

AN INTEGRATED PEDESTRIAN MANAGEMENT MODEL FOR SEKHUKHUNE

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ABSTRACT

THE NEED FOR THE PAPER

The Need for an Integrated Pedestrian Management Model (IPMM) for the Sekhukhune District Municipality (SDM)

The purpose of this research was to develop an Integrated Pedestrian Management Model (IPMM) for the Sekhukhune District Municipality (SDM) in the Limpopo Province to promote pedestrian safety. Information obtained from a number of sources such as the Department of Transport, CSIR, NIMSS and MRC, the Roads and Transport Department of the Limpopo Province, and the SDM, all pointed to the pedestrian fatality problem in South Africa, in the Limpopo Province and also in the SDM. The road safety policies, strategies, programmes, manuals and pedestrian plans of the Department of Transport, Limpopo Province and SDM were taken as the point of departure in this study. Local studies conducted by the CSIR indicated that there is a need to develop the IPMM for the SDM to address the pedestrian casualties. The pedestrian casualty statistics collected in the SDM was also used as sources to prove the extent of the pedestrian casualties. Other documents that high lighted the pedestrian safety problem were the Limpopo in Motion Strategy; the Road Traffic Management Strategy for Limpopo Province; the Pedestrian Safety Management Plan and Improvement Plan for the Dilokong Corridor at Tubatse and the Integrated Transport Plan (ITP) 2004 for SDM.

Problem Statement

Pedestrian casualties (fatalities and injuries) comprise a major part of road casualties in South Africa and also particularly in the SDM. By reducing pedestrian casualties, a major part of the road safety problem can be solved. Interventions should be implemented at district and local municipal levels to achieve this objective.

Hypothesis

An Integrated Pedestrian Management Model is urgently required to improve the poor pedestrian safety records of the Sekhukhune District Municipality. Due to the underdevelopment of the district and inadequate coordination service delivery by all the relevant role-players there is no holistic integrated approach to resolve the problem.

Goals and Sub-goals

A number of goals and sub-goals have been formulated to resolve the problem: They are:

Goals

- To develop a Pedestrian Management Model for Sekhukhune to reduce pedestrian casualties and promote pedestrian safety.
- To create a more user-friendly environment for pedestrians, as envisaged in the Sekhukhune ITP.

Sub-goals

- To improve the institutional structure to improve pedestrian safety.
- To improve pedestrian facilities on the roads.

- To improve the road safety education of the population (communities), school-children, rural adults and the community at large.
- To improve law enforcement, emergency services to cater for pedestrian accidents.
- To improve accident information systems to monitor and evaluate.
- To improve the community level of participation.
- To improve data collection and record keeping.
- To improve road safety research (include pedestrian safety research).

The IPMM will use road traffic disciplines, such as engineering measures, traffic law enforcement, education, information technology and logistics and other functional areas to address road environment, road user and vehicle problems in the SDM.

Research Methodology

Quantitative and qualitative research methodologies were applied in this study. *Quantitative research methods* such as pedestrian casualty statistics were obtained from the Road Traffic Management Corporation (RTMC), the National Injury Surveillance System, the Medical Research Council (MRC) and the Pedestrian Safety Management Plan to prove the point that there is indeed a major problem regarding pedestrian fatalities at the national, provincial and local levels. In this study, pedestrian fatality statistics are used in the development of an IPMM for the Sekhukhune area.

Furthermore, *Qualitative research methods* focusing on literature studies and expert interviews were also employed as part of the study. Various relevant government policies, studies and other relevant literature as listed in the thesis were studied. The researcher visited and interviewed various experts who have specialized knowledge and experience about pedestrian safety in the country. Experts were interviewed on pedestrian safety problems, in particular on pedestrian fatalities, and a need to develop an IPMM for the Sekhukhune area. These interviews included principals and teachers of twelve schools; community leaders (SANCO). Hawkers along the D1547 between Jane Furse and Sehlakwane and Motetema road were also visited and interviewed.

