

PEDESTRIAN SATISFACTION ASSESSMENT FRAMEWORK ON URBAN
FACILITIES ACCESSIBILITY OF COMMERCIAL NEIGHBOURHOOD ZONES

ELAHE ANJOMSHOAA

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Doctor of Philosophy (Architecture)

Faculty of Built Environment and Surveying
Universiti Teknologi Malaysia

JULY 2018

*Specially dedicated to:
My beloved father and my loving mother, for their endless support and motivation.*

ACKNOWLEDGEMENT

Praise upon Allah, the Almighty and the Most Merciful, for giving me the determination and strength in completing this research.

I would like to express my sincere thanks, admiration and deepest gratitude to all the people and parties who have helped me in conducting this research, especially my supervisor, Associate Professor Dr. Hasanuddin Lamit for his expert advice, positive attitude, enthusiasm, encouragement, guidance, constructive criticism and unconditional support who has made this journey a wonderful and enriching experience. I would like to thank my co-supervisor Dr. Tareef Hayat Khan, who always helped and guided me and also boosted my confidence at every stage of my PhD. I would also thank Dr. Sharifah Salwa Binti Syed Mahdzar for her generous help and guidance. Moreover, I would like to thank Professor Dr. Mahbob Salim, Dr. Arezou Shafaghat, Dr. Ali Keyvanfar, and Dr. Paul Agboola who have given me insightful comments to help improve this thesis, and kindly answers to my questions. Without their continued support, this thesis would not have been the same as presented here.

Alao, big thanks to Muhammad Akmal Zahin Bin Zulkifli, Zulkhairi Bin Ahmad Namiry, and Amirul Jasmeen Bin Razak Fatin who help me during collecting data. Last but not least, my deepest gratitude goes to my beloved parents, for thire many years of love, pray, supports and inspiration. It was under their watchful eye, I gained so much to tackle the challenges. I am also thankful to my lovely sister and brother, for their constant inspiration.

ABSTRACT

In recent times urban designers, planners, landscape architects, and architects are emphasising the studies of pedestrian behaviour, accessibility and satisfaction. Although the concept of users' satisfaction has gained considerable attention in the field of urban design; few studies have focused on the assessment of pedestrian satisfaction. Thus, this research aims to develop a Pedestrian Satisfaction Assessment Framework (PSAF) to evaluate pedestrian satisfaction, attitude, and preference with regard to accessibility to the neighbourhood facilities in commercial zones. This study's framework establishes the relationships between pedestrian behaviour and accessibility towards urban design strategies that can improve pedestrian satisfaction. The various aspects of pedestrian satisfaction, and the diverse urban accessibility features are relevant to be adopted in diverse design approaches that will produce more satisfactory pedestrian environments. For this study, the urban facilities and its sub-items in commercial zones were identified in order to measure pedestrian satisfaction. Therefore, Kano satisfaction assessment model was adopted accordingly, while the Pedestrian Satisfaction Assessment Framework (PSAF) for evaluation of urban facilities accessibility in commercial zones was developed and validated through a pilot study within some selected commercial neighbourhoods. For the purpose of this study, accessibility with a 500 meter walking radius of pedestrians for three commercial neighbourhood zones within Johor Bahru city were considered. The three zones are: Taman Universiti, Taman Tun Aminah, and Taman Pulai Utama. Respondents residing in the three neighbourhoods for more than eight years and have walking access to commercial zones were the subject target. Data from respondents via questionnaires was analysed by Kano model equation and SPSS. The analysed data showcased the present and future framework requirements that can be used by urban designers, urban planners, landscape architects, and architects for future sustainable urban development of commercial zones. The final framework is recommended as a design decision supporting tool for urban professionals to make more accurate decisions on urban development or redevelopment.

ABSTRAK

Pada masa kini, pereka bandar, perancang dan arkitek lanskap memberi penekanan terhadap kajian ke atas tingkah laku, akses dan kepuasan pejalan kaki. Walaupun konsep kepuasan pengguna telah mendapat perhatian yang cukup teliti dalam bidang reka bentuk bandar, namun terdapat hanya sedikit kajian yang memberi tumpuan kepada penilaian kepuasan pejalan kaki. Oleh itu, kajian ini bertujuan untuk membangunkan Rangka Kerja Penilaian Kepuasan Pejalan Kaki (PSAF) untuk menilai kepuasan, sikap, dan keinginan pejalan kaki berhubung dengan akses ke kemudahan kejiranan di zon perdagangan. Rangka kerja kajian ini ingin membuktikan tentang hubungan antara tingkah laku pejalan kaki dan akses ke arah strategi reka bentuk bandar yang dapat meningkatkan kepuasan bagi pejalan kaki. Kepelbagaian aspek kepuasan pejalan kaki dan ciri kebolehcapaian bandaraya yang pelbagai adalah relevan untuk digunakan dalam pelbagai pendekatan reka bentuk yang akan menghasilkan persekitaran pejalan kaki yang lebih memuaskan. Untuk kajian ini, kemudahan bandar dan sub-item di zon perdagangan telah dikenal pasti untuk mengukur kepuasan pejalan kaki. Oleh itu, model penilaian kepuasan Kano telah diterima pakai dengan sewajarnya, sementara Rangka Kerja Penilaian Kepuasan Pejalan Kaki (PSAF) untuk menilai kemudahan akses bandar di zon perdagangan telah dibangunkan dan disahkan melalui kajian perintis di beberapa kejiranan komersial terpilih. Untuk tujuan kajian ini, ketumpatan dan tahap kebolehcapaia dengan jarak radius 500 meter pejalan kaki untuk tiga zon kejiranan komersil di bandar Johor Bahru telah dipertimbangkan. Tiga zon tersebut ialah: Taman Universiti, Taman Tun Aminah, dan Taman Pulai Utama. Responden yang menetap di tiga kawasan kejiranan selama lebih lapan tahun dan mendapat akses ke zon komersial adalah sasaran subjek. Data yang dikumpul daripada responden melalui soal selidik dianalisis dengan persamaan model Kano dan SPSS. Data yang dianalisis memaparkan keperluan rangka kerja untuk masa kini dan masa depan yang boleh digunakan oleh pereka bandar, perancang bandar, dan arkitek lanskap demi pembangunan bandar zon komersial lestari yang akan datang. Rangka kerja akhir cadangkan sebagai model sokongan keputusan reka bentuk untuk para profesional bandar untuk membuat keputusan yang lebih sesuai mengenai pembangunan atau pembangunan semula perbandaran.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENT	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xiv
	LIST OF FIGURES	xviii
	LIST OF ABBREVIATIONS	xxi
	LIST OF APPENDICES	xxiv
1	INTRODUCTION	1
	1.1 Introduction	1
	1.2 Background of Study	5
	1.3 The Problems with Assessment Satisfaction on Urban Facilities Accessibility	11
	1.4 Importance of Pedestrian Satisfaction for Future Sustainable Urban Development in Malaysia	12
	1.5 Research Aim	16
	1.6 Objectives of the Study	17
	1.7 Scope of Study and Unit of Analysis	17
	1.8 Research Methodology	18

1.8.1	Preliminary Study (Phase 1)	21
1.8.2	Literature Study (Phase 2)	21
1.8.3	Expert Input in Collection and Analysis (Phase 3)	21
1.8.4	Framework Validation, Findings, Conclusion and Recommendations (Phase 4, 5 and 6)	22
1.9	Significance of Study	22
1.10	Thesis Outlines	24
2	LITERATURE REVIEW	27
2.1	Introduction	27
2.2	Quality of Life and Its Dimensions	27
2.2.1	Life-Satisfaction?	30
2.2.2	Definition and Concept of Life Satisfaction	31
2.2.3	Determinants of Life Satisfaction	32
2.2.4	Importance of Life Satisfaction	33
2.3	Urbanism	34
2.3.1	Urbanism Concept	35
2.4	The Principle of New Urbanism	36
2.4.1	Walkability and Connectivity	37
2.4.2	Quality or Architecture and Urban Design	37
2.4.3	Sustainability and Quality of Life	38
2.5	Inclusive Design	38
2.5.1	Mat-Urbanism	39
2.6	Compact City Development	40
2.7	Smart Growth	41
2.8	Sustainable Urban Development and Green Urban Development	41
2.8.1	LEED for Neighbourhood Development	42

2.8.2	Green Neighbourhood Index	42
2.9	Types of Urban Spaces	43
2.9.1	Typical Functions of Urban Spaces	44
2.9.2	Users' Profile and Accessibility	44
2.10	Urban Facilities	45
2.11	Urban Facilities Issues and Causes	46
2.11.1	Urban Facilities, Services, and Infrastructure	47
2.12	Neighbourhood Services and Facilities	49
2.13	Pedestrian Physical Activity and Characteristics	50
2.14	Pedestrian Walking Purposes	50
2.15	Diverse Issues Related to Pedestrian Activities	51
2.15.1	Inactivity and Health Issues in Malaysia	51
2.15.2	Air Pollution	53
2.15.2	Safety and Security	53
2.16	Urban Environment Qualities	54
2.16.1	Built Environment and Walking	55
2.17	Pedestrian Physical Behaviour	55
2.18	Accessibility Measurement Scales	55
2.18.1	Accessibility Principles	56
2.18.2	Criteria for Accessibility Measures	57
2.18.3	Accessibility Measure Perspective	58
2.18.3.1	Infrastructure-Based Measures	59
2.18.3.2	Activity-Based Accessibility Measures	59
2.18.4	Relationship Between Accessibility and Sustainable Urban Development	59
2.18.5	Relationship Between Accessibility and Walkable Urban Design	60
2.19	Satisfaction	60
2.19.1	User Satisfaction Assessment Model	61

2.19.2	Kano User Satisfaction Measurement Model	61
2.19.3	Kano's Model in Studies	63
2.19.4	Assessment Model Development	64
2.20	Concept of Commercial Neighbourhood Zones in Malaysia	65
2.20.1	Concept of Shophouses and its Environment in Malaysia	65
2.21	Summary	66
3	RESEARCH METHODOLOGY	67
3.1	Introduction	67
3.2	Research Design	67
3.3	The Study Area	69
3.4	Diverse Activities in Johor Bahru	72
3.5	Case Study Area Selection Criteria	74
3.6	Research Paradigm	77
3.7	Description and Selection of the Study Area	77
3.7.1	Zone1. Taman Universiti	78
3.7.2	Zone 2. Taman Ungku Tun Aminah	80
3.7.3	Zone 3. Taman Pulai Utama	81
3.8	Measurement of Quantitative Variables	83
3.9	The Data Collection and Unit of Analysis	85
3.10	Data Collection and Analysing Strategy	87
3.10.1	Sampling Method	88
3.10.2	Examining Preliminary Behaviours and Analysis Techniques	88
3.10.2.1	Evaluation Considering the Frequency	88
3.10.2.2	Customer Satisfaction Coefficient	89

3.10.2.3	Two-Dimensional Display of Kano Qualitative Categories	91
3.10.2.4	Summary of the Kano Qualitative Analysis Methods	92
3.11	Questionnaires Administration	93
3.12	Population and Sampling	93
3.13	Sample Size	94
3.14	Pilot Survey	96
3.14.1	Pilot Survey Questionnaire Reliability and Validity Testing	97
3.14.2	Pilot Survey Questionnaires' Data Analysis	98
3.15	Data collection Method and Analysis (Main Survey)	99
3.15.1	Weighted Sum Method (WSM)	100
3.15.2	Kano Analysis Approach	101
3.15.2.1	Validation and Reliability of Kano Model	103
3.15.3	Descriptive Statistics	103
3.16	Summary of Chapter	104
4	DATA COLLECTION AND ANALYSIS	105
4.1	Introduction	105
4.2	Research Paradigm	106
4.3	Data Analysis	106
4.3.1	Kano Model and Its Justification	107
4.3.2	Design of Questionnaire with Kano Model	109
4.4	Descriptive Statistics of Variables (Pilot Survey)	111

4.4.1	Systematic Analysis of Research Objectives	113
4.5	Inferential Statistics (Main survey)	117
4.5.1	Check the Normality Assumption Variables by Using Kolmogorov-Smirnov Test	118
4.5.2	Hypothesis Testing (Main Survey)	118
4.5.2.1	Investigating the Status of Variables	119
4.6	Investigating the Hypothesis	126
4.7	Summary	128
5	RESULTS AND DISCUSSIONS	129
5.1	Introduction	129
5.2	Research Objective 1: Research Objective 1: Identification of the Urban Facility Categories and Closed Group Discussion	129
5.3	Research Objective 2: To Identify Suitable Urban Accessibility Compatible with Pedestrian Attitude, and Preference in Access to the Facilities in the Three Commercial Neighbourhood Zones	133
5.4	Research Objective 3: To Identify Satisfaction Assessment Framework Targeting the Walkability Elements at the Three Commercial Neighbourhood Zone	138
5.5	Research Objective 4: To Explore the Pedestrian Satisfaction Assessment Framework (PSAF) in the three Case Study of Commercial Neighbourhood Zones at the Johor State of Malaysia.	143

5.5.1	Kano Survey Results in Commercial Neighbourhood Zone 1 (Taman Universiti)	143
5.5.2	Kano Survey Results in Commercial Neighbourhood Zone 2 (Taman Ungku Tun Aminah)	151
5.5.3	Kano Survey Results in Commercial Neighbourhood Zone 3 (Taman Pulau Utama)	158
5.5.4	General Evaluation of Case Study Area	164
5.5.4.1	Self-Stated Importance of Users	168
5.6	Summary of Finding	170
5.7	Summary	173
6	CONCLUSION AND RECOMMENDATION	174
6.1	Introduction	174
6.1.1	Discussion on Finding of Objectives	174
6.1.1.1	The Pilot Survey	174
6.1.1.2	First Objective	177
6.1.1.3	Second Objective	178
6.1.1.4	Third Objective	179
6.1.1.5	Fourth Objective	180
6.1.2	Research Contributions to Knowledge	181
6.1.3	Conclusion of Study	182
6.2	Recommendation	184
6.3	Limitation of Study	185
6.4	Future Related of Studies	187
	REFERENCES	189
	Appendices A-G	222-253

LIST OF TABLES

TABLE NO.	TITLE	PAGE
1.1	Level of Urbanization in Malaysia from the year 1950-2030	13
2.1	Evaluation of life; a sequence model of conditions and processes (Source: Land, Michalos, and Sirgy, 2012).	33
2.2	The subgroups within each category (Pedestrian Planning and Design Guide, 2007)	47
2.3	Typology of Movements by Range and Frequency (Source: Daniels and Warnes, 1980)	48
2.4	Pedestrian trip purpose (Source: Austroads, 1995)	51
2.5	Comparison of VRUs killed between Malaysia, 5 EU countries and Japan, 2007 (Source: WHO, 2009)	53
2.6	Use of Kano model in different industries (Mikulic, 2007; Luoret <i>al.</i> , 2015)	64
3.1	Population projection target area of Johor Bahru, 2000-2020 (Source: Johor State Planning Authority, 2004)	72
3.2	Type of commercial land use zoning district in Malaysia (Source: Khazanah Nasional, 2006)	73
3.3	Characteristics of the case study neighbourhoods (Source: Johor Bahru District Local Plan 2020)	75
3.4	Population of neighbourhoods situated in Skudai cities in the state of Johor Bahru (the average household size for Johor Bahru district is 5)	76
3.5	Neighbourhood characteristics	83
3.6	Research objectives and measurements	84
3.7	The structure of questionnaire survey form	85

3.8	Distribution of housing, household and sampling size by regions	87
3.9	Kano evaluation table (Source: Berger <i>et al.</i> , 1993)	89
3.10	Customers' satisfaction / dissatisfaction coefficient and total CSC	90
3.11	Determining the sample size of a given (Source: Krejcie and Morgan, 1970)	95
3.12	Sample size precision level	95
4.1	Question types applied in the survey	110
4.2	An example of self-stated importance question	110
4.3	Descriptive statistics of the physical parameters	115
4.4	Descriptive statistics of the access to facilities criteria	116
4.5	Descriptive statistics of facilities' functional and services criteria	116
4.6	The main variables of descriptive statistics of the pilot survey	117
4.7	The result of one sample t-test to compare the average of a variable with a specified value	119
4.8	Test summary of facilities function	120
4.9	Friedman test result in order to prioritization of the issues of facilities function and service criteria	121
4.10	Study of the correlation between variables	121
4.11	The result of one sample t-test to compare the average of a variable with a specified value	122
4.12	Test summary of access to facilities	123
4.13	Friedman test results in order to prioritization of the issues of access to facilities	123
4.14	Study of the correlation between variables	124
4.15	The result of one sample t-test to compare the average of a variable with a specified value	124
4.16	Test summary of physical features of the facilities	125
4.17	Friedman test result in order to prioritization of the issues of physical features of facilities	125

4.18	Study of the correlation between sub-indexes and physical features	126
4.19	Study of the correlation between sub-indexes and requirement	127
4.20	Study of the correlation between sub-indexes and functional	127
5.1	Summary of interview responses by the expert	130
5.2	Customer satisfaction coefficient (CSC) values for commercial neighbourhood zone1	144
5.3	Top five needs according to CSC values	146
5.4	Urban facilities close to attractive category (Zone 1)	146
5.5	Urban facilities close to must-be category (Zone 1)	147
5.6	Distribution of needs according to quadrant map and self-stated importance (Commercial neighbourhood zone 1)	148
5.7	Customer satisfaction coefficient (CSC) values for Taman Ungku Tun Aminah, commercial neighbourhood zone 2	152
5.8	Top five needs according to CSC values (Zone 2)	154
5.9	The needs closer to attractive requirements (Zone 2)	154
5.10	The needs closer to must-be requirements (Zone 2)	155
5.11	Distribution of needs according to quadrant map and self-stated importance (Taman Ungku Tun Aminah, commercial neighbourhood zone 2)	156
5.12	Customer satisfaction coefficient values (Zone 3)	159
5.13	Top five needs according to CSC values (Zone 3)	160
5.14	Distribution of needs according to Quadrant map (Zone 3)	162
5.15	Comparison of requirement groups for all commercial neighbourhood Zones	164
5.16	Customer satisfaction coefficient values	166
5.17	Mean evaluation of the self-stated importance	168
5.18	Zone-1 self-stated importance and CSC ranking	169
5.19	Zone-2 and 3 self-stated importance and CSC ranking	169
6.1	Effective components on the main parameters of the result (in order of preference)	177

