UNIVERSITI PUTRA MALAYSIA

THE AVAIBILITY AND ACCESSIBILITY OF URBAN GREEN SPACE IN KUALA LUMPUR CITY CENTRE

YAKUBU MOHAMMED

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THE AVAIBILITY AND ACCESSIBILITY OF URBAN GREEN SPACE IN KUALA LUMPUR CITY CENTRE

By

YAKUBU MOHAMMED

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia in Fulfilment of the Requirements for the Degree of Master of Science

September 2017

DEDICATION

I dedicate this thesis to both of my parents Alhaji Yakubu Ibrahim and Aibetu Mohammed for their courage and prayer towards the success of this programme. Also my beloved wife Amina Adamu, my sons, Mohammed Ibrahim Yakubu, Mohammed Anas Yakubu and my daughter Mohammed Maimuna Yakubu for their relentless patient during the period of my study.

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Abstract of thesis submitted to the Senate of Universiti Putra Malaysia in fulfilment for the requirement of the degree of Master of Science

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YAKUBU MOHAMMED

September 2017

Chairman : Associate Professor Gs. Mohd Johari Mohd Yusof, PhD
Faculty : Design and Architecture

Urban green space plays a vital role in recreation, health and supporting everyday life. Accessibility is one of the important factors that influences the use of green space thereby increasing the quality of life and well-being of city residents. The problem of this research work was that, it was investigated that some available green space in the study area were not easily accessible by the users due to numbers of factors which necessitate the need and purpose of this study. Hence the aim of this study is to identify the availability of urban green space and to provide useful information that will improve its accessibility. Spatial data were used to identify the availability of urban green space and the views of expert in built environment about factors of urban green space accessibility were obtained with the aid of a questionnaire. The major findings of this research work was that the available green space is adequate as the result show that about 1.7 Ha per 1000 based on WHO standard. Three factors of urban green space accessibility are identified which include location, quality and quantity factors, but this study suggests to focus on two (Location and quality). Based on spatial analysis, nine sites are highly accessible, four are moderately accessible and three are less accessible. This study recommended that city authority and green space managers should apply the most important factors which are location and quality factors of urban green space accessibility in future design as this will go along way to improve accessibility.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Sarjana Sains

KETERSEDIAAN DAN KEMUDAHSAMPAIAN KAWASAN HIJAU: KAJIAN KES BANDARAYA KUALA LUMPUR

Oleh

YAKUBU MOHAMMED

September 2017

Pengerusi : Profesor Madya Gs. Mohd Johari Mohd Yusof, PhD
Fakulti : Rekabentuk dan Senibina

Kawasan hijau memainkan peranan yang penting dalam menyediakan kemudahan rekreasi kepada kehidupan seharian. Kemudahsampaian pula merupakan salah satu faktor penting yang mempengaruhi kadar penggunaan sesebuah kawasan hijau yang menjamin kualiti kehidupan penduduk sesebuah bandar. Namun begitu, terdapat permasalahan dalam kajian ini di mana sesetengah kawasan hijau sediada tidak mudah dikunjungi oleh pengguna disebabkan oleh beberapa faktor yang akan dikaji dalam kajian ini. Maka, kajian ini bertujuan untuk mengenalpasti kawasan hijau sediada dan menyediakan informasi berguna mengenai kadar kemudahsampaian ke kawasan hijau berkenaan. Data spatial digunakan dalam mengenalpasti kawasan hijau sediada ini dan pandangan dari pakar alam bina dikumpul dalam mengenalpasti faktor yang mempengaruhi kemudahsampaian ke atas kawasan hijau berkenaan. Hasil kajian mendapati kawasan hijau di Pusat Bandar Kuala Lumpur adalah mencukup dimana ianya 1.7 hektar per 1000 penduduk dan mengikut piawaian WHO. Tiga faktor aksesibiliti ruang hijau bandar dikenalpasti termasuk faktor lokasi, kualiti dan kuantiti, tetapi kajian ini memberi tumpuan kepada dua (Lokasi dan kualiti). Berdasarkan analisis spasial, sembilan laman web sangat mudah diakses, empat adalah sederhana dan tiga kurang boleh diakses. Kajian ini mencadangkan bahawa pihak berkuasa bandar dan pengurus ruang hijau harus menggunakan faktor terpenting yang merupakan lokasi dan faktor kualiti akses ruang angkasa bandar hijau dalam reka bentuk masa depan kerana ini akan dapat meningkatkan kebolehaksesan.

