12	15	10	13	50
		% within Q1	50.0%	57.7%	43.5%	52.0%	51.0%
	Can't say	Count	3	2	4	1	10
		% within Q1	12.5%	7.7%	17.4%	4.0%	10.2%
Total		Count	24	26	23	25	98
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	3.188[a]	6	.785
N of Valid Cases	98		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 2.35.

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Q32*Q1 Cross-tabulation[COM] ("can't say" omitted)

What would you say is the most important structural change needed, if any, with regard to the manner in which the LDVs that transport passengers are designed? (Commuters)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q32	Covered canopies	Count	5	9	2	7	23
		% within Q1	25.0%	39.1%	10.5%	29.2%	26.7%
	Proper seats	Count	5	4	4	7	20
		% within Q1	25.0%	17.4%	21.1%	29.2%	23.3%
	Specified seating capacity	Count	6	7	7	6	26
		% within Q1	30.0%	30.4%	36.8%	25.0%	30.2%
	Good working conditions	Count	4	3	6	4	17
		% within Q1	20.0%	13.0%	31.6%	16.7%	19.8%
Total		Count	20	23	19	24	86
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[COM]

	Value	df	p
Pearson Chi-Square	6.507[a]	9	.688
N of Valid Cases	86		

a. 6 cells (37.5%) have expected count less than 5. The minimum expected count is 3.76.

Q32 * Q1 Cross-tabulation[OPP]

What would you say is the most important structural change needed, if any, with regard to the manner in which the LDVs that transport passengers are designed? (Operators)			Q1				Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	
Q32	Covered canopies	Count	6	4	7	5	22
		% within Q1	25.0%	15.4%	31.8%	20.0%	22.7%
	Proper seats	Count	8	9	6	8	31
		% within Q1	33.3%	34.6%	27.3%	32.0%	32.0%
	Specified seating capacity	Count	8	9	6	8	31
		% within Q1	33.3%	34.6%	27.3%	32.0%	32.0%
	Good working conditions	Count	2	4	3	4	13
		% within Q1	8.3%	15.4%	13.6%	16.0%	13.4%
Total		Count	24	26	22	25	97
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[OPP]

	Value	df	p
Pearson Chi-Square	2.665[a]	9	.976
N of Valid Cases	97		

a. 5 cells (31.3%) have expected count less than 5. The minimum expected count is 2.95.

Q25new * Q1 Cross-tabulation[AD] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usuallyy travel, are you or are you not satisfied with taxi transport services? (Administrators)			Q1					Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	VDM	
Q25new	Satisfied	Count	0	7	9	13	7	36
		% within Q1	0.0%	43.8%	69.2%	100.0%	100.0%	52.2%
	Dissatisfied	Count	20	9	4	0	0	33
		% within Q1	100.0%	56.3%	30.8%	0.0%	0.0%	47.8%
Total		Count	20	16	13	13	7	69
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[AD]

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42.122[a]	4	.000
N of Valid Cases	69		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.35.

Symmetric measures[AD]

		Value	Approx. Sig.	
Nominal by Nominal	Phi	.781	.000	
	Cramer's V	.781	.000	Large practical significance
N of Valid Cases		69		

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Q26new * Q1 Cross-tabulation[AD] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with the LDV passenger transport services? (Administrators)			Q1					Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	VDM	
Q26new	Satisfied	Count	0	0	4	10	3	17
		% within Q1	0.0%	0.0%	30.8%	76.9%	42.9%	24.6%
	Dissatisfied	Count	20	16	9	3	4	52
		% within Q1	100.0%	100.0%	69.2%	23.1%	57.1%	75.4%
Total		Count	20	16	13	13	7	69
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square tests[AD]

	Value	df	p
Pearson Chi-Square	32.424[a]	4	.000
N of Valid Cases	69		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 1.72.

Symmetric measures[AD]

		Value	Approx. Sig.
Nominal by Nominal	Phi	.686	.000
	Cramer's V	.686	.000
N of Valid Cases		69	

Large practical significance

Q27new * Q1 Cross-tabulation[AD] ("very satisfied" and "satisfied" categories were combined and so also the "very dissatisfied" and "dissatisfied" categories; "can't say" category was omitted)

Thinking about the areas where you usually travel, are you or are you not satisfied with bus transport services? (Administrators)			Q1					Total
			THULAMELA	MAKHADO	MUTALE	MUSINA	VDM	
Q27new	Satisfied	Count	20	16	13	0	7	56
		% within Q1	100.0%	100.0%	100.0%	0.0%	100.0%	81.2%
	Dissatisfied	Count	0	0	0	13	0	13
		% within Q1	0.0%	0.0%	0.0%	100.0%	0.0%	18.8%
Total		Count	20	16	13	13	7	69
		% within Q1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-square tests[AD]

	Value	df	p
Pearson Chi-Square	69.000[a]	4	.000
N of Valid Cases	69		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 1.32.

Symmetric measures[AD]

		Value	Approx. Sig.
Nominal by Nominal	Phi	1.000	.000
	Cramer's V	1.000	.000
N of Valid Cases		69	

Large practical significance

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Table 3.2: Socio-demographic factors of concern in the study's surveys, survey questions and the associated variables (highlighted in bold) and indicators

Socio-demographic factors and research questions	Indicators		
	Commuter survey	LDV operator survey	Administrator survey
1. Socio-demographic factors	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income	District and **place** of residence; **gender**; **age**; **marital status**; highest educational **qualification**; **work** situation; average household monthly **income**; personal income
2. What are the nature and extent of the use of LDVs to transport passengers?	Frequency of **LDV trips** per month Main **reason for LDV trips** Main **advantage of** travelling by **LDV** Main **challenge/difficulty** when travelling by **LDV** Typical **cost** of a round trip (to and from place of residence)	Number of **years operating** Number of **LDVs operating** Number of monthly **LDV trips** Main **reason** for LDV trips Typical **passengers** Main **advantage** of **LDV operation** Main **challenge/difficulty** in respect of **LDV operation** Typical **cost** of a round trip (to and from place of residence)	
3. What are the passenger transport options and choices available in Vhembe District?	Type of passenger **transport** mostly **available** in area of residence type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus** and **other** passenger transport services (besides LDV passenger services)	Type of passenger **transport** mostly **available** in area of residence Type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus, LDV** and **other** passenger transport services	Type of passenger **transport** mostly **available** in area of residence Type of passenger **transport mostly used** Main **reason for using** a particular type of passenger transport mostly Level of satisfaction with **taxi**, **bus** and **other** passenger transport services (besides LDV passenger services)
4. To what extent are LDV users and operators aware that existing South African legislation prohibits the use of LDVs to transport passengers for reward?	**Knowledge** of transport laws/regulations	**Knowledge** of transport laws/regulations	**Knowledge** of transport laws/regulations
5. To what extent are customers satisfied with the use of LDVs?	Level of **satisfaction with LDV** passenger transport service		Level of **satisfaction with LDV** passenger transport service
6. What modifications and other measures are needed to integrate LDV passenger transport with the formal public transport system in Vhembe District?	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport service	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport	**Operational modifications** needed regarding LDV passenger service **Structural modifications** needed regarding LDV passenger transport

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