6.2	Association between access and sustainable urban development	179
-----	--	-----

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	Association between pedestrian satisfaction and available urban facilities	11
1.2	Urban development percentage in Malaysia (Source: World Bank Report, 2011)	13
1.3	Malaysia urban-rural population, 2000-2030 (Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2002)	14
1.4	Flow of systematic review	19
1.5	Research methodology flow diagram	20
1.6	Thesis structure outline	26
2.1	Quality of life reflection	28
2.2	Effective factors on determination of QOL	28
2.3	Different sides of QOL	28
2.4	Dimension of quality of life	29
2.5	QOL in one view	30
2.6	Life satisfaction placement under subjective well-being division	31
2.7	The concept of life satisfaction in a subjective well-being framework (Source: Diener, 1984).	32
2.8	Determinants of life satisfaction	32
2.9	Satisfying effect on health	34
2.10	Network based theory approach in urbanism	35

2.11	Pragmatism approach in urbanism	36
2.12	The overlapping of Mat-building inclusive design (Source: Eren, 2004)	40
2.13	The use of the safe repetitive elements with variation can identify the spaces so that all people can access them safely (Source: Eren, 2004)	40
2.14	An image of a compact city (Source: Girouard, 1985)	41
2.15	Public facilities divisions	46
2.16	Urban infrastructure divisions	48
2.17	Obesity rates by country (Source: World Health Organization, 2011)	52
2.18	Satisfaction variables	61
2.19	Kano model (Source: Kano <i>et al.</i> , 1984; Cohen, 1995)	62
2.20	Indifferent and reverse quality in Kano Model (Source: Grigoroudis and Siskos, 2012)	63
2.21	Flow of systematic review	66
3.1	Research techniques and method	69
3.2	Map of Johor (Source: Khazanah Nasional, 2006)	70
3.3	Johor five administration area of local authorities 2002- 2020 (Source: Johor State Planning Authority, 2004)	71
3.4	A target of population projections in Johor Bahru, 2020	72
3.5	Case study location (Source: http://maps,google.com.my/)	78
3.6	Taman university commercial neighbourhood zone (Source: http://maps,google.com.my/)	79
3.7	Taman Ungku Tun Aminah commercial neighbourhood zone (Source: http://maps,google.com.my/)	81
3.8	Taman Pulai Utama commercial neighbourhood zone (Source: http://maps, google.com.my/)	82
3.9	Flow of review of research measurement	87
3.10	Sample graphical representation of Kano categories	92
3.11	Method and technique used for data analysis	100
3.12	The implementation procedures of Kano model (Source: Zhang and Wang, 2014)	101

4.1	Steps in the survey design	109
4.2	Respondents' demographic result	111
4.3	Respondents' work experience	112
4.4	Respondents' field of specialization	112
4.5	Descriptive charts of facilities physical parameters	114
4.6	Descriptive charts of access to facilities criteria	114
4.7	Descriptive charts of facilities' functional and services criteria	115
5.1	The results of WSM data analysis on the expert input validations on urban facility items	132
5.2	Comparison of urban accessibility with pedestrian attitude, and preference in access to the facilities in the three commercial neighbourhood zones	135
5.3	Comparative summary of respondents' satisfaction assessment framework targeting the walkability elements at the three case study neighbourhoods	139
5.4	Urban facilities categorization with frequency distribution of needs (Commercial neighbourhood zone 1)	144
5.5	Quadrant map (Commercial neighbourhood zone 1)	148
5.6	Urban facilities categorization with frequency distribution of needs (Commercial neighbourhood zone 2)	152
5.7	Quadrant map (Commercial neighbourhood zone 2)	156
5.8	Urban facilities categorization with frequency distribution of needs (Commercial neighbourhood zone 3)	159
5.9	Quadrant map (Commercial neighbourhood zone 3)	162
5.10	Kano-based quality improvement quadrant for urban decision making	172

LIST OF ABBREVIATIONS

A	-	Attractive
AM		Accessibility Measure
ANOVA	-	Analysis of Variance
ASCE	-	American Society of Civil Engineers
CBD		Central Business District
CD		Commercial District
CDC		Centres for Disease Control and Prevention
CDP	-	Comprehensive Development Plan
CDS		Customer Dissatisfaction Coefficient
CNU	-	Congress for the New Urbanism
CO ₂	-	Carbon Dioxide
CSC		Customer Satisfaction Coefficient
CSM		Combined Scaling Method
CZ	-	Commercial Zone
DCC	-	District Centre Commercial
DTCP	-	Department of Town and Country Planning Peninsular Malaysia
ECMT	-	European Conference of Ministers of Transport
EDF	-	Empirical Distribution Function
EFA		Exploratory Factor Analysis
HDI	-	Human Development Index
HUD	-	U.S. Department of Housing and Urban Development
I	-	Indifference
IBM		International Business Machines Corporation

ICT	-	Information and Communication Technology
ISEAS	-	Institute of Southeast Asian Studies
ISO	-	International Standardization Organization
JBCC		Johor Bahru City Council
JBTMC		Johor Bahru Tengah Municipal Council
K-S	-	Kolmogorov-Smirnov
KuMC		Kulai Municipal Council
LCC	-	Local Centre Commercial
LEED	-	Leadership in Energy and Environmental Design
LEED-ND	-	Leadership in Energy and Environmental Design for Neighbourhood Development
M	-	Must-be
MX	-	Mixed- Use
NHTSA	-	National Highway Traffic Safety Administration
NPP		National Physical Plan
O	-	One-dimensional
OECD	-	Organization for Economic Cooperation and Development
PCA		Principal Components Analysis
PGLA		Pasir Gudang Local Authority
PIP	-	Pedestrian Infrastructure Prioritization
Q	-	Questionable
QFD	-	Quality Function Deployment
QoL	-	Quality of Life
QoUL		Quality of Urban Life
R	-	Reverse
RSN		State Structure Plan
SERVQUAL	-	Service Quality
SJER	-	South Johor Economic Region
SPSS	-	Statistical Package for the Social Sciences
SUD	-	Sustainable Urban Development
SWB	-	Subjective Well-Being

TRB	-	Transportation Research Board
UNEP	-	United Nations Environment Program
USGBC	-	United States Green Building Council
VMT	-	Vehicle Miles of Travel
WCED	-	World Commission on Environment and Development
WHO	-	World Health Organization
WSM		Weighted Sum Method

APPENDICES

APPENDIX	TITLE	PAGE
A	Implications of Structural and Symbolic Functions	222
B	Accessibility Measurement Scale	225
C	User–Satisfaction Measurement Model	230
D	Most Frequent Responses to User Need	232
E	Summary of WSM Data Analysis of Expert Inputs on Urban Facilities Items	236
F	Expert Input Questionnaire	239
G	Survey Questionnaire Form	245

CHAPTER 1

INTRODUCTION

1.1. Introduction

A pedestrian is someone traveling on foot from whether walking or running from one destination to another (Hanan *et al.*, 2015). A person who walks, and not through a motor vehicle is termed as a pedestrian (NHTSA, 2008). In other words, pedestrians prefer walking rather than traveling in a vehicle (Cambridge dictionary, 2016). The Department of the Environment and Transport (1992) define pedestrian as young, old, wheelchair pushers, ambulant disable people, wheelchair users and people with impairments of sight and hearing. Similarly, the pedestrian group ranges from children, old people, as well as disabled people. In the developed countries, people choose to walk to the nearest place rather than using a car to avoid traffic congestions especially during the peak hours (Hanan *et al.*, 2015). It has been identified that walking is the most basic and simple mode of transportation (Kim *et al.*, 2008). Recent developments in the field of transportation, urban planning, as well as environmental health studies have shown interest in benefits derivable from walking. In view of this, researchers have explored walking, in connection to environmental and health issues, such as air pollution, traffic congestion, and obesity risk (Marshall *et al.*, 2009; Hoehner *et al.*, 2011).

The researches of De Cambra (2012), have shown that pedestrians' satisfaction and attractiveness are indicators that influence the neighbourhood environment characteristics, form, and walkability assessment. Similarly, pedestrian behaviours are

affected by personal factors such as demographic factors, socioeconomic factors, and psychological attributes. Others include the availability of relevant settings and opportunities in the context of physical activity (Troost, Owen, Bauman, Sallis, and Brown, 2002; Glanz, Rimer, and Viswanath, 2015). Walking decisions within neighbourhood zones are influenced by pedestrians' motivation and preferences, travel-related attitudes, and satisfaction. Cao *et al.* (2009) reinstated that the psychological challenges in behavioural models may under estimate the influence of walking distance, walking time, and walking mode on travel behaviour in the built environment. The special report of Transportation Research Board (TRB, 2005) revealed that the pedestrians' travel behaviour could be enhanced through the creation of adequate opportunities.

Methorst and Van der Horst (2010) identifies pedestrian satisfaction as a state of mind relating to the fulfillment of pedestrian expectations and needs during walking and thus reflects the pleasure derived. Hence, pedestrian satisfaction on the environment affects impact on peoples' psychological state of the mind. The two concepts of satisfaction and accessibility impact on New-Urbanism, Smart Growth, and Cities Sustainability. The concept of the choices of pedestrians involves many dimensions of the pedestrian behaviour. Timmermans (2009) while considering individual pedestrian at a given location reinstated the significance of the followings: (i) activity choice, (ii) destination choice, (iii) mode choice, (iv) route choice, (v) walking behaviour, and (vi) interactions.

The neighbourhood is coined a residents' immediate environment housing the social, economic and institutions' (United States Green Building Council (USGBC), 2009). In another dimension, the charter of New Urbanism (CNU) characterizes a neighbourhood as a compact and pedestrian friendly environment in form of a mixed-use form (CNU, 1996). Meanwhile, Jenks and Dempsey (2007) viewed neighbourhood as a composition of both the physical and social elements representing people and the surrounding community. Zoning districts within the neighbourhood include some activities zone that is designated for commercial activities. For instance, in Johor Bahru, Malaysia, the comprehensive development plan (CDP) identified the

land use zoning plan based on zoning districts in which some areas are regarded as the commercial urban character. The neighbourhood commercial zone in this research work targets areas located within residential neighbourhoods serving the population. The commercial zone provides diverse retail and business service for the residents' conveniences within the neighbourhood.

The changing exhibited in the Malaysia's public spaces as revealed by Harun and Said (2009) indicated that the neighbourhood green spaces, parks and waterfronts portray a city's distinct character and coherence. This invariably gives the residents of urban areas a refreshing neighbourhood feeling. Meanwhile, the neighbourhoods' structures through institutional complexes, and business centres depend on the entire neighbourhood space (Heckscher and Robinson, 1977). As Malaysian cities develop, so also the users' needs and accessibility increases. In view of this, the city authorities have to provide urban facilities and infrastructure for pedestrians' satisfactions. Through this, most commercial neighbourhood spaces within the Malaysian cities would have gained the right attention in urban planning analysis.

Accessibility remains an important concept in transportation planning and urban design fields. It enables solving the associated motorized transport problems by considering non-motorized modes of travel. Empirical studies have showcased the simple definition of accessibility in relations to how people get to various destinations. Accessibility is significant in terms of interaction, and land-use pattern and activities.

The nature of neighbourhood design, development and uses has impacts on the choice of transportation such as auto, transit, walking and cycling (Frank, 2000; Saelens *et al.*, 2003). But the objectives of transportation planning have changed recently (Hillman, Henderson, and Whalley, 1973-1976). Accessibility indicators summarize hosts of household's information via urban activities (Wachs, 1978; Morris *et al.*, 1979). Hence, urban spatial structure and performance indicators are important for accessibility concept.

However, too little attention has been paid to the level of satisfaction experienced by pedestrians in urban planning and design, transportation planning, and travel behaviour research. Kim *et al.* (2014) in their study in Seoul, Republic of Korea, affirmed that operationalizing the concept of neighbourhood pedestrian satisfaction, often proved difficult. Notwithstanding, the two concepts could reveal the potentials of the environmental factors for pedestrian environmental improvements. Pedestrian satisfaction in their chosen environment remains important, for well-being and behavioural sustainability (Ettema *et al.*, 2011). This research explores the interactions between pedestrian satisfaction and environmental factors affecting the built environment. This is with a view to gain insight into urban design strategies that is capable of improving both the pedestrian satisfaction and related activities.

Worldwide, efforts have been geared towards exploring specific assessment tools towards measuring satisfaction as applicable to the commercial neighbourhood zone by the urban planner, designers, and policymakers. In the Malaysian context, scholars across disciplines have been advocating the significance of sustainable urban development with cognizance of reliable tool of assessment. Such tools and methods are a paramount measurement of pedestrian accessibility to the built environment, which equally affects the satisfaction of pedestrian and their routine activity. Examining people engagements in public spaces activities is crucial to establishing the qualities of urban spaces (Shamsuddin, 2011). The assessment framework would assist and aids the professionals in taking certain design decision that promotes neighbourhoods quality and pedestrian-friendly environment. In addition, the assessment tool also allows effective solutions on the appropriateness of urban facilities and pedestrians' satisfaction in commercial neighbourhood zone.

Data from the Federal Highway Administration's 2009 National Household Survey shows 35 % of Americans walk in large numbers to work, 40 % to shops, and 46 % walk to school or church. It is difficult to assess pedestrian mobility due to the shortcoming on appropriate documentation on shorter trips. At present, the importance of pedestrian walking has been underestimated (Wittink, 2001; Kotkar *et al.*, 2010). Host of past studies have reviewed the evolution and development of pedestrianization

in the United States and the European countries, but there has been little work conducted in relation to the study of pedestrianization in Asian countries such as Malaysia (Yuen and Chor, 1998; Ja'afar and Usman, 2009; Shamsuddin and Sulaiman 2002). Thus, walking is particularly vital for elderly and lower-income people who have few opportunities to participate in sports or exercise programs (Sallis *et al.*, 2004; Bassett *et al.*, 2008). Evidence have shown that people from poor backgrounds are more likely to walk than those from wealthier backgrounds, in which case the household does not own a car (Living Streets, 2001). Walking are often time promoted as a key mode of sustainable transport. Similarly, both the land use and pedestrian planning are targeted at permitting residents' living and working within walking distance of about 500 metres of a wide range of local services such as shops, schools, recreation and community facilities. In the United States, pedestrian crossing accept 45 meters of a maximum distance and the more appropriate bypassing distance is 76 meters in walk-oriented neighbourhoods, especially apartments, commercial centre and front of the school. In Japan, the acceptable distance is only 20 meters according to survey study. In Beijing the bypassing distance of which more than 200 meters accounted for 1.5% only, 50 to 200 meters accounted for more than 98.5%, among in less than 50 meters accounted for 37.6%. The Shenzhen research found that 100% of the people willing to accept within 100 meters for security purposes, 69.4% of people can accept 150 meters, 54.4% of the people can accept 200 meters, and 27.5% of people can accept more than 200 meters (Li *et al.*, 2013).

According to Tan and Pawitra (2001) little efforts have been geared towards Kano model which can help in design decision to support framework to evaluate the users' accessibility satisfaction and requirements. Therefore, this study established how to incorporate the Kano model into pedestrian study towards user-satisfaction.

1.2. Background of Study

Pedestrianization according to European Conference of Ministers of Transport (ECMT, 1996) refers to the process of reducing or removing vehicular traffic from

neighbourhood city streets. Contrarily, it restricts streets accessibility by vehicles. Pedestrianization is capable of reducing noise and air pollution, economic benefits, safety, accessibility, and improve liveable environments. Four main issues of pedestrianization as iterated by ECMT, (1996) includes: (i) detailed pedestrian streets that allows residents' movements without any prohibitions; (ii) part-time pedestrian streets in which there are certain restrictions; (iii) partial pedestrian streets that restrict vehicle access public transport vehicles only; and (iv) partial pedestrian streets that permits a mix of pedestrians and motor vehicles.

Walking was considered as the dominant mode of transportation in cities in the late 19th century. Meanwhile after the industrial revolution there was emergence of the automobile, which changed the structure of cities. During the late 1960s a negative effects of automobile surfaced in European cities and later in the US. Hence, this led to a change in the approach to the development of pedestrian-orientated urban space (Kashani Jou, 2011).

There is increasing concern that urban spatial structures were not adequately designed while at the same time challenges exists in terms of policies and regulations relating to spatial concern. While some urban shapes are suitable to the development of public transport and increase the efficiency of public transport, some, on the other hand, reduces the residential floor consumption (Bertaud, 2004). The concept of urban spatial structure is a complex phenomenon that encompasses several dimensions, and different mechanisms. Consequently, this has received some attention in the literature (Carruthers *et al.*, 2010). The quasi-experimental study of 12 neighbourhoods in Puget Sound region of United States by Moudon *et al.* (1997) identified an existence of a connection between pedestrian volume and site design. The research findings captured four factors that affect the pedestrian trip volume. The factors are (i) population density, (ii) income, (iii) typology and land use mixtures. This defines appropriate origin and destination of the pedestrian trip, and (iv) 2,414020 kilometres radius area within a spatial context. The rational for choosing kilometre radius was based on considering combinations of land uses that are generators and attractors of pedestrian

travel. These capture the characteristics of land-use mixes that have the highest potential for substantial volumes of pedestrian trips (Moudon, 2001).

Studies on the residential density have been in the forefront in urban development studies, while transit-oriented development studies are being advocated to enhance a mixed-use urban development (Torshizian and Grimes, 2014). This encourages people to walk from their homes to other destinations such as offices, business centres, recreation areas, and transportation system. In this regard, peoples' dependence on cars would be minimized and neighbourhood open space remains preserved. In most Asian countries, the rapid progress of urbanization, propelled by the migration of people from rural areas and has altered traditional land use components (ISEAS, 2010). Three major factors, such as the form, structure, and functions of the urban centres contributed to Malaysian urban development and urbanizations. Consequently, this preforms the Malaysian government to pursue the urbanization policy in the 1970's overtime. The New Economic Policy provided the basis for a more drastic action to change the colonial urban structure manifested between the year 1970 to 1990.

The impact of urban structure on mobility patterns has been given attention in recent years. While a host of literature in transportation planning affirmed that urban structure has an influence on travel behaviour (Van Wee, 2002; Næss, 2006; Ewing and Cervero, 2010). Similarly, some schools of thought also believed that the land-use characteristics could influence travel behaviour (Stead, 2001; Næss, 2006; Van Acker *et al.*, 2007). Travel distance according to Moudon *et al.* (2006) relates to the routes that the pedestrian could navigate between a specific origin and the commercial centre. Travel distance establishes the population of people that can actually walk one-half mile or less between their house and the neighbourhood commercial centre. Therefore, this measure can be used to determine the population of people or housing units that fall within a half mile catchment area known as travel routes.