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I certify that a Thesis Examination Committee has met on 20 September 2017 to conduct the final examination of Yakubu Mohammed on his thesis entitled "The Availability and Accessibility of Urban Green Space in Kuala Lumpur City Centre" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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This is to confirm that:

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- Supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) as adhered to:

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Member of
Supervisory
Committee: Dr. Norhuzailin Binti Hussain

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

DBKL	Dewan Bandaraya Kuala Lumpur
FIT	Field in Trust
Ha	Hectare
KL	Kuala Lumpur
KL CC	Kuala Lumpur City Centre
KLCC	Kuala Lumpur Convention Centre
KLCP	Kuala Lumpur City Plan
KLSP	Kuala Lumpur Structure Plan
NPFA	National Playing Field Association
PJ	Petaling Jaya
QOL	Quality of Life
UGS	Urban Green Space
UHI	Urban Heat Island

CHAPTER 1

INTRODUCTION

1.1 Introduction

In recent years, there has been increasing interest among planners, decision-makers and health specialists that urban green space (UGS) contribute a significant role in providing communities with a countless number of recreational, health and social benefits. The UGS offer city's residents with an improved living environment by lowering noise and moderate the levels of heat.

Presently, it is obvious that urban green spaces are essential asset for a well-functioning, liveable and sustainable city. This was demonstrated by Kabisch, Strohbach, Haase & Krorenberg (2016) where they highlighted six important factors of availability and accessibility of urban green space to include: (1) urban green space play a role in recreation and health, supporting everyday life; (2) contribute to conservation of biodiversity; (3) contribute to the cultural identity of the city; (4) offer places for nature experiences; (5) help maintain and improve the environmental quality of the city, and (6) bringing natural solutions to the technical problems in the cities. (e.g., sewage treatment, flood regulation).

In study by Kabisch et al. (2016), the availability of green space is perceived as the amount of green area in certain defined distance to where urban residents live but could not differentiate availability and accessibility. While in another study by Van Herzele, & Wiedemann (2003) identify four conditions guiding the use of urban green space to include proximity, accessibility, surface and safety and if these conditions are not fulfilled, people won't be attracted to green space.

It is no doubt that proximity to green space affects the accessibility towards using green space as people who lives close to the nearest park always visit the park than people who stay far away from the space (Khalil, 2014). The European Environmental Agency Mougiakou, 2014 recommended that people should have access to green space within 15 minutes' walking distance, while English Nature, a United Kingdom government agency recommends that distance to green space should not exceed 300 meters from home (Barbosa, 2007).

Much has been written about safety in urban green spaces and the fear of crime. There is a considerable body of knowledge about how perceptions of risk in the public realm constrain the spatial mobility of women, the elderly and young children.

Ward Thompson (2002), drawing upon the UK Urban Task Force report, recognises the importance of greater accessibility for persons with various forms of disability and she argues the importance of creating inclusive places of avoiding disparity of opportunity and promoting equity. Hence people with disabilities should be considered in policies geared towards the provision of accessible urban green space for the health and well-being of the citizens.

Most studies have found that proximity to the parks and recreational settings is generally associated with increased use and accessibility of green space. The spatial configuration of parks, their number, and their accessibility determine their access potential for city residence populations (Koohsari, 2013).

Urban green space accessibility, either objectively or subjectively measured is influenced by such factors as qualitative and quantitative which affect the use and accessibility of urban green space (Hillsdon, Panter, Foster, & Jones, 2006).

Furthermore, Giles-Corti, et al., (2005) state that urban green space, when provided, can help in improving the health and quality of life of the urbanite. A certain study in U.K reveals that urban green space may be available but due to its characteristics, it may not be accessible. This lead to a study of Chen, Liu, Xie, & Marušić, (2016) who made an assertion that in planning studies, the quantity and quality characteristics of urban green space accessibility in a community have been eliciting increasing attention.

