

SPATIAL-BASED SOCIO-ECONOMIC MODEL FOR ASSESSING THE IMPACT OF
URBAN RIVERFRONT DEVELOPMENT

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DEDICATION

*This thesis is dedicated to
My late father and mother
(Haji Daud Said and Hajjah Jamilah Muhammad),
My lovely siblings,
My love husband,
and
My beloved Iffah Zinnirah and Irfan Zafri*

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ABSTRACT

Urban Riverfront Development (URD) is an urban infrastructure that provides tremendous socio-economic impacts within riverfront area. However, the URD assessment practice in Malaysia have predominantly focused on social and environmental aspects, leaving behind socio-economic aspects of property market as a driver for economic growth. Due to lack of academic research, the socio-economic indicators that are linked to URD property market remain ambiguous. Apart from the qualitative nature of assessing the impacts, spatial-based impact assessment is also not extensively practised in Malaysia despite the evidential visual impacts. Hence, there is a need to develop an impact assessment model which can spatially display the socio-economic impacts of URD. These issues have motivated a quantitative study with the following four objectives: 1) to ascertain socio-economic indicators of URD; 2) to determine the spatial measurements of socio-economic indicators for URD; 3) to develop spatial-based socio-economic model for URD; and 4) to assess socio-economic impacts of URD using the developed spatial-based socio-economic model. From the piloted questionnaires, eight socio-economic indicators and forty-three parameters were identified to form the basis for a large-scale survey in which questionnaires were distributed to property building owners along the URD area to assess the socio-economic impacts of URD. Melaka River in Melaka was selected as a case study for this research. Descriptive analysis and Relative Importance Index (RII) were used to rank the socio-economic indicators and parameters as well as spatial measurements. Findings were also analysed via PLS-SEM which revealed seven socio-economic indicators and seventeen parameters which were then accepted for the model development. Using the Importance-Performance Matrix Analysis (IPMA), the identified spatial-based parameters were examined using spatial data analysis and Spatial Multi-criteria Analysis (SMCA) which generated the non-spatial and spatial weights. URD was also assessed using the developed model to observe spatial distribution of the socio-economic impacts. Finally, transaction data were utilised to analyse property market within riverfront properties to reveal the socio-economic impacts. The results show that there is market value increment for residential, commercial and industrial properties within a 300-meter radius from the URD which indicates a positive socio-economic impact. Hence, this model could assist real estate practitioners and enhance the impact assessment practice for URD in Malaysia.