The residents' level of satisfaction with the quality of their environment remains a cogent factor that affects residents' quality of life and triggers certain

behavioural outcomes. On the other perspective, the residential satisfaction gives an indication of the quality of life of residents and a reflection of the degree at which the residents feel that their occupied housing culminated in achieving good livelihood (Appeaning Addo, 2016). Nevertheless, much of the research has been directed toward multi-family housing occupied by low-and moderate- income households. The initial research began by Francescato, Weidemann, Anderson, and Chenoweth in 1979 with a study whose objectives included understanding user needs and the development of research tools to evaluate multi-family housing. Since then a series of diverse studies has followed. Each of these studies has had a concern for theory development and testing as well as for problem solution, although the emphasis has varied from one study to another. For instance, Carson, 1974 and Francescato *et al.*, 1979 suggest that people's satisfaction with where they reside deserves exploration. While the authors unequivocally, acknowledged that to determine the users' satisfaction degree, users' needs must be considered.

Schorr (1966) described past studies on residential satisfaction concept by Schorr (1996) reported that appropriate examination of housing characteristics intertwines with the perception of users' satisfaction. In England, satisfaction was a criterion in a series of studies carried out by the Department of Environment (Griffin and Dickinson, 1971). The study further revealed that interconnectivity exists between the residents' satisfaction and the users' needs which could improve the quality of life of the people. The inclusion of an objective measure of the physical environment in a model of satisfaction is important as advocated by Craik *et al.* (1976). The objective and subjective environmental attributes impacted on the residents' satisfaction.

The previous studies of Van Dyck *et al.* (2011); De Jong *et al.* (2012); Gifford (2014); have focused on residential satisfaction, coupled with social and physical environmental characteristics. Moreover, residential satisfaction could be studied in two folds namely (i) exploration of the quality of the neighbourhood environment. This could be measured through exploration of perceptions and satisfaction assessments, (ii) residential satisfaction as a dependent variable.

Over the past century, much concern has been raised on travellers' satisfaction, rational decisions to maximize their utility, and efforts towards minimizing travel time and costs (Hensher, 2001). Similar studies have investigated travellers' experiences and satisfaction during travel mode. Studies of Friman *et al.* (2001) and Stradling *et al.* (2007) ascertain that travel frequencies influence users' satisfaction in public transportation. Meanwhile, instrumental factors influencing travellers' satisfaction, and factors, such as safety. Similarly, satisfaction along walking trips is hinged on micro-scale factors. While investigating travellers' satisfaction and subjective well-being (SWB), Ettema *et al.* (2011) show that SWB could influence travel mode, travel time, and access to the bus terminal. The study of Manaugh and El-Geneidy (2013) similarly explores the relationship between walking distance and satisfaction with walking trips. Succinctly, the outcome of the study affirmed that people responsive to environmental issues happen to result in walking a longer distance, and tend to be more satisfied.

Satisfaction as a criterion variable is not peculiar to housing and built environment alone, rather the concept is of concern to the urban sociologist and geographers (Altman and Werner, 1985). Additionally, landscape architects have studied satisfaction as an outcome of visitor experiences (Carlidge, 1992). Perhaps the most extensive and dynamic current literature is concerned with consumer satisfaction. Banking industries have as iterated by Kohnke (1990) have accepted the idea of measuring customer satisfaction or dissatisfaction through money policies.

According to Axelson *et al.* (1999), pedestrians are not only those travels on foot but also the device that aids peoples' mobility. Hence, a more comprehensive definition of the pedestrian is road user who moves or walks on the road without using the vehicle as a mode of transportation. The most common description of a pedestrian is a person who travels by foot (Wittink, 2001). The pedestrian might include the skaters (Arango, and Montufar, 2008). Pedestrians have been grouped into three categories namely: (i) those that walk by foot, (ii) those on wheels, and (iii) mobility impaired.

Several studies have averted the importance of pedestrian behaviour modelling in diverse contexts. For instance, in the construction industry, efforts towards improving the quality of construction projects to evolve pleasant and user-friendly pedestrian facilities have been reinstated by the architects and designers alike.

Evidently, approaches to land use and transport appraisal recognizes accessibility's facilities. Globally, issues are raised on the significance of integrated transport. There is increased recognition within some authorities concerning the rigorous analysis of potential transport policies which could help to build consensus amongst the various stakeholders. Host numbers of empirical studies on the theoretical aspect of accessibility have ever been conducted in a planning context. As such researchers and scholars in transportation and urban planning have corroborated a paradigm shift from mobility planning to accessibility planning (Bertolini *et al.*, 2005; Litman, 2013). Accessibility measures could be categorized into five categories as revealed by Baradaran and Ramjerdi (2001) travel-cost approach, gravity or opportunities approach, constraints-based approach, utility-based surplus approach, and composite approach.

Accessibility measures are easy for policymakers and researchers to interpret but have the major disadvantage of excluding the spatial component of accessibility. The transport infrastructure is the degree at which one can carry out any desired activities. The access cost measure represents an estimate of the probable average transport costs incurred in each area. The study focused on satisfaction's perception on urban design. Figure 1.1 present pedestrian satisfactions on urban facilities.

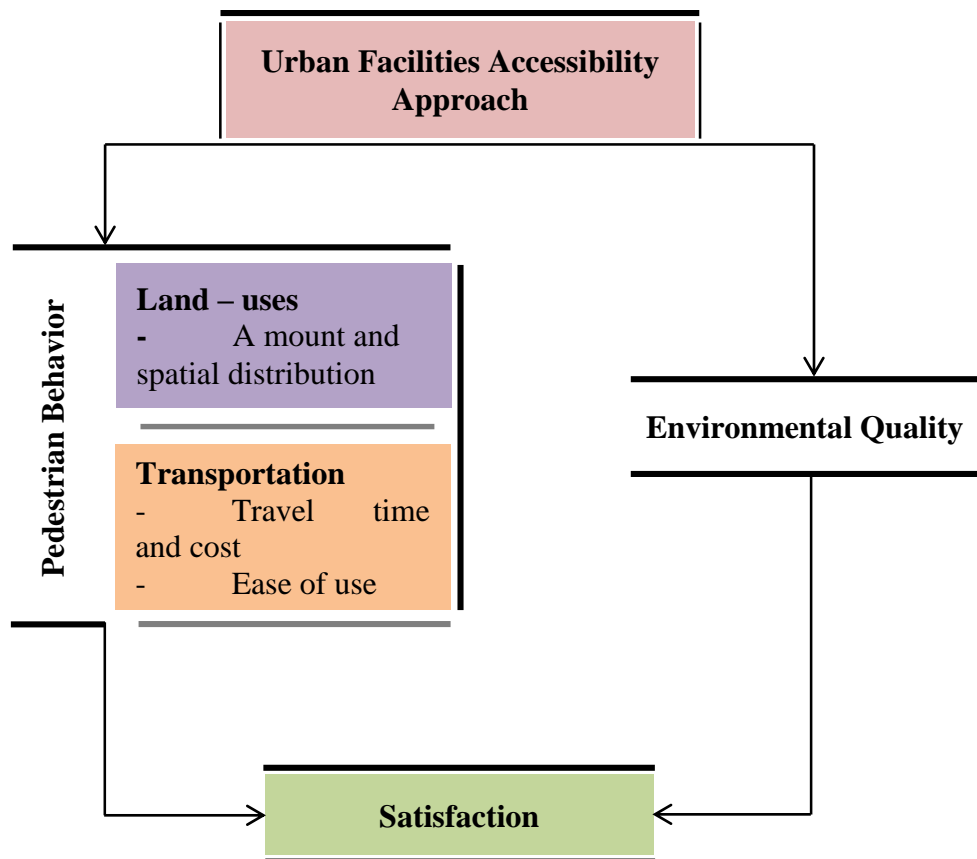


Figure 1.1 Association between pedestrian satisfaction and available urban facilities
(Source: Author)

1.3. The Problems with Assessment Satisfaction on Urban Facilities Accessibility

Current studies in urban studies are advocating on an exploration of interrelationships between pedestrian behaviour and accessibility. Little efforts have so far been initiated on pedestrians' satisfaction and its assessments framework in an urban neighbourhood. In addition, pedestrian's preferences have received little evaluation. In view of this, it becomes obvious that not enough evidence is available to support the decision tool for pedestrian satisfaction in urban facilities accessibility. Succinctly put, a gap exists in studying the assessment and measurement of pedestrian satisfaction in relation to urban accessibility. Therefore, this study would resolve

major methodological challenge and a strike balance between the theoretically and empirically plan-making processes.

The travel cost approach as referenced by Baradaran and Ramjerdi (2001) is a typical indicator typology considering spatial separation measures. Measurement of the geographical distance and other categories of travel cost are preferred to study. At the end, the research findings in form of data could be used as input for the other categories of accessibility indicators. It is a known fact that different neighbourhoods have different environmental, economic, demographic, and cultural characteristics. This invariably created a peculiar commercial zone and certain characteristics in neighbourhood developmental plan. Consequently, urban designers and planners could be effectively informed about neighbourhood development plans. Peoples' attitudes and perception, in both travel and walking behaviour are important to urban designers and planners (Park, 2008; Boarnet *et al.*, 2005; Cao *et al.*, 2009).

1.4. Importance of Pedestrian Satisfaction for Future Sustainable Urban Development in Malaysia

According to World Bank Report (2011), the percentage of urban development in Malaysia, in comparison with world and South Central Asia countries, was considerably the highest in the years 2000, 2005 and 2010 as depicted in Figure 1.2. With regards to urban development in Malaysia as a whole, it was observed that the urban population had increased from 20.4 percent in 1950 to 61.8 percent in the 2000 census (Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2002). The department observed that 68.2% urban population in 2010 will increase to 77.6% in 2030 as indicated in Table 1.1 and Figure 1.3. Accordingly, the United Nation reports a population of Malaysia comprised of 72% (expected growth rate by 2015; +2.25%) urban and 28% rural (expected growth rate by 2015; -0.42%).

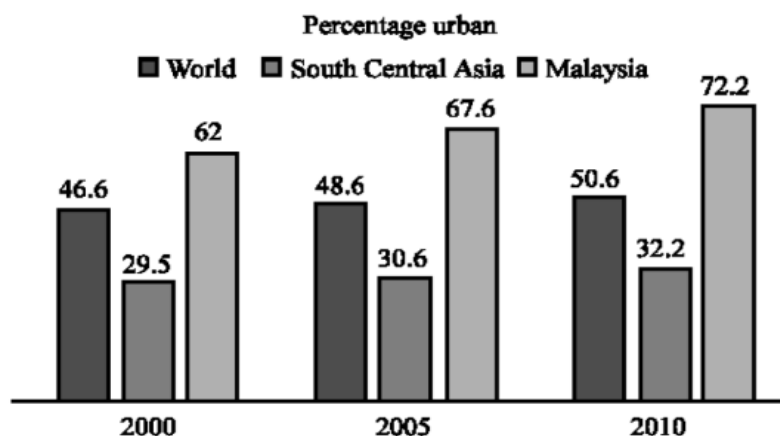


Figure 1.2 Urban development percentage in Malaysia (Source: World Bank Report, 2011)

Table 1.1: Level of Urbanization in Malaysia from the year 1950-2030

Variable	1950	1960	1970	1980	1990	2000	2010	2020	2030
Rural population (thousands)	4866	5975	7222	7977	8955	8790	8745	8362	7867
Urban population (thousands)	1244	2165	3631	5787	8891	1421 2	1876 8	2321 8	2732 4
Percentage urban (%)	20.4	26.6	33.5	42	49.8	61.8	68.2	73.5	77.6
Variable	1950	1960	1970	1980	1990	2000	2010	2020	
	-	-	-	-	-	-	-	-	
	1955	1965	1975	1985	1995	2005	2015	2025	
Rural annual growth rate (%)	1.94	2.17	1.13	1.22	0.18	0.13	-0.42	-0.57	
Urban annual growth rate (%)	5.52	5.44	4.8	4.36	4.84	2.96	2.25	1.76	

(Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2002)

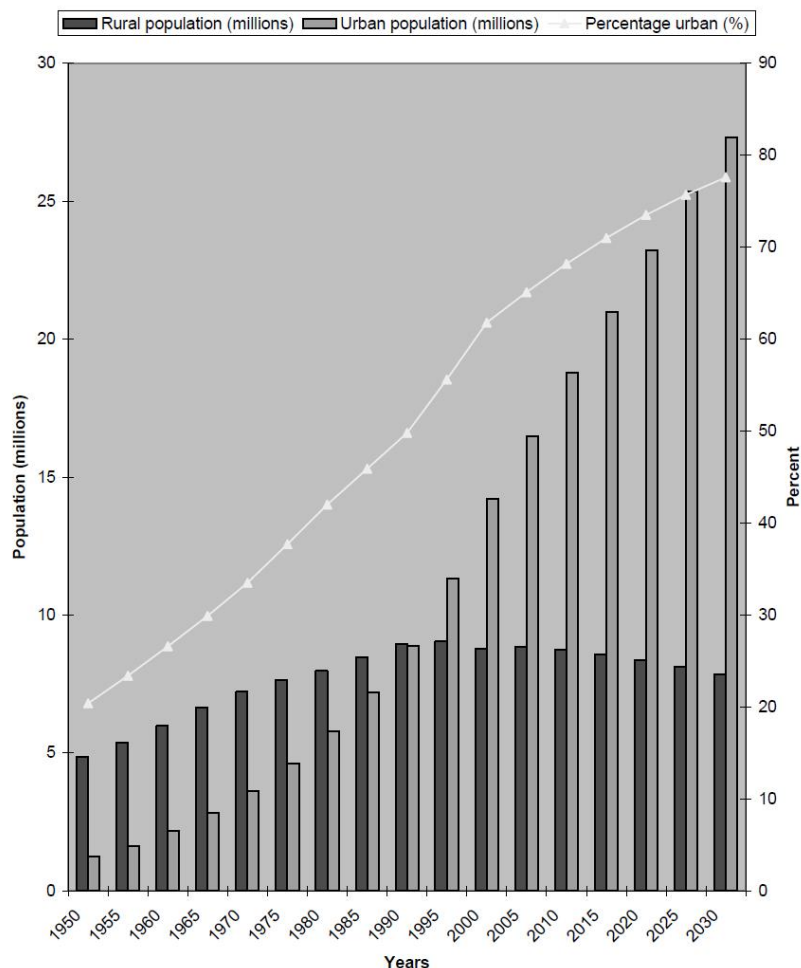


Figure 1.3 Malaysia urban-rural population, 2000-2030 (Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2002)

The increasing number of vehicle (car or automobile ownership), has become a major issue in many countries in the world. According to O'Sullivan (2007), automobile has caused three transportation problems namely, congestion, air pollution, and accidents. About 77 percent of central-city residents commute by automobile such as car, truck or van (O'Sullivan, 2007). In United States urban transportation is dominated by the private automobile and over 80 percent of all trips in American cities (beyond the house and workplace) were made by automobile (Meyer and Gomez-Ibanez, 1981). Evidence shows that in the year 2000, Kuala Lumpur has 985.7 cars and motorcycles per 1000 population. This is about 50 percent higher than the national average (Norhaslina Hassan, 2009). According to Zaly (2010), the rapid expansion of

the economy and the increase in household income has given rise to a number of car ownership. Malaysian neighbourhood reflects high dependence on cars as a major mode of transportation. Hence, efforts should be geared towards encouraging pedestrian's movements in residential planning. Source of air pollution include motor vehicles, construction and industrial activities that can be hazardous to human health. Department Of Statistics Malaysia (2015) reports that emission of pollutants to the atmosphere from the power plant and motor vehicles increased by 20.0 percent and 14.3 percent respectively as compared to 2010. Beelen *et al.* (2007) and Brunekreef and Holgate (2002) noted that motorcycles are the largest contributors of Malaysia's air pollution.

There is more consistent evidence of urban/rural differences in overweight and obesity, with consistently higher rates found amongst rural children and adults (Bruner *et al.*, 2008; Cleland *et al.*, 2010). Over the past few decades, obesity has become a major public health issue. Its prevalence has increased at a striking rate since the 1960s, when an estimated 45 percent of Americans were overweight or obese (CDC and National Centre for Health Statistics, 2012). In the study, two out of every three American adults twenty years old or older are overweight or obese (Flegal, 2010). In response to the problem, physical activity via walking has proven to reduce the risk of being overweight; of suffering from cardiovascular diseases such as high blood pressure, heart attacks, and stroke; and of developing type 2 diabetes (Dannenberg *et al.*, 2011). In Malaysia, (Ismail *et al.*, 1995; Khor *et al.*, 1999) reinstated that overweight is an increasing problem in both urban and rural dwellers as a result of people not involving in walking. Associated problem also includes, overweight and obesity among people, and particularly the older groups in Malaysia. In this regards, the focus on overweight as a national public health problem that has associated with cardiovascular diseases as the primary cause of mortality since the 1970s (Chee *et al.*, 2004). In the 1990s, this focus was incorporated into the national health agenda with the healthy lifestyle campaigns, which kicked off in 1991 and continued till present.

The concept of human development is important because it relates to the human well-being and the realization of human potential (Morvaj, 2012). Well-being, simply

portray the satisfaction of human preferences (McGillivray, 2007). Human Development Index (HDI) was introduced to measure human development and quality of life residents in various countries across the globe (Gallardo, 2009). Malaysia has always pursued a strategy of balanced regional growth resulting in an increased quality of life for communities across the nation. In this wise, overall quality of life is always measured by the United Nations Human Development Index (HDI). Invariably, it has increased from 0.80 in 2000 to 0.83 in 2007. This affirms that Malaysia has optimized its energy consumption and carbon footprint in sustainable urban development towards improving the quality of life.

Malaysia is located in the medium development section and ranked third in the HDI (Dias *et al.*, 2006). Malaysia is not an exceptional case in a country facing challenges as regards to rapid urbanization. Therefore, to address these challenges calls for a significant shift in policies and practices. These shifts are vitals towards ensuring a higher quality of life of Malaysians. The strategies include the sustainability of urban area via the upliftment of the quality of life and liveable cities. Liveable cities referred to an attractiveness of places to live. The essence of the Malaysia Plan periods hinged on: (i) Making cities compact and efficient; (ii) Mixed-use Developments; and; (iii) Creating attractive and enjoyable cities.