Malaysian government in general and Kuala Lumpur City Hall in particular also recognised the need to provide accessible urban green space to its citizen. The Malaysian vision of becoming the most beautiful Garden Nation in the year 2020, encourage city authorities to set up a target that will help realise this dream and hence the need to improve accessibility to urban green space in Kuala Lumpur City Centre.

The gap here is that, not many studies have investigated the accessibility of urban green spaces in south-east Asia in general and Malaysia in particular. Studies that employed both qualitative and quantitative analyses for urban green space use are also rare.

1.2 Statement of Problem

In recent years, researchers pointed out that urban green space provides a vital opportunity for city dwellers in terms of physical health benefits, psychological health benefits, social benefits, economic benefits and environmental benefits which tend to improve air quality, reduction of urban heat and improve urban drainage system. Adequate, equitable and easy access to green space in urban areas is regarded as an important issue of human service provision. According to a study by Sreetheran and

Adnan (2007), Kuala Lumpur does not have a proper green network that links all the existing urban green space. This is problematic, as accessibility and connectivity are important preconditions for green space functionality (Natural England, 2010).

Urbanisation which is considered as one of the problems in Kuala Lumpur City Centre and has given rise to a shortage of urban green space for public use consequently denied urban residents adequate access to recreation, thereby culminated into social, health, economic and environmental crises. A combination of dense population, traffic and noise pollution generate an environment in which inhabitants are greatly exposed to stress-inducing factors. Hence the need for accessibility to green space is enlarged in an urban environment characterised by a complex lifestyle and high exposure to environmental pollution and other stress inducers (Caspersen et al., 2006).

Some research proved that Kuala Lumpur has expanded and cover an area of 244 square kilometres and estimated in the last two decades, lost 30% of its green area within its boundaries mainly to residential and industrial development in order to cater for population (Teh, 1994 & Yaakup et al., 2004). In a bid to improve access to urban green space, various developed countries have adopted the most widely used six acres (2.4 hectares/1000) whereas Malaysia has only 0.9 hectares as at 2000. Meanwhile the National Urbanisation Policy, 2006 endorsed the target in providing 2 hectares of urban green space for every 1,000 populations by the year 2020. Four years to the targeted date, DBKL's record shows an achievement of 1.1 hectares/1000 population set out in Kuala Lumpur City Plan (Neil, Johari & Duncan 2013). It was investigated that some available green space in the study area were not easily accessible by the users due numbers of factors which necessitate the need and purpose of this study.

Hence, this research is aimed at identifying urban green space availability and also investigate on how accessible these spaces based on the expert views in order to evolve useful recommendation to improve urban green space accessibility in Kuala Lumpur City Centre.

1.3 Research Questions

Based on the many issues regarding the loss of urban green space due to urbanisation, city expansion and poor or inadequate connectivity, accessibility to the available green space could be difficult. In order to examine the above scenario, the following questions were formulated.

1. What are the factors that influence the accessibility of urban green space in Kuala Lumpur City?
2. Where are the available urban green spaces in Kuala Lumpur City Centre located?
3. How accessible are these urban green spaces in Kuala Lumpur City Centre?

1.4 Research objectives

The aim of this research is to identify the available urban green space in Kuala Lumpur City Centre and to investigate how accessible are these spaces in order to recommend improvement of accessibility to city authorities and in the future design. The objectives of this study include the following:-

1. To examine the factors that influence the accessibility of urban green space in Kuala Lumpur City Centre
2. To identify the urban green space availability in Kuala Lumpur City Centre
3. To analyse how accessible are urban green spaces in Kuala Lumpur City Centre and provide suggestion to improve accessibility.

1.5 Significance of the study

Urban green space when made available and accessible in Kuala Lumpur City Centre, it will provide two-fold of benefits. The first one is directly connected to the city or urban environment given that apart from providing the aesthetic quality environment, it serves as lung which purifies the city from dust and smoke and lowers the temperature intensity due to the concentration of built environment. The second fold offers a direct impact on the residents by providing all categories of recreational amenities ranges from parks to playing grounds thereby improving not only the quality of life but also contribute to health and well-being of the people. At present, there are patches of urban green space in the study area in which many are yet to be accessible considering factors hindering the free and easy accessibility of these spaces. Findings from literature revealed many factors that influenced accessibility to urban green space. These factors include environmental factor which manifested in the form of park having a good atmosphere, better location, quality and quantity accessible, amenity provision, landscape, recreational facilities, signage and lightings that can promote accessibility in the city environment (Hillsdon et al., 2006).

