



**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**CHALLENGES AND OPPORTUNITIES OF
CAR PARKING IN ADDIS ABABAB
A STUDY ON 10 SUBCITIES**

BY

ASHENAFI SHIFERAW

ID NO: SGS/004/2005

NOVEMBER, 2014

ADDIS ABABA, ETHIOPIA

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APPROVED BY BOARD OF EXAMINERS

Dean, Graduate Studies

Signature

Advisor

Signature

External Examiner

Signature

Internal Examiner

Signature

DECLARATION

I, the undersigned, declare that this thesis my original work, prepared under the guidance of my advisor. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Ashenafi Shiferaw

Name

St. Mary's University, Addis Ababa

Signature

November, 2014

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

Asst. Prof. Teklegiorgis Assefa

Name

St. Mary's University, Addis Ababa

Signature

November, 2014

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ABSTRACTS

The purpose of this study is to assess the opportunity and challenges of car parking in Addis Ababa. The study set out specifically to show the trend, the scarcity of car parking place and how far the city drivers were satisfied with the car parking facilities. It also helps to determine to what extent car parking had effects on the city. Parking plays an important role in mobility, access and the economic development of Addis Ababa. As the same time, it is a profitable business for both the private and public sectors. The city centre car parking market is a sector of the economy that will increased the importance of the market where number of cars has grown. To that end, car parking sector has always been of great importance in terms of urban mobility, since it is a fundamental element in achieving a high level of accessibility in the city centers. Three tools for data gathering were employed in order to obtain relevant data required for the study. One was semi structured Likert type of questionnaire, the second was direct and/or indirect observation and the other was interview. The results of the study indicated that car parking was a major problem for traffic flow and development of the city. Besides, it was also learnt that car parking has major social, political and economical impact on the growth of the city. Due to that, the city administration had found the problem of car parking is a crucial one. Finally, the findings show that, the current situation and the future trends of car parking by analyzing the questionnaire. On the study, recommendations are made to show directions, to give emphasis on the challenges of car parking and to present other related job opportunities. It is also recommended that, the needs of clear written car parking strategy and policy which will align with the objectives of parking facility and purpose of the capital city of Ethiopia and Africa. The study will also help and encourage for further investigation to other researchers.

CHAPTER ONE

1. INTRODUCTION

This chapter presents background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study, definition of key terms, and organization of the report.

1.1. Background of the Study

Parking plays an important role in the transport system since all vehicles require a storage location when they are not being used. One of the crucial issues of Addis Ababa is the scarcity of car parking. Car-parking sector has always been of great importance in terms of urban mobility, since it is a fundamental element in achieving a high level of accessibility in the city centers. In fact, many businesses and municipalities see an adequate supply of parking, especially for visitors, as crucial for their competitive growth. Yet, at the same time parking is, and will remain for most cities, the most powerful means of traffic restraint available. The enhancement of the urban environment is also partly dependent on adequately managing parking (December 2008a, Napier University).

The other issues and the biggest barrier for Africa is a lack of public parking and this can be easily observed in major cities. This has been a key problem for many municipal governments in Africa as they undergo rapid motorization. Parking is one of the comprehensive components in land use appearing in residential, shopping and industrial areas, and is related to all kinds of trips occurring in traveling, shopping and leisure trips (Mersden, 2006). The challenges of parking spaces seen in urban cities are claimed to be caused by urbanization, rapid increases of car dependence, high densities of the city and economic transition. Parking supply management, particularly pricing, could help shift auto dependence to more sustainable alternative modes and reduce congestion (Shoup, 2005). Parking scarcity identified as:

- (1) Lack of parking supply
- (2) Weak regulations and intergovernmental conflicts
- (3) And weak enforcement.

A recent survey conducted by Step & Mint (2011a) Limited based in Nigeria reported that, Cairo's public parking infrastructure could only accommodate 5.2 percent of its cars, Lagos 6.7 percent of its cars and Johannesburg had a ratio of 8 cars per public parking space.

Alarming, major cities in Africa reportedly lacking parking spaces up to 70 percent Step & Mint (2011b). According to parking estimates done during this classified survey by Step & Mint, most cities in Africa could lack up to one million parking spots by 2020. Based on the research, parking supply problems are twofold:-

First, there is a general lack of parking spaces throughout African cities. Despite the rapid pace of construction in South Africa, Nigeria, and many more developing Africa countries, rising car consumption continuously outpaces it. The overall growth of car far exceeds parking infrastructure, particularly public parking. While the total number of vehicles increased in Nigeria by 11% on average from 2001-2011 (Step & Mint 2012), private cars increased by 14% annually on average. Parking standards have not kept up with demand and are outdated. Older infrastructure lacks parking city centers and traditional residential developments were built during the bicycle era; only a minimal amount of parking spaces are available in these areas. Taking Millennium Towers (Lagos, Nigeria) as an example, a 12 story building provincial court building along one of its arterials only had a surface lot of roughly 40 spaces available and having a challenge for car parking service.

Secondly, the parking spaces that are supplied in most African cities are not necessarily used as efficiently as they could be. For example in Nigeria, public parking spaces that are available often do not have time limits. Thus, a space in a high demand area for parking may be taken by some individuals for most of the working hours. This is also tied to put into effect on fair use of the space and fee collection issues.

The site of Addis Ababa was chosen by Empress Taytu Betul and the city was founded in 1886 by her husband, Emperor Menelik II. And then, Emperor Haile Selassie helped form the Organization of African Unity in 1963, and invited the new organization to keep its headquarters in the city. The OAU was dissolved in 2002 and replaced by the African Union (AU), also headquartered in Addis Ababa. The United Nations Economic Commission for Africa also has its headquarters in Addis Ababa. The city was also the seat of the Council of the Oriental Orthodox Churches in 1965 (Addisababacity.gov.et,2006E.C).

Addis Ababa, like most African cities, has been experiencing huge population increases. This is mainly due to the fast growth in urbanization. The population of Addis Ababa is about 3.1 million and is expected to increase by 2.1% every year (Central Statistical Agency, 2010a). The lifestyle of the city dwellers is changing and people prefer to travel by vehicles, to move

from place to place within the city. The major facilities and public services, like the market area, the schools, the religious centers, offices and the like, are concentrated in the city centre and hence, people have to travel to these places every time. This demand has led to the development of transportation but adversely affect the effective uses of road due to lack of parking.

In Addis Ababa, parking service for the development of transport had been considered its importance before 52 years. Parking with payment was been exercised on Piazza from Degol roundabout to Ras Mekonnen Bridge. Due to lack of City Administration management system, it was unable to continue the service. In 1995E.C, after the new formation of the City Administration parking service was considered side by side with public transport. And then, in November 1996E.C the government and private sector coordinated together to establish and began the activity with new formation (Transport Authority Addis Ababa Branch Office, Tahesase 25,1999E.C). After 2002E.C the parking service were transferred from private to small enterprises to low income groups. Parking areas in urban centers are becoming increasingly important, due to both the fact that almost every private car trip involves two parking acts and that cars spend over 80% of the week parked (RAC Foundation, 2004). However, technical/organizational and regulatory innovation has mainly focused on public and private transport mobility within urban areas; parking has been neglected.

1.2. Statement of the Problem

It is clearly observed that car parking is basic necessity for the growth and development of Addis Ababa, and thus the research is addressing problems caused by:-

- Lack of public parking lots
- Lack of effective use of roads due to parking, that leads to narrows carriageway
- Inadequate supply of parking in construction of new high story buildings like Hotels, Market Moles, Apartments, etc.
- The level of motorization is escalating in the city & additional parking demand is also increasing
- Lack of clear government policy and strategy for parking solutions, and also less attention is given during the preparations of local development plans
- Traffic accidents that leads to property damage and death of persons
- Lack of attention on social and environmental situations.

1.3. Objectives of the Study

1.3.1. General objectives

The general objective of this research is to assess the situation of car parking which is the fundamental challenge facing the city of Addis Ababa. It carried out by considering PESTEL analysis:

- To see government land bank policy for the parking lots
- To identify cost incurred when each building considers car parking
- To reduce societal problems in relation to car parking

1.3.2. Specific objectives

The thesis is specifically intended to see the importance and challenge of car parking, and the business opportunity due to the rapid development of Addis Ababa. This idea is generated by considering the following factor and try:

- To show the related business opportunity with car parking
- To identify the job opportunity and new industry formation

1.4. Research Questions

This study is intended to answer the following research questions:

1. What kind of car parking policy and strategy existing in the city as large, the country?
2. How does car parking scarcity affect the performance of the community?
3. What are the main causes for the scarcity of car parking in Addis Ababa?
4. What opportunities is Addis Ababa facing in terms of car parking?
5. What challenges is Addis Ababa facing in terms of car parking?
6. What is the future of car parking industry in Addis Ababa?

1.5. Significance of the study

This study attempts to assess the current parking situation and practice of Addis Ababa. It is, therefore, hoped and expected to provide insights which have some gap on the future strategy on the master plan of Addis Ababa. Accordingly, this study will contribute significant information on the following issues.

- It would provide insights in an attempt to revise and establish car parking strategic directions on the master plan of Addis Ababa that will be up to date and efficient for the city under study.
- The results of this study help to develop car parking management system and show the opportunities in the formation of parking industry.

- It is also important to bear in mind that car parking is both for public and private organizations, a key source of revenue.
- It throws some lights for innovators for the importance of car parking investment.
- The findings would contribute information for the construction of car parking sites.
- It helps to stimulate further investigation in the area.

1.6. Scope of the study

The scope of the research is to study the current situation of car parking in the ten sub-city of Addis Ababa by focusing one sample from each. Even though, the scope of the research is limited to specific locations, it is expected to provide the general idea to have convenient public and/or private parking lots and traffic management in Ethiopia particularly in Addis Ababa by considering the social benefits and business opportunities.

1.7. Definition of Key Terms and Abbreviation

- **FDRE:** Federal Democratic Republic of Ethiopia
- **Community:** the people living in one place or district including embassies and those who come for short period stay.
- **Parking Lot:** an area, often paved, for parking a number of motor vehicles used to have parking related services
- **Parking:** is the act of stopping and disengaging a vehicle and leaving it unoccupied
- **Traffic:** the movement of vehicles, ships, persons, etc., in an area, along a street, through an air lane, over a water route, etc.
- **Transport:** the movement of people, animals and goods from one location to another with the mode of transported like air, rail, road, water, cable, etc
- **Congestion:** vehicles travel at slow speeds because there are more vehicles than the road can handle.
- **Vehicular:** the crime of causing the death of human being due to illegal driving of automobile, including growth negligence, drunk driving, traffic congestion, etc
- **Metropolitan:** a large city or urbanized area. Including adjacent suburbs and towns
- **Opportunity:** exploitable set of circumstances with uncertain outcome, require commitment of resources and involving exposure to risk.
- **Challenge:** a call, invite or order to engage in any competition, as of skill, strength (someone to do something, especially to take part in contest)

1.8. Organization of the Report

The research has five parts. The first part is the introduction, which states the problem, objective, significance, scope and organization of the research. The second part deals with literature review that is relevant to the research. The third part of the research discusses the research design, the sources, instruments, sampling technique, and procedures of collecting data for the study. The fourth part focuses on the analysis and discussion of the data gathered in light of the previous research questions. The fifth part presents limitation of study, summary of the main results on the findings, draws conclusion, recommendations and points out research insights based on the study. The final part presents appendices, references and annexes that are result of questionnaire due to longer table.

CHAPTER TWO

2. REVIEW OF RELATED LITRATURE

2.1. INTRODUCTION

This chapter presents a brief synthesis of related literature that deals with car parking issues which are relevant to the development of the city. Although a car is parked in a variety of places for a large part of its life, little or no debate has focused on parking areas as hubs where transport converges. If parking areas are in fact seen as transport hubs where the interchange between a variety of transit means takes place, (e.g. car/bus, car/underground, car/walking, etc.), it can be argued that not much has been done for parking, despite the vital role that it plays (Kelly, 2006). Urban car parks and especially those open to the public, play a fundamental role in encouraging, regulating, restricting access to the city or town in or near to which they are located. These reasons are of a social, financial and policy nature.

The Federal Democratic Republic of Ethiopia Ministry of Transport (August, 2011) has prepared transport policy for Addis Ababa city. In order to be a competent city on the regional, continental and international levels, the FDRE outlined eleven key policy issues and implementation strategies. Under these policies, expansion of transport infrastructure is included and it further elaborate that : “car parking facilities shall be built by private, government and public private partnership in the city center and in areas with high traffic volume and land supply shall be given special attention by the city administration”.

The practical situation of the city is showing that, all cars use the left and/or right side of the major road for parking and the central part is left to the passage, unless otherwise restricted. The poorly functioning traffic system has resulted in high level of congestion particularly at peak hours. Besides, at some road sides, there is a facility for car wash which has a serious problem for the purpose of the road and the waste water affects the road durability.