1.5. Research Aim

This current research seeks to develop the pedestrian satisfaction assessment framework for urban facilities accessibility evaluation in a commercial zone. This research planned to develop such Pedestrian Satisfaction Assessment Framework (PSAF) to evaluate pedestrian satisfaction, attitude, and preference in access to the facilities at the commercial zone. The PSAF as a decision support tool will aid the urban designers, urban planners and landscape architects to make more accurate decisions on urban development or redevelopment by enhancing pedestrians' active living.

1.6. Objectives of the Study

The aim of this study, targeted the under listed objectives;

Objective 1: To identify the urban facilities and its sub-items in a neighbourhood commercial zones.

Objective 2: To identify suitable urban accessibility compatible with pedestrian satisfaction, attitude, and preference in access to the facilities.

Objective 3: To identify satisfaction assessment framework for measuring pedestrian satisfaction.

Objective 4: To develop the Pedestrian Satisfaction Assessment Framework (PSAF) for urban facilities accessibility in neighbourhood commercial zones.

1.7. Scope of Study and Unit of Analysis

This study focuses residential areas as parts of the Johor urban form. This is attributed to the fact that the Johor residential usage covers 9,724.85 hectares (4.74%) of the total South Johor Economic Region (SJER) land area. The developed largest land use area within SJER for almost 15.35% of the total area or 31,461.63 hectares of land. Individuals' perceptions and experiences vary within a given neighbourhood. Hence, residents' perception and preferences toward the neighbourhood forms part of the research scope.

The unit of analysis shall comprise of the residents who have lived for more than eight years and have walking access to the commercial zones. Past studies of Kasarda and Janowitz (1974); Hay (1998); Yuksel *et al.* (2010); and Kil *et al.* (2012) have reinstated that age groups and length of stay in a setting plays a major role in

perceptual attributes, peoples' satisfaction and attachment to the study's context. The study of Mcgirr and Donegani (2014) expatiates on the differences in the expectations and attributes that long-term residents and new arrivals. The study's report established that long-term residents, mostly homeowners, adjudged the changes and express their strong satisfaction with their neighbourhood and community. The study affirmed that people living in the neighbourhood for nine or more years are considered 'long term' in the descriptive statistics and those eight years are considered as the 'gentrifiers'.

1.8. Research Methodology

The research design and the methods used in this study, as detailed explanation of the research methodology will be discussed in chapter 3. The research methodology comprised of 6 phases. Phase 1 contains the preliminary of the research study. This is to investigate the issues and causes of satisfaction and accessibility to urban facilities in compliance with new urbanism, smart growth, quality of life and sustainable urban development. Phase 2 is structured towards literature review. The literatures review includes urban facilities in commercial zone with traveller's perception in urban context. Similarly, literatures on urban development and accessibility were reviewed together with the satisfaction measurement model. Meanwhile, phase 3 relates to conducting an experts' opinion survey to validate literature findings in order to find the hierarchal list of urban facilities and sub-items in commercial neighbourhood zone. This phase detailed the development of the pedestrian satisfaction assessment framework for urban facilities accessibility: questionnaire and interview to evaluate the sustainability of various available facilities with considering pedestrian satisfaction attitude and preference in access to the facilities. Life satisfaction is assessed and the assessment framework for urban facilities has been developed conducting a pilot study and examining the validity and reliability of questionnaire. Phase 4 included the data analysis. The analysis was done through descriptive statistics (SPSS tool) and Kano model. The phase 5 relates to the study's findings in terms of perception of pedestrian about activities and accessibility. It also includes the exploration of the quality of the

neighbourhood environment and satisfaction in terms of all possible infrastructure and categories. The phase 6 presented the study's conclusion and recommendations. This progression is shown in Figure 1.4 and Figure 1.5.

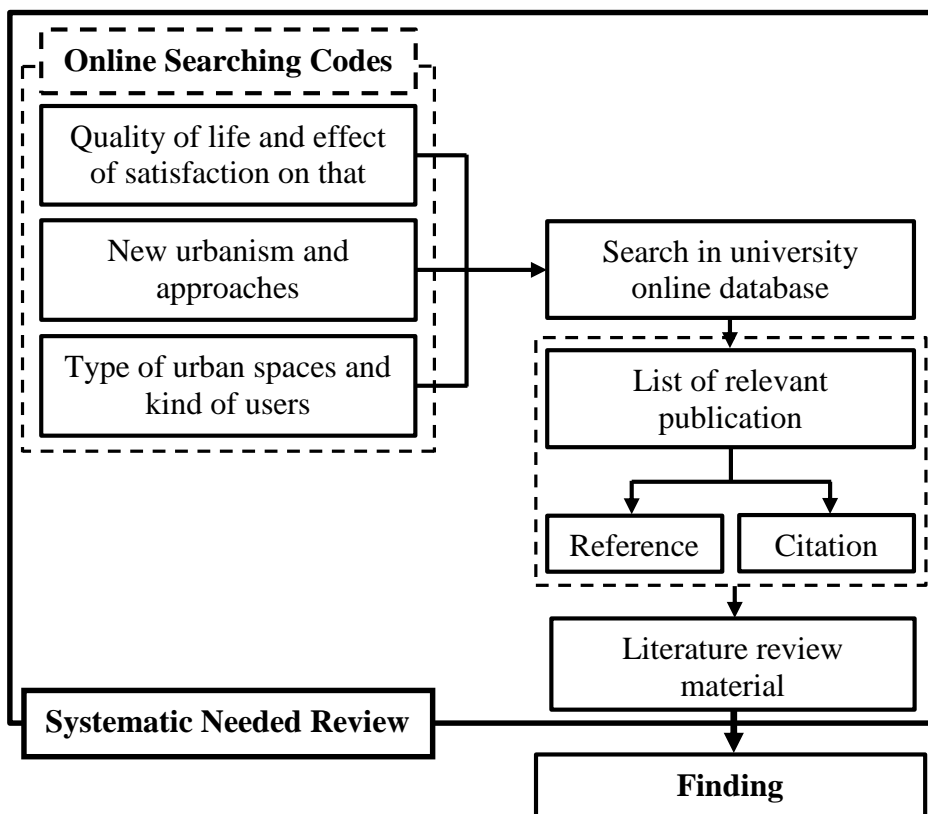


Figure 1.4 Flow of systematic review

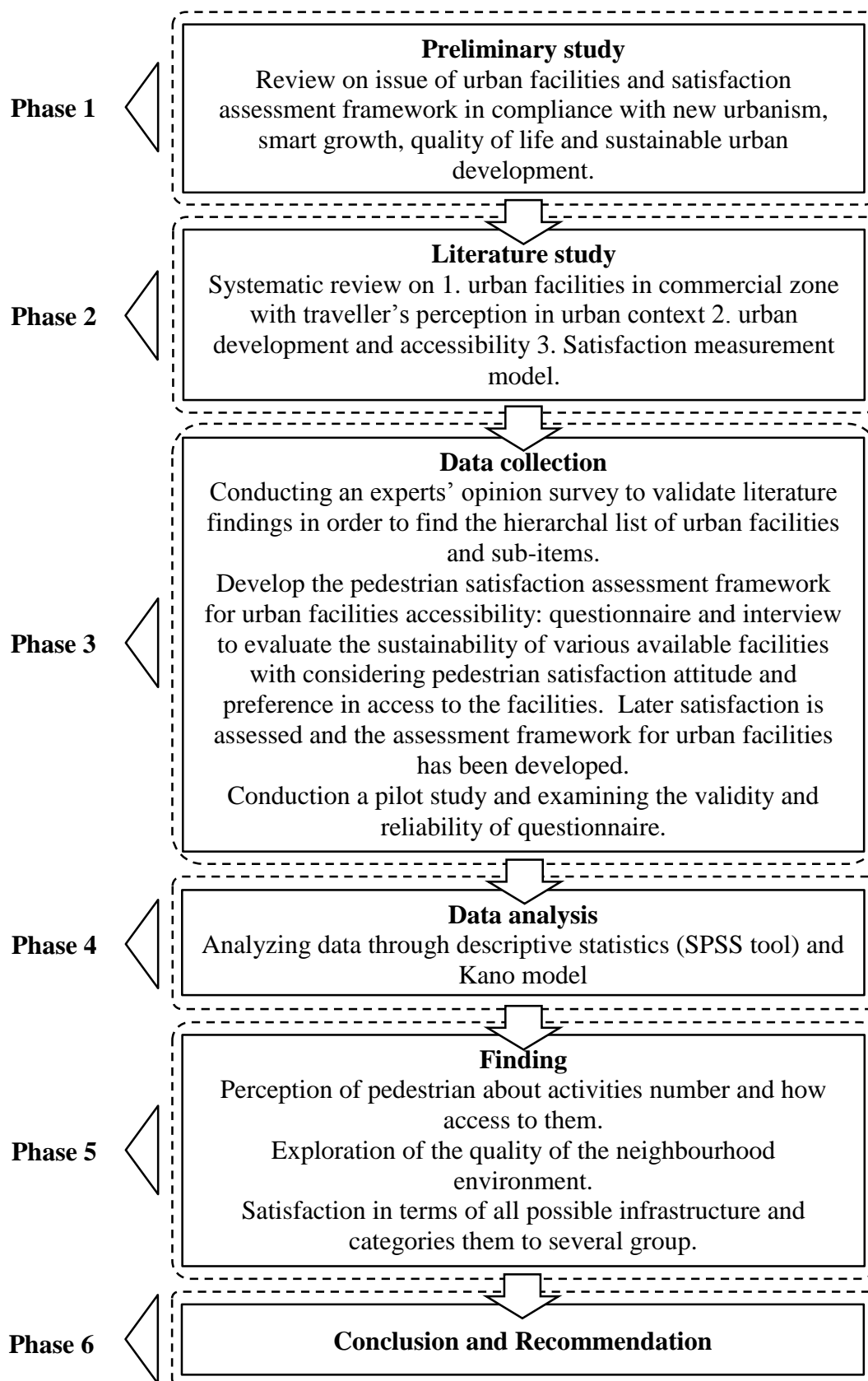


Figure 1.5 Research methodology flow diagram

1.8.1. Preliminary Study (Phase 1)

The preliminary study was conducted in form of a systematic review on issues of urban facilities and satisfaction assessment framework. It comprises of various steps conducted in academic experiences, articles, and approaches of study, activities, and projects, in assessment methods. Others include satisfaction, urban development, pedestrians' behaviour and accessibility in urban spaces. This step was undertaken by examining each of the methods, and the best strategy to further the research and selection of tool set like Kano model.

1.8.2. Literature Study (Phase 2)

The review of the literature was conducted based on the systematic review. First, studies on urban facilities in a commercial zone with traveller's perception in urban context were reviewed. This includes codes such as commercial zone principles, mobility principles, facilities design, available urban facility, neighbourhood design, urban facilities standards, urban facilities issues, and urban facilities variable. Secondly, review analysis on urban development and accessibility compatible with capturing pedestrian shaping traveller's perception was initiated. It includes codes: accessibility, accessibility principals, accessibility measurable parameters, accessibility and green urban development, accessibility, and walkable urban design, and accessibility in commercial zones. Thirdly, identification on several satisfaction measurement models to select suitable satisfaction framework to be implemented was achieved.

1.8.3. Expert Input in Collection and Analysis (Phase 3)

This step was conducted to validate the literature reviews' findings on urban facilities, items, principles in an urban context, and commercial zone. The data

collected using field-expert Delphi structured close group discussions was established. Four sessions of close group discussions and 15 experts' review were involved. The participating experts that were selected had experience in urban facilities issues and implementation across different disciplines. Disciplines such as urban design and planning, architecture and public health. Also, development of literature review findings on Assessment Model (Framework) compatible with Urban Development, the analysis in urban context was included. Field expert Delphi structured close group discussion was carried out in two sessions. It included fifteen structured interviews with experts who have experience in using and implementing urban neighbourhood frameworks and models.

1.8.4. Framework Validation, Findings, Conclusion and Recommendations (Phase 4, 5 and 6)

This phase 4 was conducted in a form of the pilot study to establish the pedestrian satisfaction assessment framework in the neighbourhood. The pilot study was conducted through the engagement of three graduate students who are masters' students in architecture. It includes the data analysis through descriptive statistics (SPSS tool) and Kano model. Phase 5, and 6 presented the findings in terms of the perception of pedestrian about activities and accessibility as well as the quality of the neighbourhood environment were incorporated. Conclusion and recommendation were also summarized.

1.9. Significance of Study

It is becoming increasingly difficult to ignore the significance of pedestrian satisfaction and urban facilities accessibility. Therefore, this study's framework will be useful for the urban designers, landscape architect, and urban planners for predicting future sustainable urban development in commercial neighbourhood zone.

This significance is supported by Lorenz and Lutzkendorf (2008) while reinstating the established procedures for sustainable assessment development. According to the International Standardization Organization (ISO) development of assessment procedure involves: (i) substantiate principles of sustainability, (ii) establishment of the variables involved in sustainability, and (iii) harmonization of the measurements targeting the sustainability of the satisfaction.

The current research will be useful in establishing framework on policies that could improve the quality of the pedestrian environment to suit pedestrian movement and safety. The pedestrian environments help explain pedestrian environmental satisfaction in planning and public health (Amerigo, 2002; Aragonés *et al.*, 2002; Clifton *et al.*, 2007). However, the physical attributes of the environment are filtered through emotional perceptions that affect satisfaction (Wang *et al.*, 2012). In connection to the methodology adopted in this study, there has not been an empirical study on developing a pedestrian satisfaction assessment framework based on Kano model within the micro-scale urban area. This remains the target significance in this study towards developing a pedestrian satisfaction of urban facilities accessibilities framework.

Succinctly, the significance of this research manifests in pedestrian satisfaction and its potential influence on urban facilities accessibility decisions. This study established the relationships between pedestrian satisfaction, and a variety of built environment factors, in order to gain insight into urban design strategies that can improve pedestrian satisfaction. The various aspects of pedestrian satisfaction, and the diverse urban facility accessibility features are relevant to planners to adopt in diverse design approaches that will produce more satisfactory pedestrian environments.

1.10. Thesis Outlines

This research work is basically arranged to address the four objectives. Thus, it comprises the six chapters as illustrated in Figure 1.6. Summary of each of the chapters are discussed below:

Chapter 1: This is the introduction chapter that introduces the research keywords such as pedestrian satisfaction, an assessment framework, urban facilities, and commercial neighbourhood. It equally, presents the first phase of research methodology, aim and objectives, scope, and significant of study.

Chapter 2: This chapter critically reviews the related literatures in relation to each objective. The literatures cover review of quality and dimensions of life, concept and determinants of life satisfaction, urbanism concept and principle. Other literatures include urban accessibility, walkability, and infrastructures, urban development and sustainability, users' satisfaction assessment model, Kano model and assessment, and concept of commercial neighbourhood zone.

Chapter 3: This chapter presents the research methodology and study area. The chapter discusses the grounded theories related to the study. Discussions on method and techniques undertaken to conduct the research data collection are presented. Other presentation includes, research paradigm, measurement of variables, sampling and questionnaires distribution and research analysis.

Chapter 4: This chapter succinctly discusses the research data collection methods and the procedural analysis of generated data for all the phases of the research. The statistical justification for the population used for the research analysis vis-a-vis the study area population was discussed.

Chapter 5: This chapter presents the research findings and detailed discussions. The strength and weakness of each objective, including the final development framework, were highlights. Meanwhile the study's limitation were equally presented.

Chapter 6: Conclusion and Recommendation, as the final chapter records conclusion to each objective. This chapter also highlights the limitations faced in this research, recommendation and possible future studies.

References: It shows the lists of cited literatures in the thesis.

Appendices: It includes the relevant supporting documents that widen the understanding of the research study.