THE TRAFFIC MANAGEMENT SYSTEM (TMS)

Introduction

The purpose of this section is to contextualize the outcome of the research in relation to the pedestrian units in the road environment. The TMS as a subsystem of the transportation system is discussed. The TMS concept, is regarded as a management system. The TMS will play an important role in reducing pedestrian casualties through the IPMM in the SDM. The components of the TMS, the role of the traffic manager, disciplines and functional areas are discussed as tools to reduce pedestrian casualties in the SDM. The purpose of this section is to demonstrate, practically, the application of system technology; explain the role that pedestrians, as road users, and role-players, such as traffic law enforcers (traffic police), engineers, etc. play in relation to road and traffic elements in the traffic system. This section also lays the foundation for a study to identify and manage the factors that contribute to road user frustrations.

Traffic Management System (TMS)

The TMS consists of three conjoining words, namely system, management and traffic. The traffic system forms a definite component (sub-system) of the entire transportation system. To ensure orderly road traffic and traffic safety, the traffic system must be managed by experts in the field of road traffic safety.

The TMS is the management tool of the IPMM to manage the road environment, pedestrians, drivers and vehicles in the traffic system. The theoretical view of the TMS is discussed as well as the practical (implementation) part. The TMS is a system that is defined as:

“a collection of distinctive elements that are mutually exclusive, that is relevant to each other and is controlled/regulated to achieve a common purpose”.

Components of Traffic Management System (TMS)

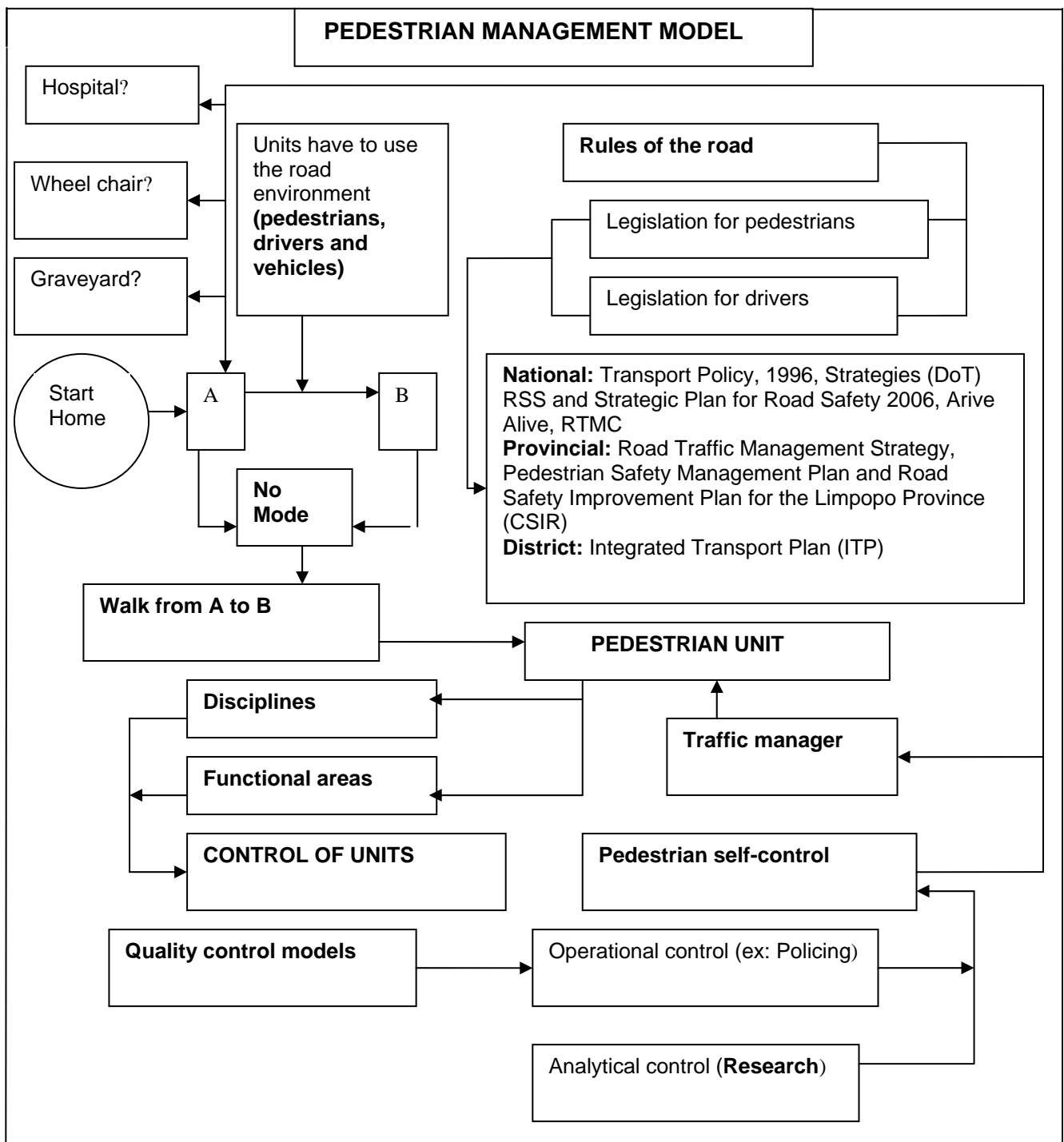
The traffic management system consists of three components, namely:

- A **psychical component** (road users with driver's licenses; road users without drivers' licenses; unprotected road users such as pedestrians, and road sections);
- A **unit component** (such as road environment units, pedestrian units, driver units and vehicle units); and
- A **management component** is supported by a number of disciplines, functional areas, policy standpoints and sub management systems such as engineering, traffic law enforcement, education, and so on.
- An **organisational structure** can be regarded as a **fourth** component. The components are addressed holistically in the study.

AN INTEGRATED PEDESTRIAN MANAGEMENT MODEL (IPMM) FOR SEKHUKHUNE

Introduction

The diagram below illustrates the six elements of an IPMM that should be considered, namely the walking mode, government interventions, control unit, monitoring unit, research unit and outcome unit. It illustrates how the IPMM can be implemented in the SDM to reduce pedestrian casualties.



The six elements (components) of the IPMM in more detail are:

- **Walking mode:** The main mode of travel for people who regularly travel to work, by province and settlement type, and shows that 48,3% of the people in the Limpopo Province are walking to work. This implies that, in the SDM, more than 50% of the people are walking. Therefore, the main mode of transport is walking. ITP 2004 indicates that there is no official transport system for learners in the SDM.
- **Government interventions:** Government interventions include government policies, programmes, manuals, legislations, strategies and other literature materials relevant pertaining to pedestrian casualties. The interventions will indicate how they will support the IPMM for Sekhukhune to resolve the pedestrian casualty problem.
- **Control unit:** The role of the Control Unit is to implement the IPMM in the SDM to address pedestrian casualties. The control model should be managed by the Provincial Management Steering Committee (PMSC), including the traffic safety manager, to chair, facilitate and achieve other objectives. The Sekhukhune Road Safety Steering Committee (SRSSC) and a Pedestrian Safety Steering Committee (PSSC) or Pedestrian Management Committee (PMC) will be formed for co-ordination or to drive the implementation of the IPMM in the SDM.
- **Monitoring unit:** The Pedestrian Safety Management Steering Committee (PSMSC) will monitor the implementation of the control measures/disciplines in the functional areas such as the engineering measures, traffic law enforcement, community education and communication, and information technology. It will monitor the success and failures of the identified projects. If there are failures, the Steering Committee will seek other methods which will ensure success.
- **Research unit:** In order to determine counter-measures for accidents it is necessary that research takes place, and statisticians therefore play a prominent role in analysing accident data and information. Research, development and implementation are important key factors in research. If the model is not producing the expected results, there should be further research to find other methods that can produce good results. The aim is to research new methods if an IPMM is not really instrumental in reducing pedestrian casualties in the SDM.
- **Outcomes unit:** *Various outcomes will be achieved such as fewer pedestrian injuries in hospitals, the model will reduce the workload of the Department of Health, who has to take care of the injured pedestrians:*
 - Fewer disabled pedestrians:
 - Fewer pedestrian fatalities:

MAJOR FINDINGS OF THE STUDY

Some of the more important findings of the study were:

Lack of and poor quality pedestrian statistics in the SDM

There is no access to pedestrian statistics at the district municipal level. Pedestrian casualties are occurring but the system of capturing only operates at the provincial level. All SAPS stations collect the statistics but they are not reliable. The collection of statistics on pedestrian casualties is inadequate. The SAP 176 register and AR forms are poorly completed. The police do not consider the AR form as important.

Lack of integration efforts in the SDM

There is a lack of integration efforts: pedestrian casualty information in the SDM is poorly collected. All the role-players are working solo and not as a team, e.g. the traffic police, SAPS, EMS, education department, community structures, etc. There is limited road safety education in the schools and in the community and this is a challenge in the SDM.

Lack of development in the SDM especially pedestrian infrastructure facilities

There is a general lack of infrastructure and, specifically, for pedestrians in the road environment. The lack of pedestrian facilities is one of the causes of pedestrian casualties. Underdevelopment and poverty in the area have led to the proclamation of the SDM as a presidential node.

Lack of focus on pedestrian safety in the SDM

There is lack of focus on pedestrian safety in the area. There is no comprehensive awareness and education in the SDM programmes. There is no proper engineering, law enforcement, communication or committees looking after pedestrian safety. No pedestrian management plan or operational model exists to reduce pedestrian casualties in the SDM area. There are no pedestrian casualty statistics available for the SDM.

Lack of proper adjudication of pedestrian-related offences

The adjudication of pedestrian-related offences is inadequately handled by the magistrate courts. There is only limited law enforcement in relation to pedestrians (policing of roads for speeding, alcohol, other offences, etc). The National Road Traffic Act contains a list of pedestrian offences, but these are not enforced by the law enforcers (traffic police and SAPS). Emergency services are limited and responding time (Golden Hour rule) is unsatisfactory because of a lack of ambulances, insufficient equipment, etc. A lack of coordination and cooperation between all the role-players is a major problem. The high poverty level in the area also plays a part in pedestrian casualties. There are also problems with the identification of the offenders. All these are some of the major challenges related to pedestrian safety in the SDM.

CONCLUSIONS BASED ON THE TMS

The more important conclusions of the study are:

Lack of integration of information and functions

The lack of integration of information and functions requires the application of an IPMM to achieve the goal. The integration approach is favoured. Pedestrian management committees at the provincial and district/local levels should be established by the role-players to coordinate or to drive the implementation of the IPMM in the SDM so that the pedestrian casualty problem can be solved.

The TMS as a subsystem of the transportation system and as a management mode will reduce pedestrian casualties in the SDM through the regulation, control and management of all the units. The units, such as the road users and the road environment, under the three components of the TMS, such as physical unit and management, are addressed in an integrated and holistically manner in road traffic systems. The six elements of the IPMM, such as the walking mode, government interventions, control unit, monitoring unit, research unit and outcome unit were established to manage pedestrian casualties in the IPMM.

The IPMM will be beneficial to the SDM because of the following:

- It will solve the pedestrian casualty problem. The multidisciplinary approach, such as disciplines, functional areas and others will be applied to promote pedestrian safety.
- The provincial, district and local pedestrian committees, will manage, control, coordinate, monitor or drive the implementation of the IPMM in the SDM to reduce pedestrian casualties.
- It will focus on law enforcement, education and engineering measures.
- It will enforce the law against road traffic offenders – both drivers and pedestrians.
- It will provide road education to children and adults in the SDM.
- It will provide pedestrian facilities across and alongside roads through engineering.
- It will provide an accurate information recording system for pedestrian casualties.