Urban green space accessibility is characterised by such factors as (park distribution, proximity, park facilities and park condition) have an impact on community desire to engage in both active and passive recreation and this can invariably promote accessibility. It becomes necessary for city authorities and green space professionals to improve accessibility through park designs/layouts, financing mechanisms and maintenance policies. Furthermore, this study will assist local authorities and city managers to improve accessibility to urban green space most importantly in Kuala Lumpur city.

As a matter of important, the need to improve accessibility to urban green space is underscored by the various benefits and functions they provide to not only the city residents but to the overall city environmental sustainability. Owing to the ever expanding city densities and population due to the high rate of urbanisation, there is

the need to protect as well as preserving the natural ecosystem and promote sustainable development through the wise use of City land without necessarily intruding gazetted urban green space meant for people's use.

1.6 Scope and Limitation of the study

This study only cover an assessment of urban green space availability and accessibility in Kuala Lumpur city centre and its environs. This study only considers public accessible green space in Kuala Lumpur City Centre. It will not consider private green space such as golf courses and polo field as well as gated apartment with swimming pools and court games. Other green space like the religious ground, agricultural land, cemeteries and schools green spaces will not be considered in this study. Digital data used in this study is based on DBKL 2006 and JUPEM, 2012 with a scale of 1:120,000 since the researcher cannot get the most current one. Digital data here means spatial data that will be used to identify the present KL City Centre available green space.

1.7 Research Framework

The framework of this research is shown in Figure 1.1 which forms the basis of the research structure. It relates the problem statement with the literature review and data collection methods and tools in order to present reliable and valid results. Therefore, it illustrates the various steps from initial preparation to contribution to the field of urban planning and design in the study context. The first stage aims to establish the problem statement and research objectives. The literature review systematically addresses different issues of urban green space availability and accessibility as it relates to the study area (Kuala Lumpur City Centre). It illustrates that the first method used in this research is a spatial method of data collection whereas the second method of data collection is a social survey from the expert in the field of planning and design and the use of Raster GIS for the final analysis. The data collection tools are GIS and self-administered questionnaire survey. Lastly, it shows that the findings of the research present practical suggestions for the future planning and design of accessible urban green space in Kuala Lumpur city centre of Malaysia. It emphasises that, the findings will significantly assist urban designers in enhancing the quality of life among different groups of the society.