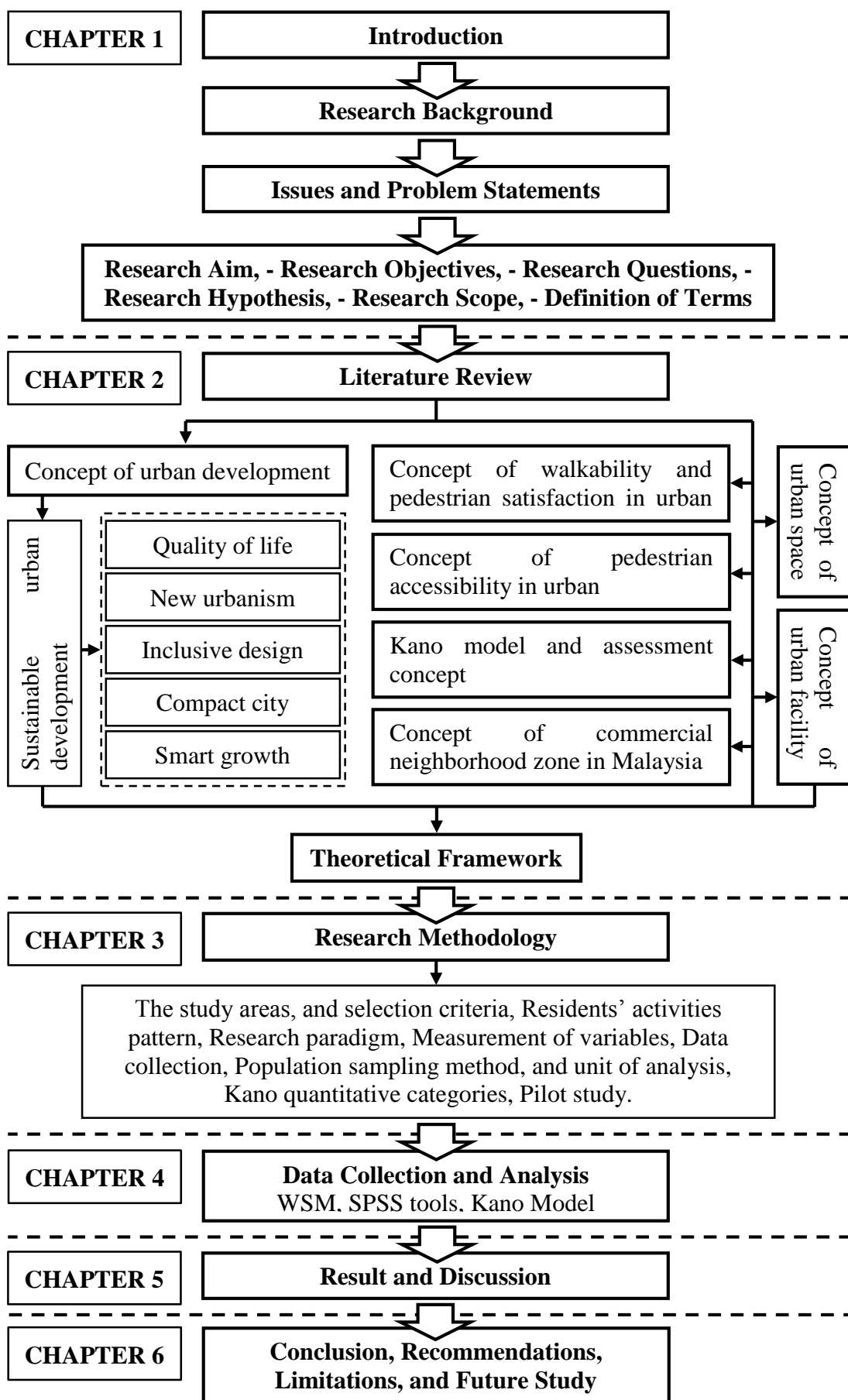


Figure 1.6 Thesis structure outline

REFERENCES

- Abdul Malek, N., Mariapan, M., & Ab Rahman, N. I. A. (2014). Community Participation in Quality Assessment for Green Open Spaces in Malaysia. *Asia Pacific International Conference on Environment-Behaviour Studies Sirius Business Park Berlin-yard field*. 24-26 February. Berlin.
- Abeyratna, S. R. (2012). *An Affective Interface for Conveying Student Feedback*. Master Degree (MSc), University of Liverpool, UK.
- Addy, C. L., Wilson, D. K., Kirtland, K. A., Ainsworth, B. E., Sharpe, P., & Kimsey, D. (2004). Associations of Perceived Social and Physical Environmental Supports with Physical Activity and Walking Behaviour. *American Journal of Public Health*. 94(3), 440-443.
- Adler, M., & Ziglio, E. (Eds.) (1996). *Gazing Into the Oracle: The Delphi Method and Its Application to Social Policy and Public Health*. London: Jessica Kingsley.
- Altman, I., & Werner, C. M. (Eds.) (1985). *Home Environments: Human Behaviour and the Environment*. New York: Plenum Press.
- American Society of Civil Engineers (ASCE) (1986). *Urban Planning Guide*, New York: American Society of Civil Engineers.
- Amerigo, M., & Aragonés, J. I. (1997). A Theoretical and Methodological Approach to the Study of Residential Satisfaction. *Journal of Environmental Psychology*. 17(1), 47-57.
- Amistad, F. T. (2010). Assessment of the Pedestrianization Policy in Vigan City: UNESCO World Heritage Site. *Journal of Urban Planning and Development*. 136 (1), 11-22.
- Appeaning Addo, I. (2016). Assessing Residential Satisfaction among Low Income Households in Multi-Habited Dwellings in Selected Low Income Communities in Accra. *Urban Studies*. 53(4), 631-650.
- Appleyard, D. (1981). *Livable Streets*. Berkeley, CA: University of California Press.

- Aqbal Hafeez, A., Zulhaidi, M. J., Mohd Hafzi, M. I., Khairil Anwar, A. K., & Wong, S. V. (2010). Pedestrian Casualties in Road Accidents-Malaysia Perspective. *MIROS Road Safety Conference*. Kuala Lumpur, 280-289.
- Aragones, J. I., Francescato, G., & Garling, T. (Eds.) (2002). *Residential Environments: Choice Satisfaction and Behaviour*. Westport, Conn: Bergin and Garvey.
- Arango, J., & Montufar, M. (2008). Walking Speed of Older Pedestrians Who Use Canes or Walkers for Mobility. *Transportation Research Record*, 2073, 79-85.
- Aravind, R., Lakshmi, S., & Gunasekaran, K. (2015). Study on Pedestrian Behaviour for a Cross Walk Facility. *International Journal of Civil, Mechanical and Production Engineering*. 1(1), 14-17.
- Arni, D., Kimberly, T., & Donna Jans, U. (2013). *A Study of the Interaction between Life Satisfaction and Health: a Simultaneous Approach*. De La Salle University, Manila.
- Ary, D., Jacobs, L. C., Sorensen Irvine, C. K., & Walker, D. A. (2014). *Introduction to Research in Education* (9th ed). London: Wadsworth.
- Austroroads (1995). *Guide to traffic engineering practice: Part 13, Pedestrians*. Sydney, Australia.
- Avermaete, T. (2005). *Another Modern: The Post-war architecture and urbanism of Candilis-Josic Woods*. Rotterdam: NAI Publishers.
- Avsaroglu, S., Deniz, M. E., & Kahraman, A. (2005). The Investigation of Life Satisfaction, Job Satisfaction and Professional Burnout Levels in Technical Teachers. *Selcuk University the Journal of Institute of Social Sciences*. 14, 115-129.
- Axelson, P. W., Chesney, D. A., Galvan, D. V., Kirschbaum, J. B., Longmuir, P. E., Lyons, C., & Wong, K. M. (1999). *Designing Sidewalks and Trails for Access Part 1 of 2: Review of Existing Guidelines and Practices*. Washington, DC: U.S. Department of Transportation, Federal Highway Administration.
- Axhausen, K. W. (2007). Activity Spaces, Biographies, Social Networks and their Welfare Gains and Externalities: Some Hypotheses and Empirical Results. *Mobilities*. 2(1), 15-36.

- Babey, S. H, Brown, E. R, & Hastert, T. A. (2005). *Access to Safe Parks Helps Increase Physical Activity among Teenagers*. UCLA Centre for Health Policy Research. Los Angeles.
- Baradaran, S., & Ramjerdi, F. (2001). Performance of Accessibility Measures in Europe. *Journal of transportation and statics*. 4(2-3), 31-48.
- Barnett, J. (2011). A Short Guide to 60 of the Newest Urbanisms. *American Planning Association*. 77(4), 19-21.
- Barton, H., Grant, M., & Guise, R. (2003). *Shaping Neighborhoods: A Guide for Health, Sustainability and Vitality*. New York, US: Spon Press.
- Bassett, D., Pucher, J., Buehler, R., Thompson, D. L., & Crouter, S. E. (2008). Walking, Cycling, and Obesity Rates in Europe, North America, and Australia. *Journal of Physical Activity and Health*. 5(6), 795-814.
- Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J., & Martin, B. W. (2012). Correlates of Physical Activity: Why Are Some People Physically Active and Others Not? *The Lancet*. 380(9838), 258-271.
- Beck, H. (2009). Linking the Quality of Public Spaces to Quality of Life. *Journal of Public Management and Development*. 2(3), 240-248.
- Beelen, R., Hoek, G., Fischer, P., Van den Brandt, P. A., & Brunekreef, B. (2007). Estimated Long-Term Outdoor Air Pollution Concentrations in a Cohort Study. *Atmospheric Environment*. 14(7), 1343-1358.
- Ben-Akiva, M., & Lerman, S. R. (1985). *Discrete Choice Analyses: Theory and Application to Travel Demand*. Cambridge, Mass: MIT Press.
- Berardi, U. (2012). Sustainability Assessment in the Construction Sector: Rating Systems and Rated Buildings. *Sustainable Development*. 20(6), 411-424.
- Berardi, U. (2013). Sustainability Assessments of Communities through Rating Systems. *Environment, Development and Sustainability*. 15(6), 1573-1591.
- Berger, C., Blauth, R., Boger, D., Bolster, C., Burchill, G., DuMouchel, W., Pouliot, F., Richter, R., Rubinoff, A., Shen, D., Timko, M., & Walden, D. (1993). A Special Issue on Kano's Methods for Understanding Customer-Defined Quality. *Centre for Quality of Management Journal*. 2(4), 1-37.
- Berkowitz, B., & Holt, C. M. (Eds.) (2012). *Work Group for Community Health and Development*. University of Kansas, Kansas.

- Bertaud, A. (2004). The Spatial Organization of Cities: Deliberate Outcome or Unforeseen Consequence? *Institute of Urban and Regional Development*, University of California at Berkeley.
- Bertolini, L., Le Clercq, F., & Kapoen, L. L. (2005). Sustainable Accessibility: A Conceptual Framework to Integrate Transport and Land Use Plan-Making. Two Test Applications in the Netherlands and a Reflection on the Way Forward. *Transport Policy*. 12(3), 207-220.
- Bhat, C., Handy, S., Kockelman, K., Mahmassani, H., Chen, O., Srour, I., & Weston, L. (2001). Assessment of Accessibility Measures. Department of Transportation. Centre for Transportation Research, University of Texas, Austin (TX), USA.
- Bhat, C., Handy, S., Kockelman, K., Mahmassani, H., Chen, Q., Srour, I., & Weston, L. (2000). *Development of an Urban Accessibility Index: Literature Review*. Centre for Transportation Research, University of Texas, Austin (TX), USA.
- Black, J., & Conroy, M. (1977). Accessibility Measures and the Social Evaluation of Urban Structure. *Environment and Planning A*. 9(9), 1013-1031.
- Boarnet, M. G., Anderson, C. L., Day, K., Mcillan, T., & Alfonzo, M. (2005). Evaluation of the California Safe Routes to School Legislation: Urban Form Changes and Children's Active transportation to School. *American Journal of Preventive Medicine*. 28(2), 134-140.
- Booth, M. L., Owen, N., Bauman, A., Clavisi, O., & Leslie, E. (2000). Social-Cognitive and Perceived Environment Influences Associated with Physical Activity in Older Australians. *Preventive Medicine*. 31(1), 15-22.
- Brown, B. B., Werner, C. M., Amburgey, J. W., & Szalay, C. (2007). Walkable Route Perceptions and Physical Features: Converging Evidence for en Route Walking Experiences. *Environment and Behaviour*. 39(1), 34-61.
- Brownson, R. C., Housemann, R. A., Brown, D. R., Jackson-Thompson, J., King, A. C., Malone, B. R., & Sallis, J. F. (2000). Promoting Physical Activity in Rural Communities: Walking Trail Access, Use, and Effects. *American Journal of Preventive Medicine*. 18(3), 235-241.
- Brunekreef, B., & Holgate, S. T. (2002). Air Pollution and Health. *The Lancet*. 360(9341), 1233-1242.

- Bruner, M. W., Lawson, J., Pickett, W., Boyce, W., & Janssen, I. (2008). Rural Canadian Adolescents are more likely to be Obese Compared with Urban Adolescents. *International Journal of Pediatric Obesity*. 3(4), 205-211.
- Brunn, S. D., Hays-Mitchell, M., & Zeigler, D. J. (2012). *Cities of the World: Cities of the World: World Regional Urban Development*. (5th ed.) Lanham, Md.: Rowman & Littlefield.
- Brynn, R. (2003). Easy Access- a City for All. *International Conference: Presentation of EuCAN by Maarten van Ditmarsch, Kristiansand*. 24-26 September. Kristiansand, Norway, 1-13.
- Burton, E., & Mitchell, L. (2006). *Inclusive Urban Design: Streets for Life*. Oxford, UK: Elsevier Ltd.
- Business Monitor International (2007). Key sectors: retail, Malaysia, 35-40.
- Buttery, E. A., & Buttery, E. M. (1991). Design of a Marketing Information System: Useful Paradigms. *European Journal of Marketing*. 25(1), 26-39.
- Cao, X., Mokhtarian, P. L., & Handy, S. L. (2009). Examining the Impacts of Residential Self-Selection on Travel Behaviour: A Focus on Empirical Findings. *Transport Reviews*. 29(3), 359-395.
- Carruthers, J. I., Selma, L., Knaap, G. J., & Renner, R. N. (2010). Coming Undone: A Spatial Hazard Analysis of Urban Form in American Metropolitan Areas. *Regional Science*. 89(1), 65-88.
- Carruthers, J. I., & Mundy, B. (Eds) (2006). *Environmental Valuation: Interregional and Intraregional Perspective*. Aldershot, England: Ashgate.
- Carson, D. H. (Ed.) (1974). Man-Environment Interaction: Evaluations and Applications. *Proceedings of the 5th Environmental Design Research association conference*. Washington, DC: Environmental Design Research Association.
- Cartlidge, T. (1992). *A Model for Managing Visitor Experience at Historic Lighthouses*. Unpublished paper, Department of Landscape Architecture, University of Minnesota.
- CDC, & National Centre for Health Statistics (2012). *Prevalence of Overweight, Obesity, and Extreme Obesity among Adults, United States*.

- Chad, K. E., Reeder, B. A., Harrison, E. L., Ashworth, N. L., Sheppard, S. M., Schultz, S. L., Bruner, B. G., Fisher, K. L., & Lawson, J. A. (2005). Profile of Physical Activity Levels in Community-Dwelling Older Adults. *Medicine and Science in Sports and Exercise*. 37(10), 1774-1784.
- Chakavarti, I. M., Laha, R. G., & Roy, G. (1967). *Handbook of Methods of Applied Statistics*. New York: John Wiley & Sons.
- Chee, H. L., Kandiah, M., Khalid, M., Shamsuddin, K., Jamaluddin, J., Nordin, N. A., Shuib, R., & Osman, I. (2004). Body Mass Index and Factors Related to Overweight among Women Workers in Electronic Factories in Peninsular Malaysia. *Asia Pacific Journal of Clinical Nutrition*. 13(3), 248-254.
- Chen, Y. H., Sha, D. Y. & Yang, C. H. (2005). Attractive Quality Creation via the Kano-CKM Model. *Journal of Quality*. 12(4), 285-298.
- Cheng, L., Yarlagadda, R., Fookes, C., & Yarlagadda, P. K. (2014). A Review of Pedestrian Group Dynamics and Methodologies in Modelling Pedestrian Group Behaviours. *World Journal of Mechanical Engineering*. 1(1), 002-013.
- Chiesura, A. (2004). The Role of Urban Parks for the Sustainable City. *Landscape and Urban Planning*. 68(1), 129-138.
- Chikara, T., & Takahashi, T. (1997). Research of Measuring the Customer Satisfaction for Information Systems. *Computers and Industrial Engineering*. 33(3), 639-642.
- Christensen, P. H. (2011). *Assessing Assessment: Toward a More Holistic Rating System for Sustainability Performance*. European Real Estate Society (ERES).
- Clark, A. E., Kristensen, N., & Westergard-Nielsen, N. (2009). Economic Satisfaction and Income Rank in Small Neighbourhoods. *Journal of the European Economic Association*. 7(2-3), 519-527.
- Clarke, P. J., Marshall, V. W., Ryff, C. D., & Rosenthal, C. J. (2000). Well-Being in Canadian Seniors: Findings from the Canadian Study of Health and Aging. *Canadian Journal on Aging*. 19(2), 139-159.
- Clayton, M. J. (1997). Delphi: A Technique to Harness Expert Opinion for Critical Decision-Making Tasks in Education. *Educational Psychology*. 17(4), 373-384.

- Cleland, V., Hume, C., Crawford, D., Timperio, A., Hesketh, K., Baur, L., Welch, N., Salmon, J., & Ball, K. (2010). Urban-Rural Comparison of Weight Status among Women and Children Living in Socioeconomically Disadvantaged Neighbourhoods. *Medical journal of Australia*. 192(3), 137-140.
- Cleland, V. J., Timperio, A., & Crawford, D. (2008). Are Perceptions of the Physical and Social Environment Associated with Mothers' Walking for Leisure and for Transport? A Longitudinal Study. *Preventive Medicine*. 47(2), 188-193.
- Clifton, K. J., Livi Smith, A. D., & Rodriguez, D. (2007). The Development and Testing of an Audit for the Pedestrian Environment. *Landscape and Urban Planning*. 80(1-2), 95-110.
- CNU (1996). Charter for the New Urbanism, *fourth Congress for the New Urbanism (CNU IV)*, Charleston, South Carolina.
- Coen, S. E., & Ross, N. A. (2006). Exploring the Material Basis for Health: Characteristics of Parks in Montreal Neighbourhoods with Contrasting Health Outcomes. *Health and Place*. 12(4), 361-371.
- Cohen, L. (1995). *Quality Function Development: How to Make QFD Work for You*. Boston, MA: Addison-Wesley.
- Cohen, L., Manion, L., & Morrison, K. (2017). *Research Methods in Education*. (8th ed.) London, New York: Routledge.
- Congress for the New Urbanism & U.S. Department of Housing and Urban Development (2000). *Principles for Inner-City Neighbourhood Design: Creating Communities of Opportunity*. Washington, DC: U.S. Department of Housing and Urban Development.
- Conklin, M., Powaga, K. & Lipovetsky, S. (2004). Customer Satisfaction Analysis: Identification of Key Drivers. *European Journal of Operational Research*. 154(3), 819-827.
- Conover, W. J. (1999). *Practical Nonparametric Statistics*. (3rd ed.) New York: John Wiley & Sons.
- Cook, C. C. (1988). Components of Neighbourhood Satisfaction: Responses from Urban and Suburban Single-Parent Women. *Environment and Behaviour*. 20(2), 115-149.

- COST 358 Pedestrians' Quality Needs (2010). Documentation- Measuring Walking, WALK21, Cheltenham, UK; available at <https://fussverkehr.ch/wordpress/wp-content/uploads/2016/08/PQN-Final-Report-short.pdf>.
- Cozby, P. C. (2007). *Methods in Behavioural Research* (9th ed.). London: Glencoe/Mcgraw-Hill.
- Craiks, K. H., & Zube, E. H. (Eds.) (1976). *Perceiving Environmental Quality: Research and Applications*. New York: Plenum Press.
- Crankshaw, N. (2009). *Creating Vibrant Public Spaces: Streetscape Design in Commercial and Historic Districts*. Washington, DC: Island Press.
- Creswell, J. W. (2015). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (5th ed.). Boston, MA: Pearson.
- Creswell, J. W. (2017). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4th ed.) Thousand Oaks, CA: SAGE Publications.
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). Thousand Oaks, CA: SAGE Publications.
- Cubukcu, E. (2013). Walking for Sustainable Living. *Procedia-Social and Behavioural Sciences*. 85, 33-42.
- Curtis, C., & Scheurer, J. (2010). Planning for Sustainable Accessibility: Developing Tools to Aid Discussion and Decision Making. *Progress in Planning*. 74(2), 53-106.
- Daneshpour, A. & Shakibamanesh, A. (2011). Compact City; Dose It Create an Obligatory Context for Urban Sustainability? *International Journal of Architectural Engineering and Urban Planning*. 21(2), 110-118.
- Daniels, P. W., & Warnes, A. M. (1980). *Movement in Cities: Spatial Perspectives on Urban Transport and Travel*. London: Methuen.
- Dannenberg, A. L., Frumkin, H., & Jackson, R. J. (Eds.) (2011). *Making Healthy Places: Designing and Building for Health, Well-being, and Sustainability*. Washington, DC: Island Press.
- Darker, C. D., Larkin, M., & French, D. P. (2007). An Exploration of Walking Behaviour-An Interpretative Phenomenological Approach. *Social Science and Medicine*. 65(10), 2172-2183.