2.2. What is Parking Services Industry?

It is a service where operators in the industry provide parking space for motor vehicles, generally on an hour, daily or monthly basis. This includes parking garages, parking stations and valet parking. Car parks operated by councils are excluded from this industry (Parking service in Australia: market research report, Mar 2014).

2.2.1. Industry Products

- Periodic parking
- Daily parking
- Short stay parking
- Week day off-peak parking

2.2.2. Industry Activities

- Car park operation
- Parking station operation

2.3. Availability of car parking facility

There are four kinds of car parking facilities (Samson Babatunda, 2012):

1. Private car park: a multi story building and underground parking lot.
2. Public car park: which includes like gateway and railway station parking.
3. On-street parking: is the adequate space for vehicles at the side of the road. Bus-stop – is a parking space provided for motorists along the road way in the central business districts and also at designated place.
4. Off-street parking: is very near to their destination and close to the carriageway. Terminal – is a parking space whether at the earth or off-street in a lot, garage, shopping center or private driveway.

2.4. Factors influencing car ownership and car parking demand

The factors influencing car ownership and demands are discussed below (London, May 2007).

2.4.1. Dwelling size, type and tenure

Dwelling size and type are major factors in determining car ownership levels. This is logical as larger dwellings are more likely to be inhabited by more people of driving age and/or households with larger incomes. Conversely, smaller dwellings tend to be occupied by single-person households. The number of bedrooms has often been used as a proxy for size, however this is a coarse measure given the significant variation in car ownership that has been found between, 4 and 5 room dwellings, and the fact that in most flats there is little difference between individual rooms (other than kitchens) and the uses to which they can be put. The number of rooms used as the proxy for dwelling size.

Tenure is another influence on household car ownership. In particular, households occupying rented accommodation can have up to 0.5 fewer cars than owner-occupied households in dwellings of similar size and type. Local planning authorities will wish to consider tenure carefully when developing car parking policies given that any future changes in the tenure of dwellings may change the nature and demand for car parking.

2.4.2. Dwelling location

In terms of location, local planning authorities may wish to consider the effect on car ownership of the availability of local services that can be reached on foot and by cycle and access to public transport. Basing expected car ownership, implicitly assumes that new housing will have similar car ownership characteristics to the existing housing stock in the area. The availability of public car parking spaces should also be considered. In areas where all on-street parking is controlled by Controlled Parking Zones, it may be acceptable to provide parking below normal levels of demand. Anderson and De Palma (2004) argue that location is an important variable, in particular, when we refer to the city centre. Since the city centre is an important destination for drivers, the location of the car parking close to potential customers' destinations becomes an important factor (Froeb et al, 2003), especially if we consider the high costs of city centre land, as noted by Shoup (1999).

Factors influencing location choice (Gerrard et al. 2001)

(Table 1)

Factors	% of business indicating factor as key influence on location choice
Road links	16
Staff parking	15
Lease or rent costs	15
Proximity to market or client	12
Customer or visitor parking	11
Proximity to labor supply	11
Rail or bus links	6
Proximity to goods or services	5
Traffic noise	3
Proximity to competitors	3
Air quality	3

2.4.3. Availability of allocated and unallocated parking spaces

The allocation of spaces to individual dwellings can have an adverse impact upon the efficiency of car parking provision. Allocated parking spaces include any spaces within the curtilage of a property (e.g. garage or driveway parking) and any spaces in communal areas where the space is reserved for one particular property. On-street spaces upon public highways are always unallocated (i.e. shared) although they can be reserved for a particular purpose such as disabled persons' or residents' parking.

2.4.4. Availability of on-and off-street parking

In the past, local planning authority approaches to residential car parking have typically focused on off-street provision due to concerns that on-street parking may lead to problems of congestion and road accidents. Whilst these concerns may be well-founded in some existing streets, on-street parking does make a valuable and flexible contribution to the overall supply of parking and need not be problematic, especially when streets are designed so that traffic speeds are kept low and adequate space is allowed for moving vehicles and pedestrians. The well-designed on-street parking in residential areas can explicitly count towards the overall supply of unallocated spaces, regardless of whether the spaces are formally marked or are simply occasional spaces on the highway.

2.4.5. Availability of visitor parking

Whilst there are times, such as evenings and weekends, when residents are likely to receive significant numbers of visitors in cars, this demand can to some degree be offset by other residents being away at the same time. This balancing effect is most significant when a high proportion of parking spaces are unallocated (and so available to both visitors and residents). So that no special provision need be made for visitors where at least half of the parking provision associated with a development is unallocated. In all other circumstances, it may be appropriate to allow for additional demand for visitor parking of up to 0.2 spaces per dwelling.

2.4.6. Availability of Garage Parking

Local planning authorities will need to consider whether to count private garages as car parking spaces given that they are not used for this purpose by a significant proportion of residents. This is a complex issue, as garage use depends upon a number of factors including the adequacy of storage within the dwelling, the ease of use of the garage and the difficulty (or otherwise) of finding a parking space outside the garage.

The authorities will encourage approaches that provide well utilized car parking spaces within housing schemes. For example, this could involve requiring car ports rather than fully enclosed garages or dwellings that make adequate provision for storage. Where developers provide garages which are likely to be under-used, authorities will consider the effect of this in terms of additional parking demand, and its impact in terms of street design requirements.

2.5. Parking Management

Renaissance Market Towns Programme, Car Parking Research has presented parking is an asset which needs to be managed. It is a common misconception that providing as many parking spaces as possible is the best way to managing parking so as to maximize access. Rather, the key is to ensure that your parking stock is managed so that spaces are made available for customers when and where is deemed appropriate for their needs. In this context, it is the number of parking acts that can be accommodated that is important, not the absolute number of parking spaces provided.

Proper management of parking will benefit your town in many ways, including contributing positively to economic performance and visual amenity. A parking ‘free for all’, with no restrictions or controls on parking and a lack of enforcement, represents a failure to manage your asset and a failure to provide good customer service. This may then adversely affect economic performance.

Management of parking can have a positive impact on economic viability by enabling ‘better’ (more productive) use to be made of the spaces within towns, providing that it is done sensitively and appropriately. Public space is often limited within market towns, and it is not uncommon for the most attractive parts of the town, such as historic market squares, to be hidden behind a sea of parked cars.

Where towns have appropriate sites on the approach routes to the town, there is an opportunity to develop ‘gateway parking’ to free up space within more sensitive central areas for other uses, whilst at the same time helping to keep moving traffic out of these areas too. Alternative uses may take the form of a smaller amount of prioritized parking for particular users, but preferably other activities which themselves provide an important ‘draw’ for visitors such as markets, outdoor seating areas for cafes and restaurants or locations for outdoor performances.

However, it is essential that gateway parking is complemented by good sign posting to the car park on approach roads, as well as pedestrian signing from the car park to the town centre itself. In order to manage parking effectively, it is a must first to understand the town's need, nature of town and the travel behavior of the town's users before making changes to the way in which parking is managed. Some of the key features of the town which need to be considered are:

- The size, nature and location of the employment, retail and visitor sectors;
- The socio-demographics of the town's residents and visitors;
- The strength and vitality of the retail sector; and
- The nature and proximity of competing settlements.

Consider who uses the town and why, including:

- The relative importance to the town's economy of workers, shoppers, visitors and residents;
- The parking behavior of each segment;
- The factors which influence when and how often each visit the town; and
- The attributes of the town and parking has value most (such as convenience, reliability, security and cost).

Different types of driver have different priorities and the attributes of a parking asset can be managed to encourage or discourage use of that asset by particular users. For example:

- Workers value long-stay spaces but usually prefer to park further from destination in order to avoid high costs;
- Shoppers value convenience close to stores and may be willing to pay for it; and
- Infrequent visitors value the ease of finding a suitable location, good quality facilities and flexibility over length of stay, and are happy to pay for this.

2.6. Parking Needs by User Type

People driving to the town will place different emphasis on the various attributes of parking supply. These attributes of each group most values to enable you to reflect these priorities in your parking regime. The five groups of users considered are (Renaissance Market Towns Programme, Car Parking Research):

2.6.1. Workers

Whilst many workers' parking behavior is based around traditional working hours, part-time and shift workers need also to be considered. Part-time employment is particularly prevalent in the retail sector. The parking attributes most important to workers are:

- The ability to park for long durations (typically four to nine hours);
- Low tariffs, but preferably free parking;
- Vehicle safety over the long periods of parking; and
- Safe walking routes between parking location and workplaces.

Most workers have little flexibility in when or where they work and some have no realistic public transport alternative. The primary response to the introduction of parking controls amongst workers is to park further from their workplace in uncontrolled areas, rather than pay higher charges or alter their mode of transport.

It is worth remembering that many workers will have access to private non-residential parking at their workplace and therefore will be uninfluenced by changes to the parking regime in on- and off-street areas.

2.6.2. Shoppers and Service Centre Users

The type of parking behavior for this group is dependent on the specific purpose of their visit and the types of functions provided by the town, namely:

- Convenience shopping (planned, frequent trips to buy everyday items);
- Comparison goods shopping (irregular and less frequent trips for larger items);
- Use of services (bank, doctor, leisure etc); and
- Multi-purpose trips (a combination of the above).

Parking duration for this group can vary from less than 10 minutes to several hours for a multi-purpose trip. The values of this group can also vary widely:

- Short-stay shoppers value close proximity to shops and a guarantee of being able to park;
- By comparison, convenience shoppers may value low-price or free parking (as offered in out-of-town facilities);
- Multi-purpose users may prefer to park further away and pay a reasonable fee, but should expect a suitable quality of service in return.

2.6.3. Visitors

Visitor needs and desires vary according to the type of town and amenities. Some examples are given below:

- Day visitors to historic centers typically have parking durations of three to five hours (medium-stay);
- They will want clear navigation to appropriate parking points: these will be close to the historic amenities (not necessarily the same location as where shoppers want to get to);
- If an attractive, gateway route into the historic centre can be provided, visitors will not mind parking at some distance from the centre, as the walk to the final destination becomes a part of the experience;
- They will benefit from orientation and information when they arrive in the car park so they can make informed choices about planning their activities and deciding how long they wish to park for; and
- They will be happy to pay an appropriate fee for good quality parking with appropriate facilities, such as toilets.

2.6.4. Residents

Competition for parking can be particularly intense in residential areas close to town centers where properties have little or no off-street parking facilities and residential densities are high. The key parking supply attributes of importance to residents are:

- Location in close proximity to home (in part due to issues of vehicle safety);
- A high likelihood of being able to park within what is considered a reasonable distance from their home; and
- Very low/free tariffs and/or simplicity of permit system.

Above all, residents want their street not to be subject to congestion or over-parking which reduces their environmental amenity. Opportunities do exist however to allow short-stay parking for visitors in residential areas during the day when many residents are at work.

2.6.5. Businesses

Different types of business typically have different parking needs as set out below:

- Retailers require opportunities for servicing close to their premises (smaller, independent retailers often have less control over servicing companies than large multiples); and for their customers to be able to park close to the shop – especially for heavy or bulky goods;

- Service providers (such as banks/building societies) value easy and convenient access for their customers;
- Tourist attractions require good information and signage to/from car parking areas; and pleasant local environment/routes from car parking areas; and
- Cafes, restaurants and bars require a pleasant local environment – especially for outdoor seating; and a flexible regime at different times of the day, week or year to allow outdoor seating in summer, or free evening parking.

It is worth noting that retail parking (especially for supermarkets) can account for a significant proportion of parking in a town over which the authorities may have little or no control. Generally, parking management uses to enhance user amenity & accessibility to the town. A town's parking supply can be managed so as to increase the overall efficiency of the available spaces and to control the location and availability of supply for different users. Drivers base their choice of parking location on a range of factors including:

- The parking location in relation to their ultimate destination;
- Maximum length of stay required;
- Certainty that a parking space will be available;
- Personal and vehicle safety;
- Quality and range of facilities;
- A fair price reflecting the quality of provision;
- Knowledge of car park location;
- Traffic conditions; and
- Pedestrian destination signing.

2.7. The Theory of Car Parks

'If only there were enough car parks in the world, then there would be space enough for everyone'. Such were the idealistic utopian ideals of the leading post war car-parking theorist in Europe (Heinrich Von Rectangle, 2010). There have been various aspects of car park sector analyzed over time from various points of view, drawing conclusions and, in some cases, offering recommendations and suggestions by researcher, policy maker and operator. These aspects can be summarized under the headings parking policy, parking economics, on-street parking economics, off-street parking supply, quality of service. (Napier University, December 2008b)

2.7.1. The Heading Parking Policy

On parking policy, much work in this area concerns discussions about parking policy and its effects. The solutions to correct the distortion between marginal costs paid by the private car commuter during rush-hours and those absorbed by the rest of the community through failure to charge rental (interest and depreciation) for much of the street and highway area used or taxes (property and profit taxes) on the capital invested was investigated by Segelhorst and Kirkus (1973). In another case, the provision of free parking for employees and customers is an additional subsidy that further distorts price below resource cost.