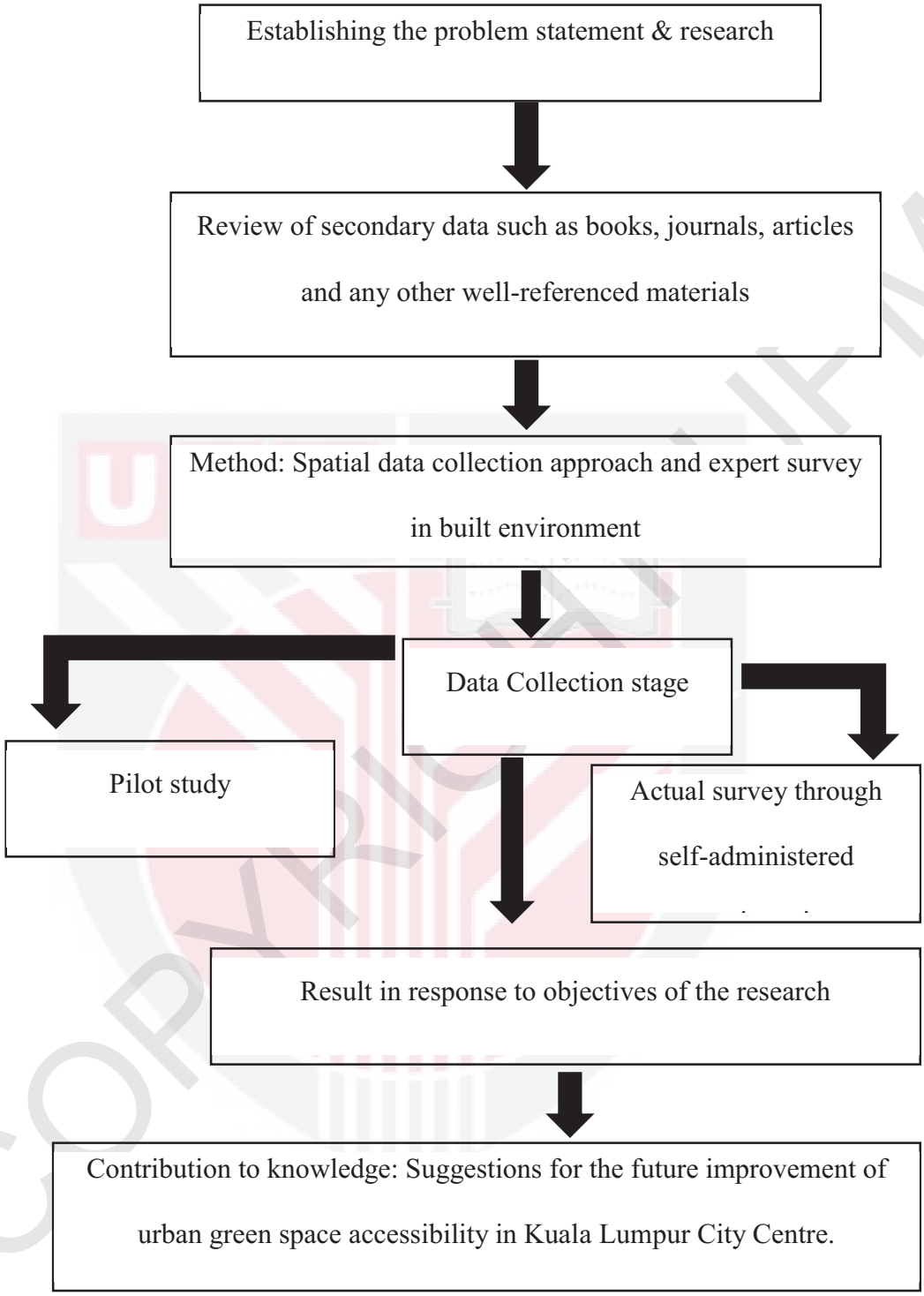

Figure 1.1 : Research Framework

1.8 Organization of the thesis

The organisation of this thesis is as follows. Chapter One covers introduction which explains the background of the study, statement of the problem, research question, research objectives, the significance of the study, scope and limitation and organisation of the study.

Chapter Two is made up of literature review covering subject areas such as the definition of urban green space and history of urban green space. It also explains the benefits of urban green space, the contribution of urban green space to city sustainability, typology of urban green space, GIS application for identifying green space as well as measuring urban green space availability. Finally, this chapter elaborates the meaning of urban green space accessibility, factors influencing urban green space accessibility, measures of urban green space accessibility, assessment of standard for urban green space accessibility and barriers to urban green space accessibility.

Chapter Three contains methodology which include introduction, research methodology, data collection, questionnaire design, data sources, data collection tools, data analysis, historical background of Kuala Lumpur City Centre, land use characteristics, description of the study area and summary.

Chapter Four constitute of result and discussion. It includes an introduction, the result of spatial analysis and mapping urban green space distribution in Kuala Lumpur city centre and assessment of urban green space availability in KL city centre. The chapter also contains discussion about the analysis of survey data from expert in built environment which include respondent's profile and professional background and respondent's view about urban green space accessibility in Kuala Lumpur city centre. It discusses respondent's level of agreement on the characteristics of urban green space accessibility and respondent's opinion on the important characteristics of urban green space accessibility including summary. Also, the mean value and the ranking of the statistical result together with site observation record that took place on 31st of February, 2017 where 16 green spaces were studied using the three main factors of accessibility. Furthermore, to assess how accessible to the identified green, GIS model builder was used to classify the green spaces in three levels and ground trothing was used as a method of validation.

Chapter Five covers summary, conclusion and recommendation. The chapter consists of introduction, conclusion and recommendation for future improvement of accessibility to urban green space. It also contains contribution of the study to knowledge. Finally references, appendices and bio data mark the end of this study.

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