- De Bourdeaudhuij, I., Sallis, J. F., & Saelens, B. E. (2003). Environmental Correlates of Physical Activity in a Sample of Belgian Adults. *American Journal of Health Promotion*. 18(1), 83-92.
- De Cambra, P. J. M. (2012). *Pedestrian Accessibility and Attractiveness Indicators for Walkability Assessment*. Master Degree (MSc), Instituto Superior Técnico (IST), Portugal.
- De Jong, K., Albin, M., Skarback, E., Grahn, P., & Bjork, J. (2012). Perceived Green Qualities were associated with Neighbourhood Satisfaction, Physical Activity, and General Health: Results from a Cross-Sectional Study in Suburban and Rural Scania, southern Sweden. *Health and Place*. 18(6), 1374-1380.
- De Vaus, D. A. (2014). *Surveys in Social Research (Social Research Today)*. (6th ed.) Australia: Allen & Unwin.
- Denscombe, M. (2014). *The Good Research Guide: For Small-Scale Social Research Projects: For Small-Scale Social Research Projects*. (5th ed.) London: McGraw-Hill Education.
- Department of Statistics (2010). Population, Department of Statistics, Malaysia.
- Department Of Statistics Malaysia (2015). *Compendium of Environmental Statistics Malaysia*.
- Department of the Environment and Transport (1992). *Design Bulletin 32: Residential Roads and Footpaths: Layout considerations*, London: HMSO.
- Derogatis, L. R., Abeloff, M. D., & Melisaratos, N. (1979). Psychological Coping Mechanisms and Survival Time in Metastatic Breast Cancer. *Journal of the American Medical Association*. 242(14), 1504-1508.
- Dias, R. A., Mattos, C. R., & Balestieri, J. A. P. (2006). The Limits of Human Development and the Use of Energy and Natural Resources. *Energy Policy*. 34(9), 1026-1031.
- Diener, E. & Suh, E. (1997). Measuring Quality of Life: Economic, Social, and Subjective Indicators. *Social Indicators Research*. 40(1-2), 189-216.
- Diener, E. (1984). Subjective Well-Being. *Psychological Bulletin*. 95(3), 542-575.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of personality Assessment*. 49(1), 71-75.
- Dikmen, A. A. (1995). Relationship between Work Satisfaction and Life Satisfaction. *Journal of Ankara University Faculty of Political Sciences*. 50(3-4), 115-140.

- Dillman, D. A. (1978). *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley & Sons.
- Dines, N., Cattell, V., Gesler, W., & Curtis, S. (2006). *Public Spaces, Social Relations and Wellbeing in East London*. London: The Policy Press.
- Dixon, L. B. (1996). Bicycle and pedestrian level-of-service performance measures and standards for congestion management systems. *Transportation Research Record*. 1538, 1-9.
- Duncan, M., & Mummery, K. (2005). Psychosocial and Environmental Factors Associated with Physical Activity Among City Dwellers in Regional Queensland. *Preventive Medicine*. 40(4), 363-372.
- Dupuy, G. (2008). *Urban Networks-Network Urbanism*. (2nd ed.) Amsterdam: Techne Press
- Dutton, J. A. (2001). *New American Urbanism, Reforming Suburban Metropolis*. Milan: Skira.
- Eamus, D., Macinnis-Ng, C. M. O., Hose, G. C., Zeppel, M. J. B., Taylor, D. T., & Murray, B. R. (2005). Turner Review No. 9 Ecosystem services: An Ecophysiological Examination. *Australian Journal of Botany*. 53(1), 1-19.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. (2002). *Management Research: An Introduction*. (2nd ed.) London: SAGE Publications.
- Edwards, P., & Tsouros, A. D. (2006). *Promoting Physical Activity and Active Living in Urban Environments: The Role of Local Governments*. Copenhagen, Denmark: WHO Regional Office for Europe.
- Ek, F. I. (2012). *Mass-Housing Consensuses and their Effects on Design Organizations in Terms of Quality*. PhD Thesis. Izmir Institute of Technology, Izmir.
- El-Geneidy, A. M., & Levinson, D. M. (2006). *Access to Destinations: Development of Accessibility Measures*. Minnesota Department of Transportation. Department of Civil Engineering, University of Minnesota, Minneapolis (MN), Twin Cities.
- Ellis, C. D., Sang-Woo Lee, S. W., & Kweon, B. S. (2006). Retail Land Use, Neighbourhood Satisfactions and the Urban Forest: An Investigation into the Moderating and Mediating Effects of Trees and Shrubs. *Landscape and Urban Planning*. 74(1), 70-78.

- Enosh, N., Leslau, A., & Shacham, J. (1984). Residential Quality Assessment: A Conceptual Model and Empirical Test. *Social Indicators Research*. 14(4), 453-476.
- Envall, P. (2007). *Accessibility Planning: a Chimera?* PhD Thesis, University of Leeds Institute for Transport Studies.
- Eren, Y. (2004). *Exploring the Potential of Mat-building for the Creation of Universally Designed Environments*. Dissertation, Middle East Technical University.
- Erto, P., & Vanacore, A. (2002). A Probabilistic Approach to Measure Hotel Service Quality. *Total Quality Management & Business Excellence*. 13(2), 165-174.
- Ettema, D., Garling, T., Eriksson, L., Friman, M., Olsson, L. E., & Fujii, S. (2011). Satisfaction with Travel and Subjective Well-Being: Development and Test of a Measurement Tool. *Transportation Research Part F: Traffic Psychology and Behavior*. 14(3), 167-175.
- European Conference of Ministers of Transport (1996). Sustainable Transport in Central and Eastern European Cities. *Proceedings of the Workshop on Transport and Environment in Central and Eastern European Cities*. Bucharest, Romania.
- Evans-Cowley, J. (2006). Sidewalk Planning and Policies in Small Cities. *Journal of Urban Planning and Development*. 132(2), 71-75.
- Ewing, R., & Cervero, R. (2010). Travel and the Built Environment. *Journal of the American Planning Association*. 76(3), 1-30.
- Farthing, S. M. (Ed.) (1997). *Evaluating Local Environmental Policy*. Aldershot: Avebury.
- Fenton, R. (1996). Performance Assessment System Development. *Alaska Educational Research Journal*. 2(1), 13-22.
- Flegal, K. M, Carroll, M. D, Ogden, C. L, & Curtin, L. R. (2010). Prevalence and Trends in Obesity among US Adults, 1999-2008. *Journal of the American Medical Association*. 303(3), 235-341.
- Forward, S. (1998). *Behavioural Factors Affecting Modal Choice*. Sweden: National Road and Transport Research Institute.

- Foster, C., Hillsdon, M., & Thorogood, M. (2004). Environmental Perceptions and Walking in English Adults. *Journal of Epidemiology and Community Health*. 58(11), 924-928.
- Francescato, G., Weidemann, E. S., Anderson, J., & Chenoweth, R. (1979). *Residents' Satisfaction in HUD-Assisted Housing: Design and Management Factors*. Washington, DC: U.S. Department of Housing and Urban Development.
- Frank, L. D. (2000). Land Use and Transportation Interaction: Implications on Public Health and Quality of Life. *Journal of Planning Education and Research*. 20(1), 6-22.
- Frank, L. D., & Engelke, P. O. (2001). The Built Environment and Human Activity Patterns: Exploring the Impacts of Urban Form on Public Health. *Journal of Planning Literature*. 16(2), 202-218.
- Frank, L. D., & Engelke, P. O. (2001). The Built Environment and Human Activity Patterns: Exploring the Impacts of Urban Form on Public Health. *Journal of Planning Literature*. 16(2), 202-218.
- Frank, L., & Pivo, G. (1994). Impacts of Mixed Use and Density on Utilization of Three Modes of Travel: Single-Occupant Vehicle, Transit, and Walking. *Transportation Research Record*. 1466, 44-52.
- Frey, B. S., & Stutzer, A. (2010). *Happiness and Economics: How the Economy and Institutions Affect Human Well-Being*. United Kingdom: Princeton University Press.
- Friman, M., Edvardsson, B., & Garling, T. (2001). Frequency of Negative Critical Incidents and Satisfaction with Public Transport Services. I. *Journal of Retailing and Consumer Services*. 8(2), 295-104.
- Gallardo, G. (2009). *The Human Development Index as an Effort to Measure Well-being in Honduras*. Paper presented at the 3rd OECD World Forum on "Statistics, Knowledge and Policy: Charting Progress, Building Visions, Improving Life. 27-30 October. Busan, Korea.
- Gehl, J. (2011). *Life between Buildings: Using Public Space*. (6th ed.) Washington, DC: Island Press.
- Geurs, K. T. (2006). *Accessibility, Land Use and Transport. Accessibility Evaluation of Land-Use and Transport Developments and Policy Strategies*. Utrecht University.

- Geurs, K. T., & Ritsema Van Eck, J. R. (2001). *Accessibility Measures: Review and Applications. Evaluation of Accessibility Impacts of Land-Use Transportation Scenarios, and Related Social and Economic Impact*. National Institute for Public Health and the Environment, Bilthoven, RIVM report.
- Geurs, K. T., & Ritsema Van Eck, J. R. (2003). Evaluation of Accessibility Impacts of Land-Use Scenarios: The Implications of Job Competition, Land-Use, and Infrastructure Developments for the Netherlands. *Environment and Planning B: Urban Analytics and City Science*. 30(1), 69-87.
- Geurs, K. T., & Van Wee, B. (2004). Accessibility Evaluation of Land-Use and Transport Strategies: Review and Research Directions. *Journal of Transport Geography*. 12(2), 127-140.
- Geurs, K. T., Zondag, B., Gerard De Jong, G., & De Bok, M. (2010). Accessibility Appraisal of Land-Use/Transport Policy Strategies: More than Just Adding Up Travel-Time Savings. *Transportation Research Part D*. 15(7), 382-393.
- Gifford, R. (2014). *Environmental Psychology Principles and Practice*. (5th ed.) Colville, WA: Optimal Books.
- Girouard, M. (1985). *Cities and People; A Social and Architectural History*. New Haven: Yale University Press.
- Giuliano, G., & Hanson, S. (Eds.) (2017). *The Geography of Urban Transportation*. (4th ed.) New York: Guilford Press.
- Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.) (2015). *Health Behaviour and Health Education: Theory, Research, and Practice*. (5th ed.) San Francisco, CA: Jossey-Bass, a Wiley Brand.
- Goldstein, B. (2002). The Environment and Health: A Conversation with CDC Chief Jeffrey Koplan, *Health Affairs*, 21(2), 179-184.
- Graham, S., & Marvin, S. (2001). *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. London: Routledge.
- Grant Jeremy (2012). *Singapore Cracks Down on Obesity*. The Financial Times Ltd. Website <https://www.ft.com/content/64391ed6-20d2-11e2-9720-00144feabdc0?mhq5j=e5>.
- Grayson, L., & Young, K. (1994). *Quality of Life in Cities: An Overview and Guide to the Literature*. London: The British Library.

- Griffin, J., & Dickinson, J. (1971). *New Housing in a Cleared Area: A Study of St Mary's, Oldham*. London: Department of the Environment.
- Grigoroudis, E., & Siskos, Y. (2012). *Customer satisfaction evaluation: Methods for measuring and implementing service quality*. New York: Springer.
- Guy, C. M. (1983). The Assessment of Access to Local Shopping Opportunities: A Comparison of Accessibility Measures. *Environment and Planning B: Urban Analytics and City Science*. 10(2), 219-238.
- Hagerstrand, T. (1970). What about People in Regional Science? *Regional Science Association*. 4(1), 6-21.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A global perspective*. (7th ed.) United States: Pearson Education.
- Halden, D. (2002). Using Accessibility Measures to Integrate Land Use and Transport Policy in Edinburgh and the Lothians. *Transport Policy*. 9(4), 313-324.
- Halden, D., McGuigan, D., Nisbet, A., & McKinnon, A. (2000). *Accessibility: Review of Measuring Techniques and their Application*. Edinburgh: Scottish Executive Central Research Unit.
- Hanan, S. A., Said, N. F., Kamel, A. A. M., & Che Amil, S. A. F. (2015). Factors that Influences Pedestrian Intention to Cross a Road While using Mobile Phone. *International Journal of Economics and Financial Issues*. 5(1S), 116-121.
- Handy, S. L. (1992). *Regional versus Local Accessibility: Variations in Suburban Form and the Effects on Non-Work Travel*. PhD Thesis. University of California, Berkeley.
- Handy, S. L., & Niemeier, D. A. (1997). Measuring Accessibility: An Exploration of Issues and Alternatives. *Environment and Planning A*. 29(7), 1175-1194.
- Handy, S. L., Boarnet, M. G., Ewing, R., & Killingsworth, R. E. (2002). How the Built Environment Affects Physical Activity: Views from Urban Planning. *American Journal of Preventive Medicine*. 23(2), 64-73.
- Hansen, W. G. (1959). How Accessibility Shapes Land Use. *Journal of American Institute of Planners*. 25(2), 73-76.
- Harun, N. Z., & Said, I. (2009). The Changing Roles of Public Spaces in Malaysia. *Habitat Magazine*.
- Hay, R. (1998). Sense of Place in Developmental Context. *Journal of Environmental Psychology*. 18(1), 5-29.

- Heckscher, A., & Robinson, P. (1977). *Open Space: The Life of American cities*. New York: Harper and Row Publisher.
- Heg, G. V. (2010). *Quality assessment of pedestrian facilities P- index method and pedestrians' perception*. Univesiti Teknologi Malaysia.
- Heinonen, J. A., & Eck, J. E. (2007). *Pedestrian Injuries and Fatalities*. Department of Justice, Office of Community Oriented Policing Services, Washington, DC, US.
- Helmer, O. (1997). Problems in Futures Research: Delphi and Causal Cross-Impact Analysis. *Futures*. 9(1), 17-31.
- Hensher, D. A. (Ed.) (2001). *Travel Behaviour Research: The Leading Edge*. Oxford: Pergamon Press.
- Hillman, M., Henderson, I., & Whalley, A. (1973). *Personal Mobility and Transport Policy*. London: Policy Studies Institute.
- Ho, C. S., Supian, A., Zaly Shah, M., Chau, L. W., Matsuoka, Y., Kurata, G., Fujiwara, T., Shimada, K. Gomi, K., Yoshimoto, K., & Simson, J. J. (2009). Low-Carbon City 2025: Sustainable Iskandar Malaysia, UTM- Low Carbon Asia Research Center.
- Hoehner, C. M., Handy, S. L., Yan, Y., Blair, S. N., & Berrigan, D. (2011). Association between Neighbourhood Walkability, Cardiorespiratory Fitness and Body-Mass Index. *Social Science and Medicine*. 73(12), 1707-1716.
- Hui, E. C. M., & Yu, K. H. (2009). Residential Mobility and Aging Population in Hong Kong. *Habitat International*. 33(1), 10-14.
- Humpel, N., Marshall, A. L., Leslie, E., Bauman, A., & Owen, N. (2004). Changes in Neighbourhood Walking are related to Changes in Perceptions of Environmental Attributes. *Annals of Behavioural Medicine*. 27(1), 60-67.
- Humpel, N., Owen, N., Iverson, D., Leslie, E., & Bauman, A. (2004b). Perceived Environment Attributes, Residential Location, and Walking for Particular Purposes. *American Journal of Preventive Medicine*. 26(2), 119-125.
- Hur, M., & Morrow-Jones, H. (2008). Factors that Influence Residents' Satisfaction with Neighbourhoods. *Environment and Behaviour*. 40(5), 619-635.

- Iamtrakul, P., & Zhang, J. (2014). Measuring Pedestrians' Satisfaction of Urban Environment under Transit Oriented Development (TOD): A Case Study of Bangkok Metropolitan, Thailand. *Lowland Technology International*. 16(2), 125-134.
- Ingram, D. R. (1971). The Concept of Accessibility: A Search for an Operational Form. *Regional Studies*. 5(2), 101-107.
- Institute of Southeast Asian Studies (ISEAS) (2010). *Urbanization in Southeast Asian Countries*. Singapore.
- Ismail, M. N., Zawiah, H., Chee, S. S., & Ng, K. K. (1995). Prevalence of Obesity and Chronic Energy Deficiency (CED) in Adult Malaysians. *Malaysian Journal of Natural*. 1(1), 1-9.
- Ismail, W. H. W. (2015). Contemporary Uses of Buildings on a Heritage Street. *Procedia - Social and Behavioral Sciences*. 170, 633-641.
- Ismail, W. H. W., & Shamsuddin, S. (2005). The Old Shophouses as Part of Malaysian Urban Heritage: The Current Dilemma. *8th International Conference of the Asian Planning Schools Association*. September. Penang, 11-14.
- Israel, G. D. (1992). Sampling the Evidence of Extension Program Impact. Program Evaluation and Organizational Development, IFAS, University of Florida.
- Ja'afar, N. H., & Usman, I. M. S. (2009). Physical and Transportation Elements of Traditional Street in Malaysia. *European Journal of Social Sciences*. 9(4), 669-676.
- Jacobs, A. B. (1993). *Great Streets*. Cambridge, MA: MIT Press.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Vintage Books/ Random House.
- Jane, A. C., & Dominguez, S. M. (2003). Citizens' Role in Health Services: Satisfaction Behaviour: Kano's Model, Part 1 and 2. *Quality Management in Health Care*. 12(1), 64-80.
- Jenks, M., & Burgess, R. (Eds.) (2000). *Compact Cities: Sustainable Urban Form for Developing Countries*. London: Spon Press.
- Jenks, M., & Dempsey, N. (2007). Defining the Neighbourhood: Challenges for Empirical Research. *Town Planning Review*. 78(2), 153-177.
- Jenks, M., & Jones, C. (Eds.) (2010). *Dimensions of the Sustainable City*. London: Springer.