Another important study on the relation between violation and enforcement rates to on street parking regulation was developed by the US DOT in 1982. It summarized the results of experiments in a large number of U.S cities. But the recent study of Willson and Shoup (1992) that describes the incidence of employer-paid parking and its effects on congestion, commuting patterns, and externalities such as land use and air quality. The authors offer a number of important recommendations, such as changes in federal and state tax policies to influence commuting behavior. Another point of view in parking regulation is the work of Ferguson (Ferguson, 2004). He shows the most important changes in policy in this field during the last half century, in particular the enlargement of the spatial dimension, land-use classification and minimum parking requirements for these different land-uses.

Other publications have concentrated their attention on reviewing the literature on parking policy, highlighting the importance of them in the general framework of transport policy (Shoup, 2005 and Litman, 2006). They underline the necessity to integrate parking policy in transport policy for the future, but the effect of parking policy, as was emerging in several cases in terms of its impact on the vitality of city centre, was most recently analyzed by Marsden (2006). To fully understand the effects of these policies, he argues that several areas of research need to be deepened, such as on standards for new build residential parking, and the understanding of zoning per impact of parking restraints, walk time and parking behavior. As well as policy dealing with parking problems, the regulatory aspect of parking has been studied on the demand side.

2.7.2. Parking Economics

Part of the literature considers the economic analysis of urban parking policy, even if this is only a recent development in the academic study of parking. Various studies have focused on local problems such as the privatization of the parking management system in some Greek

cities, as a consequence of insufficient parking fees to cover the service costs (Matsoukis 1995). The study analyzed the case of the city of Patras, which is the third most populous city in Greece. The introduction of paid parking in all the parking spaces in the city center and the implementation of an automatic ticket service were carried out by one private operator. The results were the improvement of the parking situation in the city and the emulation of this approach by other Greek cities.

Bonnel (1995) took a different approach to the study of parking in some European countries. In Switzerland he studied the case of the reduction of the amount of car parking space in the city centers of Zurich and Bern, as a means of restraining car traffic so as to reduce the level of pollution and improve living environments. In parallel, improvements in public transport have switching the driver to the public transport. In contrast, in the France cities of Grenoble, Lyon and Montpellier the provision of new public car parks is considered as a way to give users a choice of mode of transport. Some authors concentrate on the use of parking pricing as a means to charge for road congestion externalities. While Glazer and Niskanen (1992) showed that raising parking prices, by deterring trips to the city centre, may just encourage more through traffic, the use of a numerical simulation model was also able to show that a second best pricing of all parking spaces can produces higher welfare gains than a simple-ring barrier scheme.

There are disadvantages on regulatory parking policies in comparison to a system of road pricing. These are, firstly, that all external costs will, to some extent, depend on trip length and road followed. Secondly, there are the private parking places that are not subject to the public parking policies. Thirdly, there is the risk of adverse spillover effects to adjacent areas. The solution suggested is restrictive parking policies, preferably supported by supplementary instruments such as fuel taxes, as an alternative to urban traffic regulation because road pricing is not likely to be introduced on a large scale in the short run.

They did not consider, in this case, as with the previous works, the specific effects of such policies on the city centre car parking market, because they are considered to be an unavoidable consequence of such policies. This is one of the main gaps in the literature on the car parking market. The effect of policies on drivers (demand side of the market) is often underlined and analyzed (or it is suggested that the effect on driver behavior must be analyzed).

On the other hand, when the literature discusses the operator (the supply side of the city centre car parking market) the analysis considers only how policies can be applied for other purposes such as mobility, reduction of time travelling, environmental effect, but does not consider the direct effect on the car parking operator and his business. It seems that research on the city centre car parking market is primarily driver-focused whilst the operators are “get lost”.

2.7.3. On-street Parking Economics

The investigation of parking economics in the literature has been almost entirely theoretical rather than empirical. A recent exception to this is from RAC Company (2006), which presents broad data on the economic size of the parking market in the UK. Most of the works are related to the demand side of the car park market, analyzing various aspects. Arnott, De Palma and Lindsey (1991) demonstrate that spatially differentiated parking fees increasing the price from the periphery to the central business district(CBD), can induce drivers to park further from the city centre, or can concentrate arrival times closer to work start times as workers try to get the best parking places.

Other authors investigate the first best regulation of on-street parking: Vickrey (1959) makes the case for a peak-load pricing of on-street space during rush hour, but it is more recently that the problem of congestion externalities has emerged as very important in most of the CBD. Arnott and Rowse (1999) constructed a model which simulate the stochasticity of vacant on-street parking space give the policy recommendation that the per time unit parking fee should be set to reflect the value of the parking congestion externalities. With the same objective Calthrop and Proost (2004) developed a model, integrating it into a private off-street market, which alters on-street parking policy and uses time restrictions in the place of meter fees. The result in this case is that when the off-street market is competitive, on-street fees are more efficient than simply time restrictions.

2.7.4. Off-street Parking Supply

Work involving studies of the supply side of the off-street car park are fewer and very recent, and almost all of them deal with policy consideration for public authorities, but not for car parking operators. Most of the recent studies in this area are by Calthrop (2000; 2002). As well as the works cited previously by Calthrop and Proost (2000), his other work considers both the impact on reducing search externalities on the on-street market itself, and the impact on (under priced) road congestion. The model demonstrates with a numerical simulation the

order of magnitude of an optimal parking fee, taking into account effects on other distorted transport markets (off-street parking market and the rail market), when deciding upon price levels for on-street parking.

The results show that reforming on-street parking pricing may have significant impacts on parking search time but the effects on road-congestion levels are marginal (Calthrop 2002). Calthrop and Proost (2000) carried out an analysis of the optimal on-street parking pricing with the presence of an off-street market. In this case, a single off-street supplier was playing the government regulated on-street market (Leader).

Which strategy is optimal has been shown to be parameter dependent (search costs, supply of on-street spaces and resource cost of off-street parking). The number of on-street searchers will depend on price and supply conditions in both markets. Relatively low on-street pricing will induce more and more drivers to search on-street until the equilibrium cost equals the off-street price. (Arnott, 2006), considering his newest argument, Arnott used a simple model, to suggest parking policy in the case where there is only off-street parking, followed by the entrance of on-street parking into the market and, finally, with an addition of mass transit.

2.7.5. Quality of Service

Even if the available literature does not acknowledge, either through empirical studies or through modeling, the importance of the quality of service, evidence demonstrates that this is an important variable in all fields of services provision. In the United Kingdom, the British Parking Association organizes the British Parking Awards for the best car parks in terms of customer service, achievement in outstanding innovations and the industry's most committed parking employees and teams. At the European level, the European Parking Association (EPA) has established a Biennial Award for excellence in parking operations. In this case, the assessment criteria applied are related to the level of internal, external and general quality, defined as follows:

1. External quality:

- Quality of green areas and surfaces around the car park
- Structure
- Design
- Primary design principles used to enhance the general appearance and aesthetic quality of the car park

- Construction/columns etc.
- Construction characteristics chosen to enhance the quality of use of the car park, such as an open view
- Materials/quality of finish, in terms of general use of materials and any innovative features to enhance the quality of use and/or maintenance

2. Internal quality:

- Layout, routing, size of bays
- The overall layout and traffic flow system for cars and other users (motorcycles, bicycles, etc.) inside the car park
- Pedestrians, routing, orientation
- Safety and security (closed-circuit television, attendance etc.)
- Parking equipment
- General system type, including available means of payment, and any out the ordinary advantages offered to the customer, related to the parking equipment
- Lighting
- Quality of materials, coloring, decoration, music

3. General quality:

- Supervision and management
- Marketing information and type of media;
- Safety routines for evacuation etc.
- Information and service
- Cleanliness and maintenance
- Safety and security.

2.8. Parking Analysis Theory

Parking is one of the major problems that are created by the increasing road traffic. It is an impact of transport development. The availability of less space in urban areas has increased the demand for parking space especially in areas like central business district. This affects the mode of transport choice and has a great economical impact. Before taking any measures for the betterment of conditions, data regarding availability of parking space, extent of its usage and parking demand is essential. It is also required to estimate the parking charges also. Parking surveys are intended to provide all these information. Since the duration of parking varies with different vehicles, several statistics are used to access the parking need. (Traffic Engineering Laboratory, 2014)

2.8.1. Parking Statistics

Parking accumulation: it is defined as the number of vehicles parked at a given instant of time. Normally this is expressed by accumulation curve.

Parking volume: Parking volume is the total number of vehicles parked at a given duration of time. This does not account for repetition of vehicles. The actual volume of vehicles entered in the area is recorded.

Parking load: It can be obtained by simply multiplying the number of vehicles occupying the parking area at each time interval with the time interval. It is expressed as vehicle hours.

Average parking duration: It is the ratio of total vehicle hours to the number of vehicles parked.

Parking turnover: It is the ratio of number of vehicles parked in duration to the number of parking bays available. This can be expressed as number of vehicles per bays per time duration.

Parking index: Parking index is also called occupancy or efficiency. It is defined as the ratio of number of bays occupied in time duration to the total space available. It gives an aggregate measure of how effectively the parking space is utilized.

2.8.2. License Plate Method of Survey

This results in the most accurate and realistic data, in this case of survey, every parking stall is monitored at a continuous interval of 15 minutes or so and the license plate number is noted down. This will give the data regarding the duration for which a particular vehicle was using the parking bay. This will help in calculating the fare because fare is estimated based on the duration for which the vehicle was parked. If the time interval is shorter, then there are less chances of missing short-term parkers. But this method is very labor intensive.

2.9. Challenges of Car Parking in Addis Ababa

Addis Ababa city located at the center and is among the most important commercial city with a highly concentrated population in Ethiopia. Recently, study shows that the morphology (form) of the city has changed very rapidly beyond the ability of municipalities to recover its original status. For example, the construction of different activities attracts more people with a private vehicle who often visit the areas for leisure, employment and other services. On the contrary, parking space is not enough to accommodate the number of clients visiting the areas. Parking challenges occurring in the capital city will continue to be the major problem due poor parking policies, poor planning of the city, population growth, increase of car to mention in a few (Bundara, 2010).

Rapid Urbanization: The population in Addis Ababa has been changing very rapidly in a rate of 2.1% per year (Central Statistical Agency, 2010b). For example, according to Addis Ababa transport branch office 2003 – 2007 strategic plan shows that, human settlement and population in Addis Ababa will estimate to be 4.5 million people in 2012E.C. This increase does not correspond to the capacity of the municipalities for providing reliable service such as parking facilities which has a tendency to reduce the traffic congestion and smoothen the travel time in the city. The increase of the population also will continue to exert pressure on parking spaces and other social and economic services unless deliberate efforts are made to address the problems particularly in the poor parking facilities, management and policy development.

Increased number of Cars: According to the Urban Transport Study, 2004/2005, out of the total number of vehicles in the country about 75% is estimated to be concentrated in Addis Ababa; and different vehicle types are showing different growth: private cars are increasing at a rate of 5.02% and commercial vehicles are increasing at a rate of 5.74 % respectively.

Total number of vehicle group by plate major/code (Ministry of Transport, 2006E.C)

(Table 2)

Code	1999	2000	2001	2002	2003
1	18,731	19,797	20,258	20,665	20,782
2	73,398	77,566	82,572	89,338	95,131
3	76,505	84,295	91,951	103,778	114,190
4	10,541	11,105	11,759	12,725	13,370
5	2,249	2,398	2,538	2,691	2,797
CD	985	1,189	1,400	1,893	2,353
UN	1,035	1,208	1,384	1,608	1,854
AU	199	250	301	417	490
AO	6,004	6,391	6,812	7,370	7,867
Total	191,646	206,199	220,976	242,487	260,837

The Urban Plan Representation Sub-Process (August 2009), the actual vehicle on-street parking service areas is estimated to 76,038 meters linier and 12,823 car parking place are available in the service areas. It ought to consider the increase of vehicles in the broader context in the central business areas, residential areas and industrial areas of the city.

The annual motorization rate of the city vehicle had been 5.8 percent on the average (Federal Transport Authority (FTA) computer database for the year 2010/2011a). This rate will be added for the current situation of the Addis Ababa city. The data obtained show that, total number of vehicles are 260,837 for the year 2003E.C out of these 95,131 are private and 114,190 are business vehicles which is 36.47% and 43.78% of the total vehicles, respectively.

And thus, the transport sector has adverse impact on the rate and growth process of the city that may affect on the change and direction of country. Physical size of the city become increasing to accommodate the population and their activities. Due to this, the travel demand and the number of vehicles on roads are increasing.

Inadequacy of parking spaces: Roadside and illegal parking are common phenomenon in Addis Ababa especially in the central business district, this is due to the limited spaces for parking. The on-street parking narrows the road, cause unnecessary congestion and accidents in the city (Kiunsi, 2011). Shoup (2005b) conducted a study in 11 international cities. The study found that on averages 30% of traffic is cruising looking for parking spaces with the average search time being 8.1 minutes. Recent research organized by the RAC Foundation (2004) found that 48% of respondents acknowledged that have parked illegally.