- The pedestrian casualties will be properly investigated and recorded. The problem of poorly completed accident report forms (AR Forms) at police stations will be solved.
- It will provide accurate traffic information on pedestrian volumes alongside roads and on roads (pedestrians crossing). Pedestrian high-risk areas will be identified, counts conducted and the necessary measures taken.
- It will assist in fast tracking development, since the SDM was declared a presidential node. The pedestrian facilities will be developed through the implementation of the IPMM. It will identify the need for adequate infrastructure and the location thereof. The IPMM will identify road safety infrastructure, such as footbridges, footways, road crossings, etc. that need to be provided at high-risk accident locations.
- The IPMM will assist the SDM to bring about socio-economic changes such as:
 - Poverty alleviation through the establishment of job opportunities in the road environment.
 - Job creation in the construction of pedestrian infrastructure, e.g. sidewalks, fences, pedestrian footbridges, pedestrian crossings.

THE WAY FORWARD

The recommendations contained in this section have the objective to provide the basic framework for the IPMM.

Getting the basics right

This dissertation has comprehensively entertained the concept of the IPMM and the benefits it could have for the SDM in order to promote pedestrian safety. To make the IPMM a working tool, it is recommended that certain specific basic actions be implemented such as:

- Improve the information systems in the SDM
- Improve accident recording and statistics
- Coordination of pedestrian infrastructure on roads and land use planning, e.g. be sensitive to provide pedestrian facilities at shops, schools, etc.
- Align the IPMM with roles of other government institutions such as the DPLG, Departments of Public Works, Health and Education, the SAPS and Traffic Department.
- Integrate the IPMM with other government initiatives in the SDM such as the Extended Public Works Programme (EPWP), the Municipal Infrastructure Grant (MIG), and other DPLG funding mechanisms.

Integrated approach to implement an IPPM in the SDM as a blueprint for the rest of the Limpopo Province

The steering committee should define through its mission and vision what it wants to achieve with regard to pedestrian safety in the SDM:

- **Vision:** To reduce pedestrian casualties in the SDM by half in the next five years.
- **Mission:** To get all disciplines to collaborate through an integrated approach to reduce pedestrian casualties in the SDM.

Specific structures need to be established to implement the IPMM in the SDM. This will include the following:

- **Provincial steering committee** – to oversee the implementation of the IPMM in the SDM but also in the other district municipalities over the next couple of years.
- **District working committee (SDM)** to implement the IPMM in the SDM through the coordination of the different role-players and functions. This includes the identification of the specific problem areas, the information required to solve the problems, and the roles of each role-player, including local monitors in the community who would identify the road safety problems in their communities, e.g. hazardous locations, speeding, alcohol abuse.

Furthermore, the **roles and functions of the IPMM** be clearly defined, e.g.

- The role of the IPMM is to improve the safety of all road users, but in particular pedestrians.
- All disciplines (engineering, education, enforcement, justice, emergency services, adjudication of offences) will need to work together in a coordinated manner to reduce pedestrian casualties in the SDM.
- The function and contribution of each discipline participating in the IPMM will be clearly defined such as:
 - **Engineering** – to improve the road environment so that pedestrians will be safer.
 - **Education** – to educate school-children and adult pedestrians on road safety practices.
 - **Enforcement** – to enforce the traffic laws so that traffic offences and, subsequently, pedestrian casualties could be reduced.
 - **Emergency medical services** – to ensure that adequate emergency services are available and deployed throughout the SDM so that road victims can be transferred to hospitals as soon as possible after the accident.
 - **Adjudication of offences** – to ensure that traffic offences are properly and speedily adjudicated.

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