- Jenks, M., Burton, E., & Williams, K. (Eds.) (1996). *The Compact City: a sustainable urban form?* London: E & FN Spon.
- Jennings, P., & Cain, R. (2013). A Framework for Improving Urban Soundscapes. *Applied Acoustics*. 74(2), 293-299.
- Jing, Z. (2005). *Leoh Ming Pei and Reconstruction Project*. China Construction.
- Johor State Planning Authority (2004). *Draft Johor Bahru District Local Plan 2002-2020*.
- Juan, Y. K., Huang, S. J. H., & Chen, H. T. (2014). Applying a Kano Quality Model for Intelligent Green Building Design Strategies in Taiwan. *International Journal of Strategic Property Management*. 18(2), 125-137.
- Kano, N., Seraku, N., Takahashi, F., & Tsuji, S. (1984). Attractive Quality and Must-Be Quality. *Hinshitsu (The Journal of the Japanese Society for Quality Control)*. 14(2), 147-156.
- Kasarda, J. D., & Janowitz, M. (1974). Community Attachment in Mass Society. *American Sociological Review*. 39(3), 328-393.
- Kashani Jou, K. (2011). Pedestrian Areas and Sustainable Development. *International Journal of Civil, Environmental, Structural, Construction and Architectural Engineering*. 5(5), 228-235.
- Katz, A. (2012). USGBC and Land Use Law Centre at Pace Law School Announce Two Resources to Help Local Governments Create Sustainable Neighbourhoods. Website <http://www.usgbc.org/articles/usgbc-land-use-law-center-pace-law-school-announce-two-resources-help-local-governments-cre>
- Keegan, L. C. (2012). Review of Research Methods in Communication Disorders. *Contemporary Issues in Communication Science and Disorders*. 39, 98-104.
- Kelbaugh, D. (2001). Three Urbanisms and the Public Realm. *Presented At the 3rd International Space Syntax Symposium*. Atlanta, 14.1-14.8.
- Khazanah Nasional (2006). *Comprehensive Development Plan for South Johor Economic Region 2006-2025*. Kuala Lumpur: Khazanah Nasional.
- Khor, G. L., Azmi, M. Y., Tee, E. S., Kandiah, M., & Huang, M. S. L. (1999). Prevalence of Overweight among Malaysian Adults from Rural Communities. *Asia Pacific Journal of Clinical Nutrition*. 8(4), 272-279.

- Kil, N., Stein, T. V, Holland, S. M., & Anderson, D. H. (2012). Understanding Place Meanings in Planning and Managing the Wildland-Urban Interface: The Case of Florida Trail Hikers. *Landscape and Urban Planning*. 107(4), 370-379.
- Kim, H. M., & Kwan, M. P. (2003). Space-Time Accessibility Measures: A Geocomputational Algorithm with a Focus on the Feasible Opportunity Set and Possible Activity Duration. *Journal of Geographical Systems*. 5(1), 71-91.
- Kim, J. K., Ulfarsson, G. F., Shankar, V. N., & Kim, S. (2008). Age and Pedestrian Injury Severity in Motor-Vehicle Crashes: A Heteroskedastic Logit Analysis. *Accident Analysis and Prevention*. 40(5), 1695- 1702.
- Kim, S., Park, S., & Lee, J. S. (2014). Meso-or Micro-scale? Environmental Factors Influencing Pedestrian Satisfaction. *Transportation Research Part D: Transport and Environment*. 30, 10-20.
- King, W. C., Brach, J. S., Belle, S., Killingsworth, R., Fenton, M., & Kriska, A. M. (2003). The Relationship between Convenience of Destinations and Walking Levels in Older Women. *American Journal of Health Promotion*. 18(1), 74-82.
- Knox, P. L. (1978). The Intraurban Ecology of Primary Medical Care: Patterns of Accessibility and their Policy Implications. *Environment and Planning A*. 10(4), 415-435.
- Koenig, J. G. (1980). Indicators of Urban Accessibility: Theory and Application. *Transportation*. 9(2), 145-172.
- Kohnke, L. (1990). Designing a Customer Satisfaction Measurement Program. *Journal of Bank Marketing*. 28-30.
- Kotharkar, R. S., & Bahadure, S. P. (2010). Mixed Land use, An Approach to Sustainable Urban Development. *International Conference Urbanism and Green Architecture titled Mixed Land use, an approach to Sustainable Urban Development*. NIT, Hamirpur, 149-158.
- Kotkar, K. L., Rajat, R., & Satish, C. (2010). Pedestrian Flow Characteristics in Mixed Traffic Conditions. *Journal of Urban Planning and Development*. 136(1), 23-33.
- Krejcie, R. V., & Morgan, D. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*. 30(3), 607-610.

- Krenichyn, K. (2006). The Only Place to Go and be in the City': Women Talk about Exercise, Being Outdoors, and the Meanings of a Large Urban Park. *Health and Place*. 12(4), 631-643.
- Kwan, M. P. (1998). Space-Time and Integral Measures of Individual Accessibility: A Comparative Analysis Using a Point-based Framework. *Geographical Analysis*. 30(3), 191-216.
- Land, K. C., Michalos, A. C., & Sirgy, M. J. (2012). *Handbook of Social Indicators and Quality of Life Research*. Berlin: Springer.
- Lang, J. T. (1994). *Urban Design: The American Experience*. New York: Van Nostrand Reinhold.
- Langford, H. (2015). *LEED Pilot Credit library: Prevention through Design*. Website <http://www.usgbc.org/credits/preventionthroughdesign>.
- Lee, K. K. (2012). Developing and Implementing the Active Design Guidelines in New York City. *Health and Place*. 18(1), 5-7.
- Leech, N. L., Dellinger, A. B., Brannagan, K. B., & Tanaka, H. (2010). Evaluating Mixed Research Studies: A Mixed Methods Approach. *Journal of Mixed Methods Research*. 4(1) 17-31.
- Lia, J., Gao, Y., & Yin, H. (2013). Pedestrian Facilities Planning on Tianjin New Area program. *13th COTA International Conference of Transportation Professionals*. 13-16 August. Shenzhen, China: Elsevier Ltd, 683-692.
- Lin, L., & Moudon, A. V. (2010). Objective Versus Subjective Measures of the Built Environment, Which are Most Effective in Capturing Associations with Walking? *Health and Place*. 16(2), 339-348.
- Linneker, B. J., & Spence, N. A. (1992). Accessibility Measures Compared in an Analysis of the Impact of the M25 London Orbital Motorway on Britain. *Environment and Planning A*. 24(8), 1137-1154.
- Litman, T. (2013). The New Transportation Planning Paradigm. *ITE Journal*. 83(6), 20-28.
- Litman, T. A. (2003). Economic Value of Walkability. *Transportation Research Record*, 1828, 3-11.
- Liu, C. H., Tzeng, G. H., Lee, M. H. (2013). Strategies for Improving Cruise Product Sales Using Hybrid 'Multiple Criteria Decision Making' Models. *The Service Industries Journal*. 33 (5), 542-563.

- Liu, W., & Li, W. (2009). To Determine the Weight in a Weighted Sum Method for Domain-Specific Keyword Extraction. *International Conference on Computer Engineering and Technology*. January 22-24. Washington, DC, USA: IEEE Computer Society, 11-15.
- Living Streets (2001). *Streets are for Living, the Importance of Streets and Public Spaces for Community Life*. London: Living Streets
- Lorenz, D., & Lutzkendorf, T. (2008). Sustainability in Property Valuation: Theory and Practice. *Journal of Property Investment and Finance*. 26(6), 482-521.
- Lund, H. (2003). Testing the Claims of New Urbanism: Local Access, Pedestrian Travel, and Neighboring Behaviors. *Journal of the American Planning Association*. 69(4), 414-429.
- Luor, T., Lu, H. P., Chien, K. M., & Wu, T. C. (2015). Contribution to Quality Research: A Literature Review of Kano's Model from 1998 to 2012. *Total Quality Management and Business Excellence*. 26(3-4), 234-247.
- Lynch, A. J., Andreason, S., Eisenman, T., Robinson, J., Steif, K., & Birch, E. L. (2011). Sustainable urban development indicators for the United States. *Penn IUR White Paper in Sustainable Urban Development*.
- Lynch, K. (1960). *The Image of the City*. Cambridge, Mass: MIT press.
- Madanipour, A. (1997). Ambiguities of Urban Design. *Town Planning Review*. 68(3), 363-383.
- Maller, C., Townsend, M., Pryor, A., Brown, P. & St. Leger, L. (2005). Healthy Nature Healthy People, 'Contact with Nature' as an Upstream Health Promotion Intervention for Populations. *Health Promotion International*. 21(1), 45-54.
- Manaugh, K., & El-Geneidy, A. M. (2013). Does Distance Matter? Exploring the Links among Values, Motivations, Home Location, and Satisfaction in Walking Trips. *Transportation Research Part A: Policy and Practice*. 50, 198-208.
- Marshall, J. D., Brauer, M., & Frank, L. D. (2009). Healthy Neighbourhoods: Walkability and Air Pollution. *Environmental Health Perspectives*. 117(11), 1752-1759.
- Martinez, F. J. (1995). Access: The Transport-Land Use Economic Link. *Transportation Research Part B: Methodological*. 29(6), 457-470.

- Martinez, F. J., & Araya, C. A. (2000). A Note on Trip Benefits in Spatial Interaction Models. *Journal of Regional Science*. 40(4), 789-796.
- Masadeh, M. A. (2012). Linking Philosophy, Methodology, and Methods: Toward Mixed Model Design in the Hospitality Industry. *European Journal of Social Sciences*. 28(1), 128-137.
- Matzler, K. & Hinterhuber, H. H. (1998). How to Make Product Development Projects More Successful by Integrating Kano's Model of Customer Satisfaction into Quality Function Deployment. *Technovation*. 18(1), 25-38.
- Matzler, K., Bailom, F., Hinterhuber, H. H., Renzl, B., & Pichler, J. (2004). The Asymmetric Relationship between Attribute-Level Performance and Overall Customer Satisfaction: A Reconsideration of the Importance-Performance Analysis. *Industrial Marketing Management*. 33(4), 271-277.
- Matzler, K., Hinterhuber, H. H., Bailom, F., & Sauerwein, E. (1996). How to Delight Your Customers. *Journal of Product and Brand Management*. 5(2), 6-18.
- Matzler, K., Sauerwein, E., & Heischmidt, K. (2003). Importance-Performance Analysis Revisited: the Role of the Factor Structure of Customer Satisfaction. *The Service Industries Journal*. 23(2), 112-129.
- McCormack, G. R., & Shiell, A. (2011). In Search of Causality: A Systematic Review of the Relationship Between the Built Environment and Physical Activity Among Adults. *International Journal of Behavioural Nutrition and Physical Activity*. 8(125), 1-11.
- McCormick, K., & Kiss, B. (2015). Learning through Renovations for Urban Sustainability: The Case of the Malmo Innovation Platform. *Current Opinion in Environmental Sustainability*. 16(16), 44-50.
- McGillivray, M. (2007). *Human Well-being: Issues, Concepts and Measures*. Development Economics and Policy. Palgrave Macmillan, London.
- McGirr, E., Skaburskis, A., & Donegani, T. S. (2014). Expectations, Preferences and Satisfaction Levels among New and Long-term Residents in a Gentrifying Toronto Neighbourhood. *Urban Studies*. 52(1), 3-19.
- McNally, K. (2010). *Design Guidelines for Walkable Communities*. Ohio, United State: Niehoff Studio.

- Methorst, R., & Van der Horst, R. (2010). Pedestrians' Performance and Satisfaction. *Walk21/PQN Conference Getting Communities Back on their Feet*. 17-19 November. The Hague, 1-9.
- Meyer, J. R., & Gomez-Ibanez, J. A. (1981). *Autos Transit and Cities*. Cambridge, Massachusetts: Harvard University Press.
- Micholson, W. M. (1977). *Environmental Choice, Human Behaviour and Residential Satisfaction*. New York: Oxford University Press.
- Mikulic, J. (2007). The Kano Model-A Review of its Application in Marketing Research from 1984-2006. *The 1st International Conference of Marketing Theory Challenges in Transitional Countries*. 20-21 September. Maribor, Slovenia, 87-96.
- Miller, H. J. (1991). Modelling Accessibility Using Space-Time Prism Concepts within Geographical Information Systems. *International Journal of Geographical Systems*. 5(3), 287-301.
- Miller, H. J. (1999). Measuring Space-Time Accessibility Benefits within Transportation Networks: Basic Theory and Computational Procedures. *Geographical Analysis*. 31(2), 187-212.
- Mokhtarian, P. L., & Salmon, I. (2001). How Derived is the Demand for Travel? Some Conceptual and Measurement Considerations. *Transportation Research Part A: Policy and Practice*. 35(8), 695-719.
- Monnier, E. (1987). *Evaluation de L'Action des Pouvoirs Publics*. Paris: Economica.
- Montgomery, J. (2005). The Role of Community Facilities in Developing Community Spirit. Paper presented at the *Themes and Issues Emerging from the Better Facilities, Stronger Community Conference*. 15-16 August. Department for Victorian Communities, Melbourne.
- Morris, J. M., Dumble, P. L., & Wigan, M. R. (1979). Accessibility Indicators for Transport Planning. *Transportation Research Part A: General*. 13(2), 91-109.
- Morvaj, Z. (Ed.) (2012). *Energy Efficiency-A Bridge to Low Carbon Economy*. Rijeka, Croatia: In-Tech.
- Moudon, A. V. (2001). *Targeting Pedestrian Infrastructure Improvements: A Methodology to Assist Providers in Identifying Suburban Locations with Potential Increases in Pedestrian Travel*. Washington State Transportation Commission and U.S. Department of Transportation.

- Moudon, A. V., Hess, P. M., Snyder, M. C., & Stanilov, K. (1997). Effects of Site Design on Pedestrian Travel in Mixed-Use, Medium-Density Environments. *Transportation Research Record*, 1578:48-55.
- Moudon, A. V., Lee, C., Cheadle, A. D., Garvin, C., Jonson, D., Schmid, T. L., Weathers, R. D., & Lin, L. (2006). Operational Definitions of Walkable Neighborhood: Theoretical and Empirical Insights. *Journal of Physical Activity and Health*. 3(1), S99-S117.
- Moura e Sa, P., & Saraiva, P. (2010). The Development of an Ideal Kindergarten through Concept Engineering/Quality Function Deployment. *Total Quality Management and Business Excellence*. 12(3), 365-372.
- Muraco, W. A. (1972). Intraurban Accessibility. *Economic Geography*. 48(4), 388-405.
- Nadeem, O., Hameed, R., Zaidi, S. Tabassum, H., Haydar, S., & Haider, H. (2013). Residents' Perception and Analysis of the Contemporary Neighbourhood Design Practices in Lahore, Pakistan. *Journal of Engineering and Applied Science*. 12, 143-158.
- Næss, P. (2006). *Urban Structure Matters: Residential Location, Car Dependence and Travel Behaviour*. London: Routledge.
- National Highway Traffic Safety Administration (2011). *Traffic Safety Fact*, U.S. Department of Transportation.
- Neuberger, H. (1971). User Benefits in the Evaluation of Transport and Land-Use Plans. *Journal of Transport Economics and Policy*. 5(1), 52-75.
- Neuman, W. L. (2014). *Social Research Methods: Qualitative and Quantitative Approaches*. (7th ed.) England: Pearson Education.
- New Urbanism (2002). *Creating Liveable Neighbourhoods*. Website <http://www.newurbanism.org/>
- Newman, P. W. G., & Kenworthy, J. R. (1996). The Land Use-Transport Connection: An Overview. *Land Use Policy*. 13(1), 1-22.
- NHTSA. (2008). *Traffic Safety Facts 2007 Data: Pedestrians*. National Highway Traffic Safety Administration. Washington, DC: United States.
- Niemeier, D. A. (1997). Accessibility: an Evaluation Using Consumer Welfare. *Transportation*. 24(4), 377-396.

- Norhaslina, H. (Ed.) (2009). *Sustainable Urban Development Issues in the Malaysia*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- O'Brien, D. J., & Ayidiya, S. (1991). Neighbourhood Community and Life Satisfaction. *Journal of the Community Development Society*. 22(1), 21-37.
- Okulicz-Kozaryn, A., & Mazelis, J. M. (2016). Urbanism and Happiness: A Test of Wirth's Theory of Urban Life. *Urban Studies*55 (2), 349-364.
- Organization for Economic Cooperation and Development. (2015). *How's Life? Measuring Well-Being*. OECD Publishing, Paris.
- Ostermann, F., & Timpf, S. (2009). Use and Appropriation of Space in Urban Public Parks: GIS Methods in Social Geography. *Geographica Helvetica*. 64(1), 33-36.
- O'Sullivan, A. (2007). *Urban Economics*. (6th ed.) New York: McGraw-Hill Companies Inc.
- Ozer, I. (2007). *Multi-Criteria Group Decision Making Methods Using AHP and Integrated Web-Based Decision Support Systems*. University of Ottawa Faculty of Administration.
- Pallant, J. (2010). *SPSS, Survival Manual: A Step by Step Guide to Data Analysis Using SPSS*. (4th ed.) Maidenhead: Open University Press.
- Palmore, E. (1969). Predicting Longevity: A Follow-Up Controlling for Age. *Gerontology*. 39(4), 109-116.
- Park, S. (2008). *Defining, Measuring, and Evaluating Path Walkability, and Testing Its Impacts on Transit Users' Mode Choice and Walking Distance to the Station*.
- Parker, C., & Mathews, B. P. (2001). Customer Satisfaction: Contrasting Academic and Consumers' Interpretations. *Marketing Intelligence and Planning*. 19(1), 38-46.
- Pedestrian Planning and Design Guide. (2007). *New Zealand Transport Agency*. Website <https://www.nzta.govt.nz/assets/resources/pedestrian-planning-guide/docs/pedestrian-planning-guide.pdf>.
- Pedestrian. (2016). *In Cambridge Dictionary*, Cambridge University Press.
- Penchansky, R., & Thomas, J. W. (1981). The Concept of Access: Definition and Relationship to Consumer Satisfaction. *Medical Care*. 19(2), 127-140.