Residential areas in parts of many cities are overwhelmed with parking cars (Balcombe and York, 1993) that there are no informal safe crossing points for children. Parking policy should not be developed in isolated but as part of local and region spatial and transportation planning processes (Marsden and May, 2005).

The ineffective regulation of parking has accelerated poor mobility in the city. Accident was high in Addis Ababa (10,189 in 2004) and there were 305 deaths due to road accidents in the same year the accidents are increasing at a rate of 12.5% from 2003.

Traffic Accident in Addis Ababa: Source (Addis Ababa Police Commission, 2005E.C)

(Table 3)

Traffic Accident in Addis Ababa			
No.	Year	Death	Others
1	1996	345	10,476
2	1997	345	10,543
3	1998	380	11,014
4	1999	364	8,949
5	2000	395	8,169
6	2001	325	7,203
7	2002	332	7,822
8	2003	312	8636
9	2004	305	10,189
10	2005	341	10543

Demand for right of way: streets in Addis Ababa are used in different ways but mostly for movements/mobility (cars, passenger vehicles, pedestrians and motorcyclists), exchange (social interaction and street vending) and storage (parking). Many streets in the CBD (central business district) area, does not freely allow right of way to accommodate all the functions. It is clear that spaces dedicated to parking are unavailable to get service from different shops and offices.

Pedestrian safety and comfort: On some street illegal parking in the CBD hinders the movements of vehicles and walkway which is important for pedestrian comfort and safety. Poor parking on the walkway on pedestrian crossings forces pedestrians into the roadway and affects visibility. This does not attract people to use non-motorized facilities to travel in the city of Addis Ababa.

Traffic Congestion: Addis Ababa street network has a finite capacity, poor parking planning and inadequacy of the policy developed to coordinate the decision on roadway capacity. If no new roadway capacity is planned to the CBD, as seem likely, and therefore it is ultimately futile to the construction of more parking for all day commuter use in the CBD. This parking would only add to existing congestion and undermine the ridership.

2.10. PESTLE Analysis to the Challenge and Opportunity of Car Parking

A PESTLE analysis is used as a tools to explore and identify the external environmental factors that support the research which has an impact on the ‘business opportunities’ – what you do or want to do.

2.10.1. Political

The present conditions of parking lots in Addis Ababa are critically important to provide services for the existing and future vehicle demand. The overall outcome and achievement will be improved due to many factors. Of which Addis Ababa become a metropolitan city where there is rapid growth of population increasing, number of vehicles moving in it and it is a centre of many business activities. Besides, Addis Ababa is a seat of many national and international organizations like African Union and the Economic Commission for Africa. Hence, the promotion of parking lots, modern urban transport and traffic management is indispensable for the purpose of ensuring sustainable urban transport development.

2.10.2. Economical

The construction of parking lots under the multi-story building incurs high cost. Even if, this parking lot reduces the problem, the construction cost to execute parking under the building is costly. For instance, the building in front of Merkato Tana building the familiar name of the building is Dubi Tere Multipurpose building has three basements under the ground for car parking. The construction is under progress by now and constructed by Afro-Tsion Construction Company. The original project cost for the construction of five story building was 73,151,411.70 and out of which 40% of the total cost is consumed by the substructure works for the facility of car parking. This is in the one hand, it affects the investor financial capacity and on the other hand, it affects the country economic in regards to the financial and resource allocation. Therefore, considering car parking under the building like Dubi Tera will take the cost of one additional building.

2.10.3. Social

Currently existing buildings like Denbel City Centre, Golagol Building and the likes are reducing the parking problems. And such buildings unable still to satisfy the customers and the societal needs. The best parking lots ever had in Addis Ababa are Bole Air Port, Hilton Hotel and Sheraton Addis which will not obtain again due to the land policy of the government. Since the growth rate of the vehicles increases by 5.8% (Federal Transport Agency 2010/2011b) the importance of car parking should be considered to avoid the complexity that will occur in the future either from government or private sector. Creation of an enabling policy environment, parking management and provision of facilities such as parking spaces, terminals etc. and limiting the non-motorized ones to specific route will reduce the societal needs and wants.

2.10.4. Technological

The technology will create good opportunity for the problem encounter in parking lots development and management. Seven One Seven Parking Enterprises has established relationships with vendors of parking software & equipment who provide the most technologically advanced products in the market. The company established relationships by providing advanced technology in both software and hardware. (717 Parking Services, Inc., 2014). Some of their products include:

- Access Gates
- Card Readers
- Fee Computers
- Customer Request Kiosks (stand)

- Valet(wash) Parking System
- Dial-up Request Module
- Pay On Foot Equipment
- Pay Per Space Equipment
- Pay Per Display Equipment
- Hand Held PC Devices (for enforcement)
- Integrated License Plate Recognition
- Accounts Receivable Information Systems

And also, the development of construction for new multi-story building is supported by technology and skilled personnel. It is possible to critically analyze the architectural, structural, electrical, mechanical and sanitary of the parking lots using special software's. Thus, technology advancement and knowledge transfer will create suitable parking conditions.

2.10.5. Legal

There is no doubt regarding the need to the parking lots in Addis Ababa. The increasing traffic congestion, pollution and accidents in the city had been a problem for the last decades. The illegal parking and washing area have a consequence on the car accident and pollution of the environment. The establishment of proper planed system of car parking management will be a legal issue for the society to use these opportunities, and hence it will have manageable and controlled system for theft and security purpose. Besides, the parking lots are business firms that have legal entity, thus the government will have sustainable income tax and they will have legal protection for the customers.

2.10.6. Environmental

Even though it is not possible for now to present data on the magnitude of air and water pollutants corresponding to car parking and washing, it is obviously understood that there is an impact on air and water pollution.

According to report on statistical indicator of public transport performance in Africa DATE: April 2010a, the volume of gas products from the engine's combustion from a bus with a loading capacity of 100 passengers and the volume emitted by 25 automobiles or 9 minibuses (the number required for them to transport 100 passengers in one trip). It is estimated that two million metric tons of fuel are consumed in a year by motor vehicles circulating in the metropolitan area and, from this volume of fuel, 90% corresponds to a complete combustion producing CO₂. This means that the remaining 10%, or 200 million kg, corresponds to products contaminating the environment like CO, NO₂ and SO₂.

Air pollution in Addis Ababa is becoming an issue with visible dense smog in the city throughout the day, affecting the respiratory organs of its inhabitants as well as plants. Due to this fact, when we construct car parking under the ground, there is a ventilation problem and also when we going down to the earth below the ground level the air pressure increases. And hence, the concentration of emission gas together with ventilation and elevation decrease, those who work in that area and those who continuously parking at that location will have health problem.

2.11. Future Trends

For the past few decades, African cities have been experiencing huge population increases. This is mainly due to galloping urbanization and rural exodus. It is estimated that by 2020 some 55% of the African population will be living in urban areas. Such fast growing cities face enormous challenges in terms of infrastructure provision and the need to cope with the increasing demand for transport and parking lots. This is especially acute as much of the existing road infrastructures in African cities are far from being appropriate for the actual transport demand. In addition, apart from a few remaining companies, almost all publicly owned and managed public transport enterprises in Africa ceased to exist during the 1990s. Often as a consequence of structural adjustment policies required to comply with aid programmes associated with international agencies. (Report on statistical indicator of public transport performance in Africa: April 2010b).

Particularly, Addis Ababa the capital city of Ethiopia and Africa needs to be considering a business opportunity of car parking for those bring innovative ideas to overcome the serious problem that will encounter. This in returns will create job opportunity for the government works and/or for private investors. In order to implement the 10 years and 20 years planning period of the city development plans, the local development plan is the key instrument. The provision for the development and expansions of car parking building sites didn't get proper attention during the preparation of any local development. Due to this reason, the city encountered to traffic congestion, traffic conflicts and accidents repeatedly occurred at different parts of the city. In Ethiopia no detail research had been made for the socio economic development of the country. For these reasons, the research investigates the challenges and opportunities of car parking industry.

Shoup (1999, 2005a) reviewed to some extent the challenges of parking and stated that the parking policies have and will continue to worsen the spread out by requiring the over

provision of parking spaces, lowering the resultant density of commercial and residential development and encouraging further car use. With this realization the inability of the cities to cope with unrestricted increases in car traffic planners have emerged to reconsider the degree of parking policy required to contribute to the economic, environmental and social policies in towns and cities (Valleley et al., 1997). It is argued that the good design of the parking policies in various ways contributes to smooth the transportation networks, lowering emissions, high densities and better more of urban mobility (IHT, 2005; Shoup, 2005a; Stubbs, 2002, Valleley et al., 1997) while poor design of the cities tends to act otherwise. Litman (2011) conceptualized the parking problem in terms of a paradigm shift which describes a fundamental change in the perception of the problem and solutions evaluation. Parking problems and solutions can be viewed in terms of a shift from the old paradigm to the new one.

The old paradigm assumes that parking should be abundant and free at the destinations. It attempts to maximize supply and maximize the price (Willson and Shoup, 1999). The paradigm also assumes that parking lots should almost never be filled and that parking facilities cost should be incorporated into the costs of buildings or subsidized by governments and that every destination should be satisfied with its own parking needs. The old parking paradigm asserts that parking requirements should be applied rigidly without exception or variations and that parking management should be considered as a last resort to be used only if increasing supply is infeasible.

The new parking paradigm on the other hand aims to provide optimal parking supply and price. It considers too much supply as harmful as too little and price that are too low are as harmful as those are too high. The new paradigm strives to use parking facilities efficiently. The new ideas must reflect the technique to handle the increasing demand for parking by constructing new structures for parking, new parking standards (including a parking at own property), new parking policy regarding short term and long term parking (where parking involves costs) and promotion campaign (information).

It is also important to promote the introduction of parking agents whose times for parking depends on parking supply and the resultant must be equally distributed with the parked cars. Thus, in the absence of adequate policy and effective measures to enforce the stakeholders to comply with the regulations for parking, the increase of vehicles will result to congestion and delays, serious accidents and intense pollution.

2.12. Strategic Direction and Aim

The term multi-storey car park is used in the United Kingdom, Hong Kong and many Commonwealth of Nations countries. In the western United States, the term parking structure is used, especially when it is necessary to distinguish such a structure from the "garage" in a house. In some places in North America, "parking garage" refers only to an indoor, often underground structure. Outdoor multi-level parking facilities are referred to by a number of regional terms:

- Parking garage is used, to varying degrees, throughout the United States and Canada,
- Parking deck is used in the Southeast,
- Parking ramp is used in the upper Midwest, especially Minnesota and Wisconsin, and has been observed as far east as Buffalo, New York,
- Parkade is widely used in Canada and South Africa,
- Parking building is used in New Zealand.

Architects and civil engineers in the USA are likely to call it a parking structure, since their work is all about structures. When attached to a high-rise of another use, it is sometimes called a parking podium. United States building codes use the term open parking structure to refer to a structure designed for car storage (not repair). It has enough openings in the walls that it does not need mechanical ventilation or fire sprinklers, as opposed to a "parking garage" that requires mechanical ventilation or sprinklers but does not require openings in the walls. The openings provide fresh air flow to disperse either car exhaust or fumes from a fire should one break out within the structure.

The aim of this research is to show the opportunities by considering the challenges of car parking. The above mentioned deities in Addis Ababa are not yet considered. These strategies which may needs high investment and further study, but in the future the return is high from many perspectives. The other opportunities considers in the parking buildings are beauty salons, entertainment centre, car washing service considering water treatment, sport filed, cinema halls and public toilets. The benefit is primarily the investors who invest on this sector, secondly the society as large by reducing car parking lots and unemployment.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

This chapter presents the overall research approach adopted and design, the data sources used, the data gathering techniques employed, the sampling frame, the data collection procedures, and the data analysis & presentation approach used in planning and carrying out this research.

3.1. The Overall Approach Adopted

The research design used for the study of opportunities and challenges of car parking in Addis Ababa is based on the criteria and design categories.

1. The degree of the problem is formal that is the problem is well defined/articulated.
2. Purpose of the study is analytical that is casual studies of the cause and effect analysis between variables is studied and descriptive study that is the purpose is to provide description of events (who? When? How? And Where?) Without giving attention to cause of the event or problem. By taking verbal (qualitative data) and observation as a principal data collection mechanism.
3. Time dimension is cross sectional studies that is variable of interest is studied across the border at a specific point in time. Data is collected from different locations at the same time.
4. The research control variable is ex-post facto that is the report presents what happened or what is happening without influencing the variable. Variables of the research are not under the control of the researcher.
5. Method of data collection both observation and interrogation /communication/ mode study.
6. Topical scope is statistical study that inference about population based on sample result and use quantitative method.
7. The research environment is field condition that is census survey (data is collected from each single element unit in the population to have good sampling and no error).

The study used quantitative and qualitative approaches or mixed approach to analyze the data collected. The mixed approach was adapted on the study to obtain data from relevant sources by using tools like questionnaire and interviews.