ABSTRAK

Urban Riverfront Development (URD) adalah infrastruktur bandar yang memberi kesan sosio-ekonomi yang luar biasa di sekitar sungai. Walau bagaimanapun, amalan penilaian URD di Malaysia lebih memberi tumpuan terutama kepada aspek sosial dan alam sekitar, mengeneppikan aspek sosio-ekonomi pasaran harta tanah sebagai pemacu untuk pertumbuhan ekonomi. Oleh kerana kekurangan kajian akademik, penunjuk sosio-ekonomi yang dikaitkan dengan pasaran harta tanah URD adalah samar. Selain dari segi kualitatif menilai kesan, amalan penilaian kesan secara spatial juga tidak banyak dilaksanakan di Malaysia walaupun terdapat kesan visual yang jelas. Oleh itu, terdapat keperluan untuk membangunkan model penilaian impak yang boleh memaparkan kesan sosio-ekonomi URD berasaskan spatial. Isu-isu ini telah menzahirkan kajian kuantitatif dengan empat objektif iaitu: 1) untuk menentukan petunjuk sosio-ekonomi berkaitan URD; 2) untuk menentukan ukuran spatial penunjuk sosio-ekonomi bagi URD; 3) untuk membangunkan model sosio-ekonomi berasaskan spatial untuk URD; dan 4) untuk menilai kesan sosio-ekonomi bagi URD menggunakan model sosio-ekonomi berasaskan spatial yang dibangunkan. Dari soal selidik yang dihasilkan, lapan petunjuk sosio-ekonomi dan empat puluh tiga parameter telah dikenal pasti untuk membentuk asas dalam membangunkan soal selidik berskala besar di mana soal selidik diedarkan kepada pemilik bangunan harta tanah di sepanjang kawasan URD untuk menilai kesan sosio-ekonomi URD. Sungai Melaka di Melaka dipilih sebagai kajian kes bagi kajian ini. Analisis diskriptif dan Indeks Kepentingan Relatif (RII) digunakan untuk menilai petunjuk dan parameter sosio-ekonomi serta ukuran spatial. Penemuan juga dianalisis melalui PLS-SEM yang menjelaskan tujuh petunjuk sosio-ekonomi dan tujuh belas parameter yang kemudian diterima untuk pembangunan model. Dengan menggunakan Analisis Matriks Kepentingan Prestasi (IPMA), parameter berasaskan spatial yang telah dikenal pasti dikaji menggunakan analisis spatial dan Analisis Multi-kriteria Spatial (SMCA) yang menghasilkan pemberat bukan spatial dan spatial dijana. URD juga dinilai berdasarkan model yang dibangunkan untuk meneliti pengedaran spatial bagi kesan sosio-ekonomi. Akhir sekali data transaksi digunakan untuk menganalisis pasaran harta tanah di dalam kawasan tepi sungai bagi mencerminkan kesan sosio-ekonomi. Dapatan kajian mendapati bahawa terdapat kenaikan nilai pasaran bagi harta tanah kediaman, komersil dan perindustrian dalam radius 300 meter dari URD yang menunjukkan kesan sosio-ekonomi yang positif. Oleh itu, model ini dapat membantu para pengamal harta tanah dan meningkatkan amalan penilaian kesan untuk URD di Malaysia.

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LIST OF ABBREVIATIONS

URD	-	Urban Riverfront Development
SIA	-	Social Impact Assessment
EIA	-	Environmental Impact Assessment
SEIA	-	Socio-economic Impact Assessment
US	-	United State
UK	-	United Kingdom
GIS	-	Geographic Information System
IRDA	-	Iskandar Regional Development Authority
DPR	-	Development Proposal Report
SEM-PLS	-	Structural Equation Model-Partial Least Square
NLC	-	National Land Code
NEPA	-	National Environmental Policy Act
SEA	-	Strategic Environmental Assessment
HIA	-	Health Impact Assessment
GNP	-	Gross National Product
GDP	-	Gross Domestic Product
QOL	-	Quality Of Life
HDI	-	Human Development Index
NGRBA	-	National Ganga River Basin Authority
MWD	-	Monodo Waterfront Development
PM	-	Property Market variable
PD	-	Property Development variable
ED	-	Economic Development variable
SD	-	Social Development variable
GP	-	Government Policy variable
DA	-	Demographic Attributes variable
NL	-	Neighbourhood and Location variable
EA	-	Environmental Attributes variable
PIA	-	Participatory Impact Assessment
POS	-	Public OPen Space
ESRI	-	Environmental Systems Research Institute
CBA	-	Cost-Benefit Analysis
IO	-	Input-Output

SMCA	-	Spatial Multi-criteria Analysis
MCDA	-	Multi-criteria Decision Analysis
SMCE	-	Spatial Multi-criteria Evaluation
IPMA	-	Importance-Performance Matrix Analysis
GLM	-	General Linear Model
CB-SEM	-	Co-variance Based Structural Equation Model
CR	-	Composite Reliability
AVE	-	Average Variance Extracted
DEM	-	Digital Elevation Model
URD_IMPACTS	-	URD impacts
PROP_MAR	-	Property Market indicator
PROP_DEV	-	Property Development indicator
ECO_DEV	-	Economic Development indicator
SOC_DEV	-	Social Development indicator
GOV_POL	-	Government Policy indicator
DEMOG	-	Demographic Attributes indicator
NEIGH_LOC	-	Neighbourhood and Location indicator
ENV	-	Environmental Attributes indicator
PPSPM	-	Perbadanan Pembangunan Sungai Ddan Pantai Melaka
SAM	-	Syarikat Air Melaka
MBMB	-	Majlis Bandaraya Melaka Bersejarah
MPHTJ	-	Majlis Perbandaran Hang Tuah Jaya
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
iEco	-	Impact Economic variable
iSoc	-	Impact Social variable
iEnv	-	Impact Environment variable
RII	-	Relative Importance Index
ROW	-	Rescaled Outer Weights
UPEN	-	Unit Perancang Ekonomi Negeri