- Podobnik, B. (2002). New Urbanism and the Generation of Social Capital: Evidence from Orenco Station. *National Civic Review*. 91(3), 245-255.
- Pope, J., Annandale, D., & Morrison-Saunders, A. (2004). Conceptualising Sustainability Assessment. *Environmental Impact Assessment Review*. 24(6), 595-616.
- Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, (2002). *World Population Prospects: The 2002 Revision and World Urbanization Prospects*.
- Porta, S. (2001). Formal Indicators: Quantifying the Contribution of Form to Urban (Social) Sustainability. *Australia: walking the 21st century, international conference*. Perth, Western Australia, 67-78.
- Rapoport A. (1982). *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Beverly Hills, CA: SAGE Publications.
- Recker, W. W., Chen, C., & McNally, M. G. (2001). Measuring the Impact of Efficient Household Travel Decisions on Potential Travel Time Savings and Accessibility Gains. *Transportation Research A*. 35(4), 339-369.
- Resolution ResAP. (2001). *1 on the introduction of the principles of universal design into the curricula of all occupations working on the built environment*, Council of Europe and Committee of Minister.
- Reynolds, K. D., Wolch, J., Byrne, J., Chou, C. P., Feng, G., Weaver, S., & Jerrett, M. (2007). Trail Characteristics as Correlates of Urban Trail Use. *American Journal of Health Promotion*. 21(4), 335-345.
- Rimer, B. K., & Glanz, K. (2005). *Theory at Glance: A Guide for Health Promotion Practice*, Washington, DC, National Cancer Institute, National Institutes of Health, U.S Department of Health and Human Services.
- Riviere, P., Monrozier, R., Rogeaux, M., Pages, J., & Saporta, G. (2006). Adaptive Preference Target: Contribution of Kano's Model of Satisfaction for an Optimized Preference Analysis Using a Sequential Consumer Test. *Food Quality and Preference*. 17(7-8), 572-581.
- Rubenstein, H. M. (1992). *Pedestrian Malls, Streetscapes and Urban Spaces*. New York, United States: John Wiley & Sons Ltd.

- Saelens, B. E., Sallis, J. F., & Frank, L. D. (2003). Environmental Correlates of Walking and Cycling: Findings from the Transportation, Urban Design, and Planning Literatures. *Annals of Behavioural Medicine*, 25(2), 80-91.
- Sallis, J. F., & Owen, N. (1999). *Physical Activity and Behavioural Medicine*. Thousand Oaks, CA: SAGE.
- Sallis, J. F., Frank, L. D., Saelens, B. E., & Kraft, M. K. (2004). Active Transportation and Physical Activity: Opportunities for Collaboration on Transportation and Public Health Research. *Transportation Research Part A: Policy and Practice*, 38(4), 249-268.
- Saris, W. E., Veenhoven, R., Scherpenzeel, A. C., & Bunting B. (Eds.) (1996). *A comparative study of satisfaction with life in Europe*. Budapest, Hungary: Eötvös University Press.
- Sarkis, S., Allard, P., & Hyde, T. (Eds.) (2001). *Case: Le Corbusier's Venice Hospital and the Mat Building Revival*. New York: Prestel Pub.
- Sauerwein, E. (1999). Experiences with the Reliability and Validity of the Kano Method, Comparison to Alternate Forms of Classification of Product Requirement. Paper presented at *Transactions of the 11th Symposium on Quality Function Deployment*, 12-18 June. Novi, Michigan: Quality Function Deployment Institute, 416-429.
- Scerri, A., & James, P. (2010). Accounting for Sustainability: Combining Qualitative and Quantitative Research in Developing 'Indicators' of Sustainability. *International Journal of Social Research Methodology*, 13(1), 41-53.
- Schatzman, L., & Strauss, A. L. (1973). *Field Research: Strategies for a Natural Sociology*. Englewood Cliffs: Prentice-Hall.
- Schorr, A. L. (1966). *Slums and Social Insecurity*. Washington, DC: Government printing Office.
- Schurmann, C., Spiekermann, K., & Wegener, M. (1997). *Accessibility Indicators, Summary of Accessibility Indicator Model and Report*, SASI project, Deliverable D5. IRPUD.
- Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A Skill Building Approach*. (7th ed.) West Sussex, UK: John Wiley & Sons.

- Shahin, A., & Zairi, M. (2009). Kano Model: A Dynamic Approach for Classifying and Prioritizing Requirements of Airline Travellers' with Three Case Studies on International Airlines. *Total Quality Management and Business Excellence*. 20(9), 1003-1028.
- Shamsuddin, S. (2011). *Townscape Revisited: Unravelling the Character of the Historic Townscape in Malaysia*. Johor, Malaysia: Universiti Teknologi Malaysia Press.
- Sharifi, A., & Murayama, A. (2013). A Critical Review of Seven Selected Neighbourhood Sustainability Assessment Tools. *Environmental Impact Assessment Review*. 38(44), 73-87.
- Shen, Q. (1998). Location Characteristics of Inner-City Neighbourhoods and Employment Accessibility of Low-Wage Workers. *Environment and Planning B: Urban Analytics and City Science*. 25(3), 345-365.
- Shin, D. C., & Johnson, D. M. (1978). Avowed Happiness as an Overall Assessment of the Quality of Life. *Social Indicators Research*. 5(4), 475-492.
- Skov-Petersen, H. (2001). Estimation of Distance-Decay Parameters - GIS-Based Indicators of Recreational Accessibility. *Scan GIS: The 8th Scandinavian Research Conference on Geographical Information Science*. 25-27 June. Norway, 237-258.
- Southworth, M. (2005). Designing the Walkable City. *Journal of Urban Planning and Development*. 131(4), 246-257.
- Stake, R. E. (1995). *The Art of Case Study Research*. Thousand Oaks, CA: SAGE Publication.
- Stangor, C. (2014). *Research Methods for the Behavioural Sciences* (5th ed.). Stamford, CT: Cengage Learning.
- Stead, D. (2001). Relationships between Land Use, Socioeconomic Factors, and Travel Patterns in Britain. *Environment and Planning B: Planning and Design*. 28(4), 499-528.
- Stedman, R. C. (2002). Toward a Social Psychology of Place: Predicting Behaviour from Place-Based Cognitions, Attitude, and Identity. *Environment and Behaviour*. 34(5), 561-581.

- Steuteville, R. (2004). *The New Urbanism: An alternative to modern, automobile-oriented planning development*. The New Urban News, Ithaca, New York, USA.
- Stradling, S. G., Anable, J., & Carreno, M. (2007). Performance, Importance and User Disgruntlement: A Six-Step Method for Measuring Satisfaction with Travel Modes. *Transportation Research Part A: Policy and Practice*. 41(1), 198-106.
- Stren, R., White, R., & Whitney, J. (Eds.) (1992). *Sustainable Cities: Urbanization and the Environment in International Perspective*. Oxford, England: Westview Press.
- Surprenant, C. F. (Ed.) (1987). *Add Value to Your Service: The Key to Success*. Chicago: American Marketing Association.
- Sweet, R. J. (1997). An Aggregate Measure of Travel Utility. *Transportation Research B*. 31(5), 403-416.
- Tabachnick, B. G., & Fidell, L. S. (2012). *Using Multivariate Statistics*. (6th ed.) Boston: Pearson Education.
- Talen, E. (2002). Pedestrian Access as a Measure of Urban Quality. *Planning Practice and Research*. 17(3), 257-278.
- Talen, E., & Anselin, L. (1998). Assessing Spatial Equity: An Evaluation of Measures of Accessibility to Public Playgrounds. *Environment and Planning A*. 30(4), 595-613.
- Tan, K. C., & Pawitra, T. A. (2001). Integrating SERVQUAL and Kano's Model into QFD for Service Excellence Development. *Managing Service Quality: An International Journal*. 11(6), 418-430.
- Tan, K. C., & Shen, X. X. (2000). Integrating Kano's Model in the Planning Matrix of Quality Function Deployment. *Total Quality Management*. 11(8), 1141-1151.
- Tanguay, G., Rajaonson, J., Lefebvre, J., & Lanoie, P. (2010). Measuring the Sustainability of Cities: An Analysis of the Use of Local Indicators. *Ecological Indicators*. 10(2), 407-418.
- The Global Development Research Centre (2003). *Notes on quality of life*.
- Theofilou, P. (2013). Quality of Life: Definition and Measurement. *Europe's Journal of Psychology*. 9(1), 150-162.
- Tilly, C. (Ed.) (1978). *Historical Studies of Changing Fertility*. New Jersey: Princeton University Press.

- Timmermans, H. (Ed.) (2009). *Pedestrian Behaviour: Models, Data Collection and Applications*. Bingley, UK: Emerald Group Publishing Limited.
- Ting, S. C., & Chen, C. N. (2002). The Asymmetrical and Nonlinear Effects of Store Quality Attributes on Customer Satisfaction. *Total Quality Management*. 13(4), 547-569.
- Todd, J., & Kaplan. S. (2014). *USGBC Accelerates Social Equity with New LEED Credits*. Website <http://www.usgbc.org/articles/usgbc-accelerates-social-equity-new-leed-credits>.
- Torshizian, E., & Grimes, A. (2014). Residential Satisfaction, Crowding and Density: Evidence over Different Geographic Scales in Auckland. *55th Annual Conference of the New Zealand Association of Economists (NZAE)*. 2-4 July. Auckland.
- Transportation Research Board (TRB), & Institute of Medicine of the National Academies (2005). *Does the Built Environment Influence Physical Activity? Examining the Evidence*. National Academies Press, Washington, DC.
- Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. J. (2002). Correlates of Adults' Participation in Physical Activity: Review and Update. *Medicine and Science in Sports and Exercise*. 34(12), 1996-2001.
- Tsai, L. F., Liu, M. Y., Wang, P. W., Shih, M. L., Xie, X. M., & Shaw, J. C. (2011). Application of Kano Model to Discuss Tourist Demands on Service Quality in Recreational Travel. *IJCSNS International Journal of Computer Science and Network Security*. 11(3), 249-254.
- Tufts, R. (2014). *LEED Professionals at a Glance*. Website <http://www.usgbc.org/articles/leed-professionals-glance-november-2014>.
- Turksever, A. N., & Atalik, G. (2001). Possibilities and Limitations for the Measurement of the Quality of Life in Urban Areas. *Social Indicators Research*. 53(2), 163-187.
- U.S. Environmental Protection Agency (2003). *Travel and Environmental Implications of School Siting*. Washington, DC: US Environmental Protection Agency.

- United Nations Environment Programme (UNEP). (2009). *Concept Paper for Workshop on Partnership for Clean Fuels and Vehicles for East Asia*. Partnership for Clean Fuels and Vehicles, United Nations Environment Programme, and Regional Resource Centre for Asia and Pacific.
- United States Green Building Council (2009). *LEED 2009 for Neighbourhood Development Rating System*.
- United States Green Building Council (2015). *LEED for neighbourhood development*.
- Vallance, S., Perkins, H. C., & Dixon, J. E. (2011). What is Social Sustainability? A Clarification of Concepts. *Geoforum*. 42(3), 342-348.
- Van Acker, V., Witlox, F., & Van Wee, B. (2007). The Effects of the Land Use System on Travel Behaviour: A Structural Equation Modelling Approach. *Transportation Planning and Technology*. 30(4), 331-353.
- Van Dyck, D., Cardon, G., Deforche, B., & De Bourdeaudhuij, I. (2011). Do Adults Like Living in High-Walkable Neighbourhoods? Associations of Walkability Parameters with Neighbourhood Satisfaction and Possible Mediators. *Health and Place*. 17(4), 971-977.
- Van Lenthe, F. J., Brug, J., & Mackenbach, J. P. (2005). Neighbourhood Inequalities in Physical Inactivity: The Role of Neighbourhood Attractiveness, Proximity to Local Facilities and Safety in the Netherlands. *Social Science & Medicine*. 60(4), 763-775.
- Van Wee, B. (2002). Land Use and Transport: Research and Policy Challenges. *Journal of Transport Geography*. 10(4), 259-271.
- Van Wee, B., Hagoort, M., & Annema, J. A. (2001). Accessibility Measures with Competition. *Journal of Transport Geography*. 9(3), 199-208.
- Vandelanotte, C., De Bourdeaudhuij, I., Philippaerts, R., Sjostrom, M., & Sallis, J. (2005). Reliability and Validity of a Computerized and Dutch Version of the International Physical Activity Questionnaire (IPAQ). *Journal of Physical Activity and Health*. 2(1), 63-75.
- VanVoorhis, C. R.W., & Morgan, B. L. (2007). Understanding Power and Rules of Thumb for Determining Sample Sizes. *Tutorials in Quantitative Methods for Psychology*. 3(2), 43-50.
- Veenhoven, R. (Ed.) (1989). *How Harmful is Happiness? Consequences of Enjoying Life or not*. Rotterdam: University Press Rotterdam.

- Velibeyoglu, H. (2014). *Assessing Subjective Quality of Urban Life at Neighbourhood Scale*. PhD Thesis, Institute of Technology, Izmir.
- Verma, R. K., Chua, G., & David, S. R. (2013). Obesity and Overweight Management in Malaysia and Singapore: Progress on Right Track. *Journal of Clinical and Diagnostic Research*. 7(12), 3124-3125.
- VTPI (2004), Online TDM Encyclopaedia, Victoria Transport Policy Institute.
- Wachs, M. (1978). Report on Plenary Session, Workshop H: Behavioural Modelling, Accessibility, Mobility and Travel Need. *Proceeding 3rd International Conference on Behavioral Travel Modelling*. Tanunda, South Australia. Croom Helm, London.
- Wachs, M., & Kumagai, T. G. (1973). Physical Accessibility as a Social Indicator. *Socio-Economic Planning Science*. 7(5), 437-456.
- Wakita, Y., & Shiraishi, H. (2010). Spatial Recomposition of Shophouses in Phnom Penh, Cambodia. *Journal of Asian Architecture and Building Engineering*. 9(1), 207-214.
- Walliman, N. (2005). *Your Research Project: A Step by Step Guide for the First-Time Researcher*. (2nd ed.) London: SAGE Publication.
- Walljasper, J. (2013). *A Walking Revolution: Movement Making Americans Happier and Healthier*. Common Dreams.
- Wang, D., & Timmermans, H. (1996). Activity-Based Measures of Accessibility for Transportation Policy Analysis. *Transportation planning methods. Proceedings of seminar held at the PTRC European transport forum*. 2-6 September. Brunel University, England, 404-2.
- Wang, W., Li, P., Wang, W., & Namgung, M. (2012). Exploring Determinants of Pedestrians' Satisfaction with Sidewalk Environments: Case Study in Korea. *Journal of Urban Planning and Development*. 138(2), 166-172.
- Weibull, J. W. (1976). An Axiomatic Approach to the Measurement of Accessibility. *Regional Science and Urban Economics*. 6(4), 357-379.
- Weibull, J. W. (1980). On the Numerical Measurement of Accessibility. *Environment and Planning A*. 12(1), 53-67.
- Weisman, L. K. (2000). Creating the Universally Designed City: Prospects for the New Century. *Architectural Theory Review*. 5(2), 156-173.

- Western Riverside Council of Governments, Smart Growth (2003). Website <http://www.wrcog.cog.ca.us>
- Williams, D. R., Patterson, M. E., Roggenbuck, J. W., & Watson, A. E. (1992). Beyond the Commodity Metaphor: Examining Emotional and Symbolic Attachment to Place. *Leisure sciences*.14 (1), 29-46.
- Williams, H. C. W. L. (1977). On the Formation of Travel Demand Models and Economic Evaluation Measures of User Benefit. *Environment and Planning A*. 9(3), 285-344.
- Williams, K., Burton, E., & Jenks, M. (Ed.) (2000). *Achieving Sustainable Urban Form*. London: E & FN Spon.
- Wilson, A. G. (1970). *Entropy in Urban and Regional Modelling*. London: Pion.
- Wilson, A. G. (1971). A Family of Spatial Interaction Models and Associated Developments. *Environment and Planning*. 3(1), 1-32.
- Wittink, R. (2001). Promotion of Mobility and Safety of Vulnerable Road Users, SWOV Institute for Road Safety Research, Leidschendam, Netherlands.
- World Bank Report (2011). World Development Indicators, World Bank, Washington, DC, USA, website www.worldbank.org.
- World Health Organization (WHO) (2009). *Global Status Report on Road Safety: Time for Action*. Geneva: World Health Organization.
- World Health Organization (WHO) (2011), *US Department of Health and Human Services*, Ministry of Health Basic Health Services Directorate, Republic of Turkey.
- Wu, Q., Maslyuk, S., & Clulow, V. (2010). Energy Consumption Transition and Human Development. *Monash University, Department of Economics*, (No. 43-10).
- Wu, Y. H., & Miller, H. (2002). Computational Tools for Measuring Space-Time Accessibility within Dynamic Flow Transportation Networks. *Journal of Transportation and Statistics*. 4(2/3), 1-14.
- Yaguang, S. (2011). Development and Characteristics of Central Business District under the Philosophy of Health. *Procedia Engineering*. 21, 258-266.
- Yin, R. K. (2012). *Applications of Case Study Research*. (3rd ed.) Thousand Oaks, CA: SAGE.

- Yin, R. K. (2013). *Case Study Research: Design and Methods*. (5th ed.) Thousand Oaks, CA: SAGE Publication.
- Yoke, L., Said, I., & Kubota, A. (2013). The Roles of Cultural Spaces in Malaysia's Historic Towns: The Case of Kuala Dungun and Taiping. *Procedia - Social and Behavioural Sciences*. 85, 602-625.
- Youth Link Survey (1991). *City of Bellevue*, Washington.
- Yuen, B., & Chor, C. H. (1998). Pedestrian Streets in Singapore. *Transportation*. 25(3), 225-242.
- Yuksel, A., Yuksel, F., & Bilim, Y. (2010). Destination Attachment: Effects on Customer Satisfaction and Cognitive, Affective and Conative Loyalty. *Tourism Management*. 31(2), 274-284.
- Zaly, M. (2010). *Rating Pedestrian Facility with P-Index and the Application of Google Map*. Monograph, Centre for Innovative Planning and Development (CIPD), Faculty of Built Environment, Universiti Teknologi Malaysia.
- Zautra, A. J. (2006). *Emotions, Stress and Health*. New York: Oxford University Press.
- Zhang, Y. & Wang, J. (2014). Application of KANO Model in Decision-Making Concerning the Improvement of Environmental Service Quality of the Parks. *The Electronic Journal of Geotechnical Engineering*. 19, 3029-3035.
- Zhu, X., & Liu, S. (2004). Analysis of the Impact of the MRT System on Accessibility in Singapore Using an Integrated GIS Tool. *Journal of Transport Geography*. 12(2), 89-101.