3.2. The Research Design

This research adapted statistical study for the better inference about the population based on the sample result. It is suitable to study sensitive strategy like master plan preparation of the city for various purposes including car parking and others. Parking lots is an area of city administration that the communities are so much concerned with and affects daily activities, time management, safety of car, accident, and traffic flows. Doing these, the overall the city productivity or performance will be improved by providing better and new car parking lots.

Hence, to understand how much car parking is serving its ends, it requires understanding of in-depth factors that relate to parking and views from both the government and the community of Addis Ababa living in 10 sub cities.

The research is designed to present information and data by convenience sampling which is non-probability that conforms to certain criteria or strata. . The researcher selects units that are convenient, close at hand, easy to reach. Convenience sampling means that members of such samples are chosen mainly because they are readily available and willing to be involved hence there is a saving of time and money. In this thesis, the researcher believes to use because the members are to be representative of the population and thus, one sample is taken from each sub city.

3.3. Data Sources

The study made use of data from both primary and secondary sources. Primary data is used to analyze social and environmental situations based on the challenge and opportunities of car parking. Besides, it is employ to understand the importance, satisfaction, scarcity, unfair use of road and building due to car parking through questionnaire and interview. The secondary data relating to the challenges, opportunities, strategy, accident, motorization escalating and policy was gathered from the different organization's documents, reports, research and standard literature.

The stakeholders considered in the research for source data are:

- Addis Ababa Road Transport Office,
- Addis Ababa Police Commission,
- Addis Ababa Micro and Small Enterprises Development Office,
- Addis Ababa Road Authority,
- Addis Ababa Community,
- Addis Ababa Mayor Secretarial Office

- Construction Permit and Control Authority, and
- Environmental Safety and Protection Office

3.4. Data Gathering Tools

The data for the variable of interest in the population investigate what opportunities and challenges of car parking exist. And also, it is required for the study to collect information from the target group who will be the stakeholders of the industry. Those were government and non-government offices, and individuals. The time of study was four months until July 7, 2014. The method used how to study was considers the tools designed in three forms; first, Likert Scale which is semi-structured; second, direct and/or indirect observation on selected area; and third, interview. These research tools were used in the study because the instruments would be more effective in generating data from the participants about their opinions of the actual situation (Turner, 1993, and Meriam, 1998).

3.4.1. Questionnaire for non-government organizations and community of Addis Ababa

In line with the objectives of the study, the purpose of the questionnaire was to obtain information mainly about the view and opinion of the stakeholders. It was concerning about the importance of car parking, and to what extent the problem of parking affect their daily activity and city development. The ideas used in the questionnaire were drawn mainly from current condition of the city, to address the objectives and the needs to be further development in the parking industry.

The questionnaire has four parts with sixty nine items altogether. These are:

- a) Part I: is simply about personal information.
- b) Part II: is intended to seek information about the challenges and opportunities point of views and opinions regarding the present situation of car parking in the city.
- c) Part III: is intended to assess how far the stakeholders are satisfied with the present car parking lots and what will be the trends. Besides, it needs to check the societal problem and construction cost of car parking when constructed under the building.
- d) Part IV: is consisted of four open ended questions attempted to elicit general information from the non-government organization and the community of Addis Ababa.

3.4.2. Questionnaire for government organizations

A questionnaire which has two parts was designed and distributed to the government officials considering the stakeholders. The purposes of these questionnaires were to triangulate or cross check what would the government officials say about the current parking lots arrangements. It was also intended to evaluate the performance of the lots and how the effectiveness of parking will be improved. Part I is about the judgments of the officials on how the city transport management strategy, land bank policy and practices are implemented. And also, what opportunities and challenges exist and will be occurring. Part II is intended to evaluate how far car parking industry creates job now and in the future. And request about how the challenge of the city will be improved the performance due to lack of parking lots.

3.4.3. Interview

An interview was carried out with the higher government officials of Addis Ababa Police Commission Deputy Commissioner, Addis Ababa Micro and Small Enterprises Development Office and Urban Plan Preparation Sub-process Owner and Addis Ababa city Administrator Deputy Mayor. It was about parking strategy, policy, the existence of new parking location, land development plan (LDP), current situation of parking, related business opportunity and implementation of the new idea with particular attention to the city.

3.5. Sampling Technique

3.5.1. Selection of the Idea for Car Parking

The purpose of this study as stated in chapter one was to assess the car parking problems, to show the opportunities in job creation, to give feedback for further study and to give recommendation on the car parking lot locations. Addis Ababa was selected for the research purpose on two grounds. The first reason considered the study was the researcher is the dweller of the community who face the problem of parking and its consequence. Even though the main aim of this thesis is to carry out research on fulfillment of MBA in Business Administration, he felt that the findings of this study will help new parking industry formation in the city for future growth and development. The second reason is that to present innovative ideas that create job opportunities and remove societal problems that were not designed and executed before.

Thus, the research tries to show what the cause of the challenge is, what other opportunities exist in the parking industry, how could things be made better by identifying the objective, and which one is the best location to develop multi-story buildings. The convenient sampling

techniques that the researcher has adopted is also supported by other researchers such as Gall Borg and Goal (1990) and Nachmias and Nachmias (1987).

3.5.2. Selection of Sampling Elements of the Study

Addis Ababa, with an area of 540km² is divided into 10 sub cities and 116 woredas (Transport Policy of Addis Ababa, August 2011). There are 72 on-street parking service areas administered by 121 parking Enterprises. The enterprises are allocated in Addis Ketema 21, Bole 13, Gullele 3, Ledeta 10, Nifasilke 7, Kolfe 3, Yeka 15, Akaki 1, and Arada 29 (Micro & Small Enterprises Development Office, 2005E.C). And also there are underground parking buildings in most of the buildings (according to construction permit Procedure No. 1/1997). All buildings constructed in the city should fulfill the standard even though they will not meet (Annex-1). There is one four story car parking building in Addis Ababa which is located in National Bank of Ethiopia at the new building compound for the purpose of Bank service only (researcher investigation, July 2014).

The sampling frame of this research was focused on one sample from each sub city at ten locations based on judgmental sampling to show the challenges and opportunities of car parking. The basic requirements and criteria taken into consideration are:

- Current and future accessibility and traffic generation
 - Creation of active streetscape
 - Along streets which have a vital role regarding accessibility and high connection with the different parts of the city
 - Along streets which have the role of short link for mobility and access functions
 - In areas whereby traffic accidents and/or conflicts frequently occurred
 - In areas whereby car park buildings tend to become a problem that affecting the efficiency of traffic flow
 - In places whereby on-street parking services are saturated and consequently residual parking demand is observed
- Other requirements
- Clear visibility
 - Clear views to the outside
 - Street width, Entrance & exit , and
 - Integration into the context of town planning objectives; guidelines and regulations are also considered in the selection of the sites.

The research intended to assess how far the parking lots and practice have met the objectives. And also, the service is satisfying the user needs to further improvement of car parking performance.

Sample size is determined by considering the influencing factors, including the purpose of the study, population size, the risk of selecting a "bad" sample, and the allowable sampling error. In addition to the purpose of the study and population size, three criteria usually are needed to be specified to determine the appropriate sample size: the level of precision ($\pm 5\%$), the level of confidence or risk ($\pm 95\%$), and the degree of variability (50%) in the attributes being measured (Miaoulis and Michener, 1976).

There are several approaches to determining the sample size. These include using a census for small populations, imitating a sample size of similar studies, using published tables, and applying formulas to calculate a sample size. (PEOD6, sample size determining, reviewed April 2009). The study is done using the following formula to calculate sample size which is used for large population. (Cochran, 1963:75)

$$n_0 = z^2 pq / e^2$$

Where:

n_0 = sample size

Z^2 = (1-confidence level (95%)) = 1.96 (from statistical table)

e = precision $\pm 5\%$

p = population estimated attribution of interest do (variability 80%)

q = $1-p = 1-0.80 = 0.20 = 20\%$ (attribution of interest do not)

Thus, $n_0 = (z^2 pq) / e^2 = (1.96^2 * 0.80 * 0.20) / 0.05^2 = 245.86$. The result obtained gave sample size for each selected sub cities were expected to be 25. But, Kish (1965) says that 30 to 200 elements are sufficient when the attribute is present 20 to 80 percent of the time (i.e., the distribution approaches normality). Due to this, 15% (30/200) adjustment is made and used 290 sample sizes for 10 sub cities with 29 samples for each.

The top government officials in stakeholders mentioned was considered in the research. The research participants were selected by the importance of the feedback. Since the duration of the research was short and difficult to include the other data's in the city as a whole, the study focuses only 10 locations of the city.

3.6. Data Collection Procedure

In general, after the data gathering tools were designed, the pre-testing of the instruments was carried out to see whether the items could generate the expected data or not, and based on the information obtained, the instruments are refined further and distributed to the participants. Before the samples were distributed to ten locations in the sub cities, 25% of them were converted in Amaharic language so as to address the required meaning. The distribution was made based on the participants' language skill.

3.7. Procedures for Data Analysis and Presentation

As can be seen from the above discussion, mainly questionnaire is used to obtaining data for the study. The analysis of the data from the structured and semi structured questionnaire is carried out using descriptive statistics. These are mainly frequency counts and percentages. The results of the open ended questionnaire and interview were described qualitatively and the findings are summarized.

CHAPTER FOUR

4. DATA ANALYSIS AND PRESENTATION

The purpose of this chapter is to present and discuss the data generated from the questionnaire and interview. To that end, the chapter has three sections. In section one, the questionnaire for the non-governmental and any individual of the community is presented. In section two, the government officials' questionnaire is taken up and presented. In the third section, the results of the interview with the government officials are summarized.

• Bio-data of the Respondents

(Table 4)

Gender				Job					Car Owner	Age Ranges					
M	%	F	%	Business		Office Work		Others	From 209 return sample	18-28	%	29-39	%	40-61	%
160	76.6	49	23.4	68	32.4	103	67.7	38	138	65	31.1	101	48.3	43	20.6

Though the bio-data of the respondents were not considered as variable for this research purpose, a summary of their personal information has been presented here. Regarding gender issue, as can be seen from table 1 above, 76.6% of the respondents are males. As to their age ranges, 48.30% of the respondents' age range lay within 29-39 and the majority of the respondent are office workers which is 67.70%. The car owner from the 209 respondent was 66.02%. The owner of the car is considering those who have their own car or using the organization vehicle for the purpose of individual service including with self driver.

4.1. Results of Questionnaire for non-government and dwellers' of the city

Main source of data used for this study, as discussed in chapter three, was questionnaire for stakeholders. One purpose of the questionnaire was to gather information about the stakeholder's agreement on the challenges and opportunities of parking lot. Also, the questionnaire was intended to find out the extent of the persons' satisfaction with the provisions of the parking. Below the results of the questionnaire for non-government organization and any individuals in the community are presented (Annex-2 & Annex-3).

4.1.1. Respondents' satisfaction level with the parking service

As mentioned earlier, the questionnaire was also intended to find out that the extent of the stockholders satisfaction with the current provision of car parking practice. Therefore, in this section, how far the dwellers were satisfied with the parking service are analyzed and presented.

(Table 5)

No	Statement about car parking	Very Satisfied		Satisfied		Unsatisfied		Very Unsatisfied		Neutral	
		No	%	No	%	No	%	No	%	No	%
1	Government concern to parking industry	16	7.66	40	19.14	102	48.80	50	23.92	1	0.48
2	Investor concern to parking industry	16	7.66	33	15.79	103	49.28	55	26.31	2	0.96
3	Micro and small enterprises concern	19	9.09	112	53.59	54	25.84	22	10.52	2	0.96
4	Parking condition of Addis Ababa city	4	1.91	22	10.52	98	46.89	85	40.68	0	-
5	Opportunities to use and develop new parking place and multi-story building	17	8.13	55	26.32	94	44.98	40	19.14	3	1.43
6	Parking availability under buildings and responsibility for the property	10	4.78	60	28.71	81	38.76	58	27.75	0	-
7	Availability of road side parking and responsibility for property	0	-	29	13.88	119	56.94	61	29.18	0	-
8	Construction cost, if parking consider under the building	14	6.70	54	25.84	101	48.80	25	11.96	14	6.70
9	Availability of park for disable persons vehicles	8	3.83	13	6.22	54	25.83	126	60.29	8	3.83
10	The trends of parking service	10	4.78	27	12.92	96	45.93	68	32.54	8	3.83

As can be seen from table 6 above, the first two items were intended to measure up the satisfaction levels of respondent concerns on car parking industry by the government and investors. In this regard, the respondents (72.72%) expressed their view that, they were unsatisfied with the government concerns and the respondents (75.59%) forwarded their view that they were unsatisfied with the investors concerns. But, on micro and small enterprise concern to parking service, the respondents (62.68%) were satisfied. On the issue of availability, 86.12% of the respondents were unsatisfied with availability of park for disable person's vehicles. The opportunities to develop new parking place and multi-story building; and availability of parking under the building and road side; and its responsibility for property; and others are described on table 5.

