Chapter 5
Towards Smart Urban Transportation System in Harare, Zimbabwe

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ABSTRACT

The concept of smart transportation systems is increasingly becoming critical in addressing the challenges posed by an increasing number of mega cities in both developed and developing regions in maintaining safety, smooth traffic flow, and an environmentally friendly and sustainable urban environment. The Government of Zimbabwe deregulated its transport sector in the early 1990s. This development ushered in the informal public transport operators, locally referred to as ‘kombis’. Major cities such as Harare are characterised by a disjointed and chaotic urban public transport system. The major problems are the impacts this has on the quality of the environment. Currently, the urban public transport system is contributing greatly to both air and noise pollution within the confines of the city, especially in the Central Business Districts. The problem is further exacerbated by the massive importation of used vehicles from outside the country. These developments have resulted in high emission rates of major air pollutants resulting in a deterioration of the ambient air quality especially in the major cities such as Harare. Transportation is a major source of air pollutants. Vehicles are probably the largest single source of air pollution.
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of pollutants such as hydrocarbons, nitrogen dioxide and carbon monoxide. Other harmful emissions include as lead, benzene, arsenic, aldehydes, sulphates, particulate matter and the secondary creation of ozone. In Harare the number of registered vehicles increased from 192,901 in 1994 to 292,862 and by August 1999 showing that the increase in the number of vehicles is mostly in the cities. This chapter seeks to explore how smart transportation system can be adopted in Harare, the capital city of Zimbabwe. Harare was purposefully selected as it is experiencing rapid urbanization and motorization in the country. Using documentary analysis, discourse analysis and textual analysis, the chapter also describes and examines the challenges, constraints and opportunities of adopting smart urban transportation system in Harare. From this chapter the major conclusions are that the main problem associated with this rapid growth in vehicle population in the major cities is increase concentration of line and area emission sources due to traffic congestion at peak times. The stock of vehicles is quite old and they lack emission control equipment. Major constraints and limitations are observed in the current pieces of legislation. For example, the current Atmospheric Pollution Prevention Act (1971) does not require vehicles to be fitted with emission control equipment. Most of the vehicles use leaded fuel resulting in emission of the dangerous lead particulate matter in the urban areas. There is therefore an urgent need to design and implement air pollution control measures in the urban areas of the country. It is also critical to develop smart and eco-friendly transportation infrastructures so as to achieve sustainable urban communities. The integration of transportation, land use and decision making is also critical in the achievement of smart transport.

INTRODUCTION

Urbanisation is making smart cities more important. Globally, 54% of the world’s population lives in cities, a figure the United Nations predicts will rise to 66% by 2050. For cities to manage an ever-increasing influx of people, they must adopt new smart technologies and processes to remain attractive places to live and work. Over the last few years, the rapid development of Information Technologies (IT) has created new opportunities for the sustainable growth of cities. Nowadays, cities are being approached as complex systems which increasingly attract people who wish to work and live in them. For this reason, cities have to deal with various problems, such as traffic congestion, noise and air pollution, energy efficiency, high densities, the lack of green space and an increasing demand for services. The concept of smart transportation systems is increasingly becoming critical in addressing the challenges posed by an increasing number of mega cities in both developed and developing regions in maintaining safety, smooth traffic flow, and an environmen-
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