4.1.2. Summary of open ended questionnaire

The answers given by the dwellers of Addis Ababa for the open end questions about parking are summarized as follow:

Challenges:

- roads made for traveling vehicle only
- miss use of basement parking
- risk of security and theft on road side parking
- barriers to pedestrian and creates road accident
- no enough parking area around office and business center
- lack of ventilation for underground parking
- accommodation of parking is less than the needs and no consideration
- unfair payment for parking under the building
- side by side parking on street

Opportunities:

- create job for the dwellers by serving in different vacant positions
- helps to transfer of technology and knowledge
- related business developed like car washing and accessory shop
- create effective use of roads
- has security & safety for property
- means of income to government and investors
- giving rental parking service, if multi-storey car parking building will constructed
- reduce fuel consumption and traffic congestion

Current Situation:

- high needs for parking and scarce land to park
- parking space is limited and not good
- better not to drive a car due to lack of parking space
- real problem on the city and very poor concern from government and investors
- because of lack of parking I do not want to drive Merkato

Future Trends:

- the demand will increase due to this government and investors shall participate on the business as per the regulation
- there will no change because of lack of attention
- driving will become more difficult
- difficult to arrange because there is no free space on the business area unless demolishing existing buildings
- hopefully things will changed to solve the problem and somehow bright

Location for Car Parking:

- parking under the high rise building shall be considered
- parking required at the congested area and market center(Merkato, Piazza, Bole Road, Kera, Mexico), street side
- standard road shall be considered like Addis Ababa to Adama Road which considered parking bays
- under the building and on the building using ramp circulation or vertical moving machine
- any free space near to public transport

4.2. Results of Questionnaire for Government Officials

The questionnaire used for the government officials were made for six offices those are the stakeholders on the study and two questionnaires for each. It was intended to know two things regarding to car parking. Part one was the applicability of parking practice and part two was the satisfactory effects on parking by considering key performance indicators.

4.2.1. Parking practices of the city (Table 6)

No	Statement	Strictly Applicable		Applicable		Inapplicable	
	Addis Ababa current car parking condition	No	%	No	%	No	%
1	has coordinated traffic management system strategy like road network, terminals and parking places, roundabouts and junctions	1	8.33	3	25	8	66.67
2	recognizes the challenges and give alternative solution for parking problems	2	16.67	7	58.33	3	25
3	pays attention to serve the underground parking for their purpose rather than using for shops, store, etc	0	-	1	8.33	11	91.67
4	has special flow up to give training for illegal parking, street trade, the needs of disabled, children and pedestrian	0	-	2	16.67	10	83.33
5	ensures the performance of parking lots are evaluated	1	8.33	2	16.67	9	75
6	try to see other option to optimize parking challenges	0	-	9	75	3	25
7	ensures that the parking places are effectively utilized	1	8.33	1	8.33	5	83.34
8	has feasibility study for the parking station arrangement and future service	0	-	11	91.67	1	8.33
9	critically consider and enhance land supply for parking and terminal development in the central part of the city	0	-	1	8.33	11	91.67
10	ensure adequate parking space in the issuance of construction permit, monitor and control its implementation	0	-	2	16.67	10	83.33
11	the on progress railway transport considers parking station at the train start and end	0	-	2	16.67	10	83.33

As indicated in table 8 above, the respondents were made to decide how seriously affect lack of coordinated traffic management system strategy like road network, terminals and parking places, roundabouts and junctions. On second variable, the current condition of car parking in Addis Ababa were recognized by the stakeholders to give alternative solution for parking challenges, the respondents (75%) witnessed that it was applicable. On the issue of critically considering and enhancing land supply for car parking and terminal development in the central part of the city, 91.67% responded that this was inapplicable. But, the same percent agreed that the presence of feasibility study for the parking station arrangement and future service. The other issues concerning the current situation of car parking is presented on the table 6 above.

4.3. Results of Interview with Government Officials

Interview questions were set and forwarded to government officials, namely, Addis Ababa Police Deputy Commissioner, Addis Ababa City Administration Deputy Mayor, Urban Plan Preparation Sub-process Owner and the Addis Ababa Road Transport Office. The main issues raised during the interview session were related to the research objectives of the study in relation to the following themes.

4.3.1. The Challenges and Opportunities of Car Parking

Regarding the challenges of parking: the officials were responded that the there is poor parking management system, no modern traffic management and continual improvement, less concern to establish new lots, usually focused on street parking and heavy duty trucks holds large space for loading and unloading. Besides, less supervision for underground parking which are used for gymnasium, supermarket, store, shops, bars, restaurants and other uses. The other problems facing the city is on street car wash, road side trade that affect the free movement of pedestrian, illegal parking like narrow carriageway, pedestrian walkway, roundabouts and junction points.

The response of the officials about the opportunities was identifying the treat is one thing to solve the challenges. Then after, it solves the traffic congestion, it will reduce unemployment, it will be a place for shopping center when parking established at different station or multi-storey buildings developed. When parking stations developed, there will be a facility for toilet service and car owners may chose public transport like the expected city train to travel long distance. The performance of parking will be improved by take legal action those who

used underground parking to other purpose. Narrow carriageway parking given to small enterprises should be eliminated, adequate parking signage should be provided, and it needs to give attention for the implementation of traffic management system.

4.3.2. Parking Industry, Strategy and Policy

Parking as an industry is not developed in Ethiopia yet. But, the city administration will try to solve those challenges within the next five years plan and it is under investigation side by side with the revised Addis Ababa master plan. Since, the investment is high the government will take initiative to developed parking sites and multi-storey buildings where there is high business transaction, bus, taxi and train stations. The appropriate car parking locations are under investigation with the new master plan. The current car parking practice is not giving appropriate service to the community and need to be improved. There are no enough parking spaces in the city, because the existing places are not accommodating the increasing number of motorization rate and miss use of under building parking. Most of the roads are designed to vehicle passage but not considered parking bays like Torhyloch roundabout and Sare Bet in front of Addis Ababa road Authority.

Clear strategy and specific policy will be designed in the future, but it is consider under infrastructure works. The procedure, the principle and practice was developed for on-street parking but it will develop in detail with the development of master plan.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

5.1. Limitation of the study

Limitation of the study is particularly focuses on market area from Addis Ababa Sub cities; it will not include the parking lots provided by Addis Ababa air port, Hilton and Sheraton Hotels, around Stadium and the like. It is specifically focus due to economic and time factor on the following 10 sub cities: Addis Ketema, Bole, Gulele, Ledeta, Nefasilk, Kolffe, Yeka, Akaki, Cherkose and Arada. The study shows the needs of public parking lots in these areas to reduce the challenges of car parking.

5.2. SUMMARY

The major findings of the study are summarized as follows.

- The results obtained from non-government organization and community of Addis Ababa indicates that the challenges of car parking are a crucial issue where the stakeholders participate to solve the difficulties. These include unfair payment for the underground parking, signage for parking are not place on the required place and totally the current situation of car parking practices affect the stakeholders' daily activities.
- Almost all respondents of the community agreed that the opportunities obtained from parking will give the city development. It is also important for the creation of jobs, and it can be a means of income for the government and investors. Some of the opportunities includes: legal car wash service with parking, a safe and secure parking place will be established, parking garage, recreation center at the top of the building, public toilets, and beauty salon will be developed.
- However, the results from questionnaire made to the dwellers appeared to indicate that the level of satisfaction except small enterprise office activity, all the other stakeholders concern is unsatisfied. For instance, there is little idea from the government and investors for the establishment of parking industry. Besides, no concern about parking vehicles for disabled and high cost of construction when buildings includes parking base on the regulation.
- The findings from government officials show that there is no coordinated traffic management system, strategy, road networks, terminals and parking places.

- The officials were giving attention for miss use of underground parking control and has special follow-up to give training for illegal parking issues. And also, they did not have information about the availability of parking at the beginning and ending of on progress train station of Addis Ababa.
- Based on the key performance indicators, the officials unsatisfied by the current parking situations which could not to accommodate the required services to the dwellers.
- The officials responded about parking of customer, visitor, reservation system, proximity to market place, parking policy, parking management, disabled facilities and unallocated parking which are shared by any individuals are very unsatisfactory. But, staff parking, cost of public parking and allocated parks which are owned by private are satisfied.
- Regarding parking industry, there were no detail investigations to develop the sector in Ethiopia. But, the city administration will try to solve those challenges within the next five years plan and it is under investigation side by side with the revised Addis Ababa master plan.
- The appropriate car parking locations are under investigation with the new master plan. And the current car parking practice is not giving appropriate service to the community and need to be improved.
- There are no enough parking spaces in the city, because the existing places are not accommodating the increasing number of motorization rate.

5.3. CONCLUSIONS

The general objective of this study was to assess the situation of car parking which is the fundamental challenge facing the city of Addis Ababa and to see different opportunities related to it. The research was specifically intended:

- To see government land bank policy for the parking lots
- To see high cost incurred when each building consider car parking
- To show the related business opportunity with car parking
- To creates job opportunity and new industry formation
- To reduce societal problems in relation to car parking

In order to achieve these objectives, data were gathered from community of Addis Ababa including the higher government officials using questionnaire, observation and interview which were subjected to analysis. Even if, it is difficult to give conclusion based on the findings because of the research was not empirical evidence, but the following conclusions could be drawn.

1. As indicated above one objective of the study was to assess the government land bank policy about parking lots. Each square meters of land are included in lease land bank system, except the worship places, public schools, universities, health centers, social recreation centers and the path of rivers sides. From the finding, it could be seen that, there is only on-street parking facility which is controlled by the government. It had a congestion problem and has had scarcity of space especially on areas where there is high mobility and market places. Besides, the parking place under the building is functioning for other purpose, due to this, visitors, customers, workers were used on-street parking around the building.

Thus, the government should consider using the lease land for car parking buildings which are available for construction of building so as to give social and economic benefit of the cities. Particularly, the road side of the rivers at the cross bridge of the city land is not considering for use. And thus, it is possible to have multi story car parking building at the left and right side of the bridge which is located in different sub cities based on the nature of the terrain. These means, some of the river are dipper and the others are wider. Therefore, it can be construct either public parking about five stories building or develop parking garage considering environmental and social issues.

The importance of parking policy grows and will continue to grow over the coming decades as car ownership continues to rise. The parking charges are presented in small and large urban cities and effective parking policies are well coordinated by management and government of the city.

Even if, Policies alone cannot solve Addis Ababa city parking scarcity, the government should provide clear policy and strategy. These policies have to be backed by enforcement to address this issue. We have public parking place around Addis Ababa stadium for the purpose of sport field and for those who are visiting around the area, but it is unable to accommodate the needs of the society. Even if, the city administrators were not able to supply additional parking spaces until now in different sub cities, the government needs to give attention for the challenges occurring, due to the fact that Addis Ababa is the seat of international offices.

2. The second objective of the study was to find out the cost of construction when car parking is considered under the building. From the respondents obtained, 60% of them were unsatisfied by the cost incurred when providing car parking place under the building. The greatest advantage of underground car parks is the least intrusion they cause to the aesthetics of a place. These parks can be built in the basement of any multi-storey building. Since the work involves, large quantity of excavation, construction of retaining walls, ventilation and lighting this constitute the high cost of providing the facilities.

Empirical evidence obtained on the research period was the building constructed at Dubie Tera Multipurpose building in front of Tan Market Center has three basements under the ground for car parking. The construction is under progress by now and constructed by Afro-Tsion Construction Company. The original project cost for the construction of eight story building was 73,151,411.70 and out of which 40% of the total cost is consumed by the substructure works for the facility of car parking (company contract document). In the one hand, it affects the investor financial capacity and on the other hand, it affects the country economy in regards to the financial and resource allocation. This implies, considering car parking under the building like Dubi Tera will take the cost of one additional building which can build five story building above the ground. Therefore, the practice of multi-story building should be implemented and the government takes the initiation to solve this challenges.

3. The third objective of the research was to show business opportunities when car parking industry will develop. In this regard, the finding showed related businesses like car wash and accessory shops. It creates jobs for the dwellers to work in different vacant positions and helps to transfer new technology with knowledge in the new industry formation. Besides, it can be a means of income to the government by giving rental services or collect income tax from the sector. It can also help for the effective use of roads and lease land in the city. Therefore, it has to be noticed that providing parking lots reducing traffic congestion and different business opportunities to the communities.
4. Finally, from the findings it can be concluded that the development of car parking industry is vital. Specially, the commercial land use has a high vehicular and pedestrian traffic generating. Thus, demand for parking spaces and other facilities are high. The inability of the existing situation to cope with the demand has later led to parking problem and traffic congestion which has a consequence on the social and environmental aspect. And therefore, new industry formation in the city should be established by the government or investors including its management system to overcome the challenges which had occurred and will occur.

5.4. RECOMMENDATIONS AND SUGGESIONS

In light of the findings of this research work, the following recommendations are suggested to reduce and possible reduce the challenges and traffic congestion confronting Addis Ababa due to car parking.

1. Construction Permit and Control Office, and all local Planning Authorities should be cooperate each others to specify and enforced the provision of parking space in conjunction with new building and road side-buys. Even though, there is proclamation on the building permit procedures, it is found that most of the buildings that are required to provide parking facility were functioning for other purpose. Therefore, particularly, Construction Permit and Control Office should have to take action for the implementation of the law so as to reduce the scarcity of parking. Besides, Addis Ababa Road Authority needs to consider road side-buy for taxi and bus stops like Torhayloch and Megenaga. And also, parking place should be considered at the beginning and end of train station which is under construction by now.
2. Old building in central business districts should be refurbished to accommodate adequate parking space using multi-story building on the newly reconstructed area and the government should take responsibility for the implementation. Parking facilities must be provided to help the area perform its prime function - that of accessible, attractive and profitable market place. These facilities should be located at easily accessible off-street point and convenient to the motorist ultimate destination. On-Street parking can only solve a part of parking problem of the cities if properly manage. Therefore, the concept of parking industry should begin since it creates different opportunities for the growth of the city by reducing unemployment and new industry formation. The following parking facilities should be considered and need to be developed in the future by the government and/or the investors to solve the existing situation of the Addis Ababa. Provided that, the overall aesthetics of the area should receive due attention.

1. Surface Car-parks and peripheral parking schemes
2. Multi Storey Car-parks
3. Gateway and Railway Station parks
4. Under-ground Car-parks
5. Garage and Valet parks

These facilities are costly to provided and maintain. However, the service render is so enormous to traffic management.

3. In order to reduce the parking problems, the parking management requires changing current policy development, zoning and design patterns and it should not only dependent on Micro and Small Enterprise duty. To accomplish this, the public officials, planners and the public are required to establish the techniques depending on the parking problems. Then provide solutions after being familiar with existing parking techniques implemented in the city to the benefits of the society after understanding the whole system. It is important to establish an institution which relates the other fields such as transportation management associated with parking activities to improve the enforcement and addressing different opportunities obtained when car parking place developed.
4. The study also suggested the following solutions which are obtained from the practice of Tanzania to reduce the challenges of parking in Addis Ababa.

❖ **Shared parking:** The parking facilities can be utilized by multiple users or destinations. Motorists can share parking space available, rather than being assigned as a reserved space. Shared parking in the destinations should be encouraged such a technique are very effective in the office building which can share parking with restaurant or theaters since the peak demand for offices occurs during the weekday and on weekend evenings for restaurants or theater. Public parking including on-street, municipality's off-street and commercial parking (for profit) facilities generally may serve multiple destinations. The developers must donate funds to build public parking facilities instead of providing private facilities which served as a single destination. This technique tends to be more cost effective and efficient when implemented accordingly.

❖ **Parking regulation and policies:** This controls who, when and how long vehicles may park at a particular location in period of time, in order to prioritize parking facility use. For example in the limited parking space it is important to classify duration in intervals of time (e.g. 15 minutes in road zones, 30 minutes adjacent to shop entrances, 1 or 2 hours shopping malls). Prohibit occupancy at certain times such as before 10AM, to discourage employees use or between 10PM and 5AM to discourage residents use and prohibit on-street parking on arterials during peak periods to increase traffic lanes.

- ❖ **Parking maximum:** The excessive parking supply should be discouraged by reducing the parking supply, imposing a special parking tax, by applying a regulation that limits temporary parking facilities. Maximum is applicable and effective for certain type of parking such as long-term, single use, free or surface parking depending on the planning objectives.
- ❖ **Remote parking and shuttle service:** This is off-site parking facilities which involve shared facilities, such as office workers, parking at a restaurant parking lot during the day, in exchange for restaurant employees using the office parking lot evening and weekends. It can involve the use of public facilities such as commercial parking lots. Remote parking can also necessitate the use of parking facilities located on the peripherals of a business district or other activity center and use of overflow parking during a special event that draws large crowds. Special shuttle buses or free transit service may be provided to connect destinations with remote parking facilities, allowing them to park their cars in the public parking design to reduce chaos occurring in the cities. Park and ride facilities are another type of remote parking often located on the urban fringe where parking is free or significantly less expensive in cities.
- ❖ **Smart growth:** This will be supported by parking management by reducing the amount of land required for parking facilities, in turn will reduce the automobile use and increase an affordable public transport. The land use patterns which reduce the vehicle dependence will also reduce the parking requirements. These will encourage people to shift to alternative modes of transport.
- ❖ **Parking pricing:** The motorists must pay directly for using parking facilities. This may be implemented as a parking management strategy to reduce parking problems, as a mobility management strategy to reduce transport problem, to recover parking facility costs or to raise revenue for any purpose (such as funding local transport programs to improve parking facilities). Currently, most of the parking is inefficiently priced, it is provided for free (especially in shopping centers), significantly subsidized or bundled with building purchases and rents forcing consumers to pay for parking facilities regardless of whether or not they want it. When motorists pay directly for parking, it is often a flat annual or monthly fee in cities which provide little incentive to apply an alternative mode occasionally. Rates should be set to optimize parking

facility use. In Dar es Salaam it is estimated that 15 percent of parking spaces in most of the time are vacant and available at any time.

- ❖ **Improving parking pricing methods:** The methods used to compute and/or to adjust the parking price must be amended in order to subdue the resistance of parking pricing. These methods are very important to predict how long the motorists will park with nonrefundable if the motorists leave earlier than anticipated. Newer electronic systems are more convenient, accurate, and flexible and increase cost effectiveness. The systems can accommodate various payment methods (bill, credit and debit cards etc.) charged only for the amount of the time parked incorporate multiple rates and discounts, automatically vary rates by day and time and are convenient to use. The new system also can produce printed receipts and record data for auditing which prevents fraud and increase convenience for customers, operators and local government. In addition, automatically record data utilization and turnover will improve planning and administration.
- ❖ **Parking tax reform:** This includes the tax policies that support parking management such as commercial parking taxes (a special tax on parking rental transaction) per space parking levies. This helps to reduce the parking supply and increase parking costs, as well as providing revenue for public programs.

Therefore, the researcher is believed that, the suggested solutions represented in this paper are effective to change the current practices of Addis Ababa. Besides, it helps to overcome the parking challenges in order to achieve the optimal point when the city administration begins implementing the tasks.

The recommendation and suggestion put forward have been in light of findings from the field survey, and the practice of Uganda (Kampala), Tanzania (Dar es Salaam), Nigeria (Lagos) and Seychelles (Victoria). Finally, if all the conclusion, recommendation and suggestion mentioned earlier are successfully implemented, the challenges of car parking in Addis Ababa will be a thing of the past and it creates opportunity for new industry formation.

APPENDIX-1

Section 1: Questionnaire to be filled by non-government organization and the community of Addis Ababa

Dear respondent, thank you in advance for your unreserved cooperation.

This questionnaire is designed to gather data for research purpose in fulfillment of a MBA in challenges and opportunities of car parking in Addis Ababa. Thus, your genuine responses are extremely important for the success of this research. And also, you are kindly requested to feel free and respond all of the questions as honestly as possible. Besides, you may not write your name and the researcher assures you that the information will be used exclusively for the research purpose and remain confidential.

Please note that the terms indicated below have the following operational definitions here:

Vehicle owner: one who drive car either the organization or own, and it is a means of transport used by motor.

Parking Lot: an area, often paved, for parking a number of motor vehicles used to have parking related services.

Parking: is the act of stopping and disengaging a vehicle and leaving it unoccupied.

Congestion: vehicles travel at slow speeds because there are more vehicles than the road can handle.

Likert scale: showing respondents' agreement or disagreement

I. Personal Information

- Please put a tick mark in the box provided hereunder

1. Sex: male female

2. Age : 18-28 29-39 40-60 Above 60

3. Vehicle owner: Yes No

4. Job: business office worker other

- Please specify, if you select other _____

II. The purpose of this Likert scale is to assess your views and opinions about the present situation of car parking in Addis Ababa. Therefore, please read each statement in the table and put a tick along the scales (strongly agree to strongly disagree) that most closely fits your opinion.

No	Statements related to car parking	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A	Challenges					
1	I pay fair price to public parking					
2	I pay fair price to private parking					
3	The size of parking is good and suitable					
4	There is no time limit for parking					
5	I face congestion problem to park					
6	I have always difficulty of space to park around my destination					
7	Sometimes parking is made out of the given place					
8	I spent more time to find parking					
9	The parking lots are safe and secure					
10	Parking under the building has open view or ventilation and enough light					
11	I am afraid to park on street side					
12	The parking places are suitable to exit and entrance					
13	The parking signage are available on the required place to give information					
14	Street side parking creates traffic jam					
15	I used to wash my vehicle while park					

No	Statements related to car parking	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
16	Parking had impact on accident					
17	I am not affected by current parking situation					
B	Opportunities					
18	Parking is means of revenue to investors and government					
19	Parking industry will create good supervision and management system					
20	Parking create job for skilled and unskilled labor					
21	Parking garage can be established					
22	Car washing service will provide on parking building					
23	Parking building need to supply sport place, beauty salon, cinema house, etc					
24	Quality service like CCTV, Ventilation, toilet and light are important to parking building					
25	Parking availability is a means of attracting customer					
26	Parking gives social and environmental benefits					
27	Parking has benefit to fuel consumption					
28	New parking site and/or multi-storey building is required					

III. The purpose of this Likert scale is to determine how far you are either satisfied or unsatisfied with the items listed in the table below. Therefore, please read the statement about parking and then decide your level of satisfaction by putting a tick along the scales (very satisfied to very unsatisfied) that most closely fits your level of satisfaction.

No	Statement about car parking	Very Satisfied	Satisfied	Unsatisfied	Very Unsatisfied	Neutral
1	Government concern to parking industry					
2	Investor concern to parking industry					
3	Micro and small enterprises concern					
4	Parking condition of Addis Ababa city					
5	Opportunities to use and develop new parking place and multi-story building					
6	Parking availability under buildings and responsibility for the property					
7	Availability of road side parking and responsibility for property					
8	Construction cost, if parking consider under the building					
9	Availability of park for disable persons vehicles					
10	The trends of parking service					

IV. Please write your responses for the following questions briefly and legibly.

1. What are the challenges of car parking in Addis Ababa?

2. What are the opportunities of car parking industry?

3. How do you see the current situation and future trends of parking in Addis Ababa?

4. Where can be developed the location of parking based on your opinion in the city and write any information about car parking?

Section 2: Questionnaire to be filled by government officials of the stakeholders

Dear respondent, thank you in advance for your unreserved cooperation.

This questionnaire is designed to gather data for research purpose for the fulfillment of a MBA in the challenges and opportunities of car parking in Addis Ababa. Accordingly, your genuine responses are extremely important for the purpose of the research. Hence, you are kindly requested to feel free and respond all questions.

Stakeholders are the following in the research context:

- Addis Ababa Road Transport Office,
- Addis Ababa Police Commission,
- Addis Ababa Micro and Small Enterprises Development Office,
- Addis Ababa Road Authority,
- Addis Ababa Community,
- Addis Ababa Mayor Secretarial Office
- Construction Permit and Control Authority, and
- Environmental Safety and Protection Office

I. Decide how far the following statements are currently applicable or inapplicable to Addis Ababa, and tick either in strictly applicable, applicable or inapplicable columns as appropriate for you.

No	Statement about current parking condition and practice	Strictly Applicable	Applicable	Inapplicable
1	has coordinated traffic management system strategy like road network, terminals and parking places, roundabouts and junctions			
2	recognizes the challenges and give alternative solution for parking problems			
3	pays attention to serve the underground parking for their purpose rather than using for shops, store, etc			

No	Statement about current parking condition and practice	Strictly Applicable	Applicable	Inapplicable
4	has special flow up to give training for illegal parking, street trade, the needs of disabled, children and pedestrian			
5	ensures the performance of parking lots are evaluated			
6	try to see other option to optimize parking challenges			
7	ensures that the parking places are effectively utilized			
8	has feasibility study for the parking station arrangement and future service			
9	critically consider and enhance land supply for parking and terminal development in the central part of the city			
10	ensure adequate parking space in the issuance of construction permit, monitor and control its implementation			
11	the on progress railway transport considers parking station at the train start and end			

II. Taking into account the opportunities of parking industry and job creation, evaluate the sub cities performance and challenges based on the following key performance indicators (KPIs) or business drivers.

No	Key performance Indicator	Very Satisfactory	Satisfactory	Unsatisfactory	Very Unsatisfactory
1	Dwelling size (more people of driving age has enough park)				
2	Dwelling type (car owner has parking place on business area)				
3	Dwelling tenure (parking place for rented car accommodation)				
4	Dwelling location (lifestyle, cost of parking, network, infrastructure, etc)				
5	Road, rail or bus links				
6	Staff parking (office workers, business owners, residence)				
7	Parking lease or rental cost				
8	Proximity to market or client				
9	Proximity to competitors, labor supply, goods or services				
10	Customer or visitor parking				
11	Air quality and traffic noise				

No	Key performance Indicator	Very Satisfactory	Satisfactory	Unsatisfactory	Very Unsatisfactory
12	Allocated parking (private owned with garage facility)				
13	Unallocated parking (shared place to all)				
14	Parking management				
15	Parking policy of the Municipality or Council				
16	Parking space reservation systems				
17	Disabled vehicles parking facilities				
18	Overnight security				
19	Theft prevention				
20	Short and long term Payment Rates to park				

Section 3: Interview questions for government officials.

1. Would you please tell me the challenges and opportunities of vehicle parking? How can be improved the performance of parking?
2. What types of strategy and policy provide to solve the current parking practice? Would you please describe how Addis Ababa city implement them?
3. Are there enough car parking places in Addis Ababa? If No, What are the main causes of scarcity?
4. Is there car parking industry in Ethiopia? If Yes, What is the practice and business trend? If No, When does it start?
5. What do you suggest and/or recommend to parking practice and future trend?
6. Which locations are appropriate for parking lots?
7. Any other comments in relation to parking?

APPENDIX-2

Accident Contributory Factors (Federal Police Central Bureau)

Item No.	Attributes of Accident	Total	cumulative	
1	Over loading	2,559,301	2,559,301	18%
2	Parking on restricted site	1,944,452	4,503,753	32%
3	Parking on turnings	887,260	5,391,013	38%
4	Parking at override position	605,003	5,996,016	43%
5	Parking at bus stops	594,043	6,590,059	47%
6	No annual inspection	500,094	7,090,153	51%
7	Incomplete vehicle lighting	468,191	7,558,344	54%
8	Driving vehicle not in license category	426,017	7,984,361	57%
9	Wrong signing	413,005	8,397,366	60%
10	Neglecting traffic light at red indication	346,044	8,743,410	62%
11	Parking on vehicle entrance path	337,889	9,081,299	65%
12	Expired driving license, not updated	304,061	9,385,360	67%
13	Neglecting traffic police instruction	302,933	9,688,293	69%
14	Improper reverse driving	294,490	9,982,783	71%
15	Washing a vehicle on road site	282,037	10,264,820	73%
16	Driving license not at hand	280,881	10,545,701	75%
17	Defected vehicle driving	267,027	10,812,728	77%
18	Neglecting prohibitory traffic signs	240,520	11,053,248	79%
19	Parking on pedestrian crossing	239,686	11,292,934	81%

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ANNEX-1

Constructions permit procedure No. 1/1997 Design standard tables

Table A

No.	Number of car Parked	Minimum height for parking (meter)
1	Until 10	2.10
2	10 - 30	2.30
3	30 -70	2.50
4	Above 70	2.60

- Internal room height 2.40m – 2.70m
- For disabled out of 40 cars place there should be $4.50\text{m} * 3.50\text{m} = 15.75\text{m}^2$ space is required

For condominium residence and for real estate buildings number of cars parking place per house hold is presented as follows:

Table B: Based on Income Level

No	Housing Typology	Floor Area	Car park/house hold
1	High Income	Grater floor space than 57.5m ² i.e. 50m ² (3 bed rooms+ living rooms+ WC+ kitchen)+ 15% circulation=57.5	1/1
2	Middle Income	46 - 57.5m ² floor space i.e. 40m ² (2 bed rooms+ living rooms+ WC+ kitchen)+ 15% circulation=46	1/5
3	Upper-low Income and Low Income	20 - 46m ² floor space minimum habitable area = 20m ²)	1/10

Table C: Based on Services

No	Main service	Small Bar	Higher Bar	Car parking place	Minimum room height
1	Residential House	60%	85	1/1	2.6
2	Condominiums/Apartments	75	85	refer	2.6
3	Shops	75	100	1/70m2 shop area	2.6
4	Market Halls	75	100	1/70m2 market place	3.0
5	Hotel and Hostel	60	75	1/6 bed rooms	2.6
6	Food and Beverage organization	75	100	1/15 seats	3.0
7	Office	75	100	1/70m2 office place	2.6
8	Meeting Halls	60	75	1/15 seats	3.0
9	Production	60	75	Lauding & unloading area	5.0
10	Store	60	75	Lauding & unloading area	5
11	Garages	60	75	Shade for car	5
12	Educational Institute	60	75	1/1 class room	3
13	Health Center	60	75	1/70m2 treatment area	3
14	Clinic	60	75	1/6 bed room + 1 ambulance stop	2.6
15	Library	75	100	1/15 seats	5
16	Worships and over whole halls	60	75	1/15 seats	5
17	Sport field and Centers	25	60	1/15 seats	5
18	Entertainment, Park and green area	0	25	1/15 seats	3

Table D: Sub Cities Survey Data specifically On-Street parking

No.	Sub City	Enterprise and/or Building	Location	Covered Length or Area	Average Car Holding per Day	Staff
1	Addis Ketema	Tagel Beheberet	Mesalemia Ehele Berenda Wereda 4	480m		52
2	Bole	Mafi City Mall	Bole Medehanialem Church	Under building & front side	174 car, 64 place	8
3	Gullele	Seket	Semen Mazegaja to Addisu Gebeya Gas Station Wereda 08/16			14
4	Ledeta	Saint Parking	Diafric Hotel	90 m ²		11
5	Nefaselk	Edeget Lelewt	Sare Bet to Saint Gebreal			12
6	Kolfe	Tsenate Bekolfe	Around Efoyeta Market Wereda 10	1000m		11
7	Yeka	Berehan Taye	Megenagna Wereda 9	1,000m		18
8	Akaki	Addis Alem	Car treanind center to Korki production			9
9	Kirkos	Webet Parking	Legar to National Theater Wereda 7	430m		16
10	Arada	Arada Building	Piazza Wereda 1		148 place	27

ANNEX-2

The challenges and opportunities of car parking

No	Statements related to car parking	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		No	%	No	%	No	%	No	%	No	%
A	Challenges										
1	I pay fair price to public parking	68	32.53	86	41.15	49	23.45	6	2.87	0	-
2	I pay fair price to private parking	38	18.18	76	36.36	52	24.88	30	14.35	13	6.23
3	The size of parking is good and suitable	3	1.44	22	10.53	49	23.45	98	46.89	37	17.69
4	There is no time limit for parking	25	11.96	63	30.14	33	15.79	65	31.10	23	11.01
5	I face congestion problem to park	49	23.45	87	41.63	57	27.27	16	7.65	0	-
6	I have always difficulty of space to park around my destination	33	15.80	103	49.28	54	25.84	17	8.13	2	0.95
7	Sometimes parking is made out of the given place	52	24.88	106	50.72	44	21.05	6	2.87	1	0.48
8	I spent more time to find parking	46	22.01	84	40.19	65	31.10	11	5.26	3	1.44
9	The parking lots are safe and secure	14	6.70	22	10.53	71	33.97	74	35.41	28	13.40
10	Parking under the building has open view or ventilation and enough light	5	2.39	16	7.66	48	22.97	109	52.15	31	14.83
11	I am afraid to park on street side	52	24.88	65	31.10	67	32.06	25	11.96	0	-

No	Statements related to car parking	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		No	%	No	%	No	%	No	%	No	%
12	The parking places are suitable to exist and entrance	5	2.39	33	15.79	51	24.40	85	40.67	35	16.75
13	The parking signage are available on the required place to give information	0	-	27	12.92	62	29.67	85	40.67	35	16.74
14	Street side parking creates traffic jam	112	53.59	84	40.19	5	2.39	5	2.39	3	1.44
15	I used to wash my vehicle while park	13	6.22	57	27.27	73	34.93	49	23.45	17	8.13
16	Parking had impact on accident	46	22.01	79	37.80	51	24.40	24	11.48	9	4.31
17	I am not affected by current parking situation	1	0.48	29	13.88	40	19.14	83	39.71	56	26.79
B	Opportunities										
18	Parking is means of revenue to investors and government	76	36.36	98	46.89	27	12.92	8	3.83	0	-
19	Parking industry will create good supervision and management system	65	31.10	93	44.50	40	19.14	11	5.26	0	
20	Parking create job for skilled and unskilled labor	87	41.63	103	49.28	19	9.09	0	-	0	-
21	Parking garage can be established	57	27.27	63	30.14	51	24.40	33	15.79	5	2.40
22	Car washing service will provide on parking building	33	15.79	63	30.14	63	30.14	44	21.05	6	2.88
23	Parking building need to	55	26.32	98	46.89	30	14.35	26	12.44	0	-

No	Statements related to car parking	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		No	%	No	%	No	%	No	%	No	%
	supply sport place, beauty salon, cinema house, etc										
24	Quality service like CCTV, Ventilation, toilet and light are important to parking building	114	54.55	79	37.80	14	6.70	2	0.95	0	-
25	Parking availability is a means of attracting customer	133	63.64	63	30.14	6	2.87	6	2.87	1	0.48
26	Parking gives social and environmental benefits	103	49.28	87	41.63	19	9.09	0	-	0	-
27	Parking has benefit to fuel consumption	76	36.36	90	43.06	36	17.22	5	2.39	2	0.97
28	New site to parking building is required	101	48.33	79	37.80	29	13.87	0	-	0	-

As can be seen from Annex-2, section A is concerned with the challenges and section B is about opportunities of car parking. In this regard the respondents were made to decide on different questions on each item. Then, 73.68% of the respondents have expressed agreement that they pay fair price to public parking and 54.54% agreed for the fairness of private parking. Regarding items 3 and 4 which were meant to assess the suitability of the size of parking and the time limit to parking. 64.58% and 42.11% have expressed disagreement for the two items respectively. Similarly, the other items were described on the Annex-2.

Section B concentrates on assessing the opportunities of car parking. In this regard, the respondents were asked to express their views whether the parking is a means of revenue to investors and government. As shown in the table 5 above, 83.25% expressed their agreement and the majority (90.91%) felt that parking industry creates job for skilled as well as unskilled labor. The issue of car parking garage, washing service, social & environmental benefit, and all other respondents view were described in percentage on the above Annex-2.

ANNEX-3

Performance Effectiveness of parking

No	Key performance Indicator	Very Satisfactory		Satisfactory		Unsatisfactory		Very Unsatisfactory	
		No	%	No	%	No	%	No	%
1	Dwelling size (more people of driving age has enough park)	1	8.33	0	-	7	58.33	4	33.33
2	Dwelling type (car owner has parking place on business area)	0	-	2	16.67	6	50	4	33.33
3	Dwelling tenure (parking place for rented car accommodation)	0	-	1	8.33	7	58.33	4	33.33
4	Dwelling location (lifestyle, cost of parking, network, infrastructure, etc)	0	-	1	8.33	6	50	5	41.67
5	Road, rail or bus links	0	-	3	25	6	50	3	25
6	Staff parking (office workers, business owners, residence)	0	-	1	8.33	9	75	2	16.67
7	Parking lease or rental cost	0	-	4	33.33	5	41.67	3	25
8	Proximity to market or client	0	-	3	25	5	41.67	4	33.33
9	Proximity to competitors, labor supply, goods or services	0	-	1	8.33	9	75	2	16.67
10	Customer or visitor parking	0	-	1	8.33	8	66.67	3	25
11	Air quality and traffic noise	0	-	1	8.33	7	58.33	4	33.33

No	Key performance Indicator	Very Satisfactory		Satisfactory		Unsatisfactory		Very Unsatisfactory	
		No	%	No	%	No	%	No	%
12	Allocated parking (private owned with garage facility)	0	-	1	8.33	7	58.33	4	33.33
13	Unallocated parking (shared place to all)	0	-	1	8.33	6	50	5	41.67
14	Parking management	0	-	3	25	5	41.67	4	33.33
15	Parking policy of the Municipality or Council	0	-	1	8.33	9	75	2	16.67
16	Parking space reservation systems	0	-	1	8.33	8	66.67	3	25
17	Disabled vehicles parking facilities	0	-	1	8.33	7	58.33	4	33.33
18	Overnight security	0	-	2	16.67	1	8.33	9	75
19	Theft prevention	0	-	1	8.33	7	58.33	4	33.33
20	Short and long term Payment Rates to park	0	-	3	25	6	50	3	25

As can be seen from Annex-3 above, the respondents were made to evaluate based on the Key Performance Indicator. On this issue, there were 20 items of questions and majority of them said it was unsatisfactory. As to dwelling size (more people of driving age has enough park), dwelling type (car owner has parking place on business area), dwelling tenure (parking place for rented car accommodation), allocated parking (private owned parking with garage facility), and disabled vehicles parking facilities 58.33% and 33.33% witnessed that they were unsatisfied, and very unsatisfied respectively.

On dwelling location (lifestyle, cost of parking, network, infrastructure, etc) and unallocated parking (shared place to all) were 50% and 41.67% of the respondents said unsatisfied and very unsatisfied respectively. The other issue was customer or visitor car parking service. In this regard, 66.67% of the respondents expressed unsatisfactorily and 25% were very unsatisfactory. Further performance indicators are shown in the Annex.

Pictures Taken in Uganda for Parking Place

P...1



P...2



P...3



Pictures Taken in Addis Ababa for Parking Place

P...4: at Megenaga Zefemesh Building



P...5: the new road to Awarea from Lex-Plaza Building



P...6: the new in front of Traffic Bureau to the side of Gollagol Building