LIST OF SYMBOLS

n	-	Sample Size
N	-	Population
e	-	Precision Level
w	-	Weight given to each factor by the respondents
5	-	Very strongly effected
1	-	Not effected
A	-	Highest weight
N	-	Total number of respondent responded
w	-	Spatial weight
ij	-	Unit of variable
d	-	Threshold distance beyond
j	-	Observation
i	-	Observed variable
p_{Y,X_j}	-	Value of path coefficient for individual latent variable
k	-	Percentage distributions
i	-	Sub-item
f_{ij}	-	Frequency of each scale of observed sub-item
N	-	Total number of the observations/results
ΣX_i	-	Summation of number of sub-item for each observed variable
k_{i1}	-	Percentage distribution of the measured scale/item
$max(k_{i0})$	-	Highest percentage of the individual sub-item's scale/item
y	-	Constant denominator for each individual sub-item
A	-	SEIA of URD index
$\Sigma_{i=1}^n z_i$	-	Summation of all the sub-item z_i
R^2	-	R-square
f^2	-	Effect size
Q^2	-	Predictive relevance
q^2	-	Relative impact

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In moving towards achieving sustainable urban development, urban infrastructures especially related to natural resources have been protected to ensure that it could be valuable for future generations. Due to that reason, infrastructures developments within urban areas have been emphasized by many countries over the world (Economic Planning Unit, 2015b). Nowadays, economic and social infrastructures are keys to attract stakeholders' attention due to both having tremendous impact to social and economic growth (Ansar *et al.*, 2016). Generally, economic infrastructure is the facilities that directly affect the economy in terms of distribution and transportation such as roads, highways, railways, waterways, airways, telecommunication systems, electricity and water supplies; social infrastructure refers to amenities that indirectly affect the economy such as education, healthcare and recreation grounds (i.e. parks, gardens, open spaces, green spaces, etc.) (Esfahani and Ramírez, 2003). Ideally, the synergy between the two infrastructures can influence and support social, economic and environmental activities of urban sustainability.

Urban Riverfront Development (URD) is a nature-based social infrastructure development within the urban area which has the capability to spur socio-economic growth of a cities and regions, and is essential in encouraging growth and sustainability of local economies. According to Gross *et al.* (1981) and Hjerpe & Kim (2007), river recreation and beautification (i.e. URD) is a part of urban recreation that having significant positive impacts on social and economic development of the respective areas. Apart from that, URD has also been postulated to improve the environmental basis of urban development (Cordell *et al.*, 1990; Douglas & Harpman, 1995; Bowker *et al.*, 1999). Thus, it proved that the

development of URD within the urban area affects on social and economy not only directly but also indirectly.

In this regard, these effects of URD in influencing social and economic growth have promoted its practice and awareness in Malaysia. This can be seen in the increasing numbers of URD projects, where more positive impacts can be observed in nearby neighbourhood areas, rather than the negative effects of urban development. However, the implementation of the projects requires a strategic assessment to support efforts towards developing sustainable urban development in Malaysia; either it's affected positively or negatively. Hence, this implementation has demanded a tactical assessment model to assess the impact of URD in Malaysia; yet, little attention has been given to this subject.

1.2 Research Background

The significance of assessing the impact of infrastructure developments including URD is appreciable as practicing by numerous practitioners throughout the world. According to previous literature, the impacts of other infrastructure developments are assessed in a good manner that has a great deal of focus on sustainability. It is underpinning of social, economic and environment. For example, road or highway project (Huang and Yeh, 2008; John and Sharma, 2014); transportation or railways project (Amiril *et al.*, 2014; Simionescu and Silviu, 2016); electricity or hydropower project (Keskinen and Kummu, 2010; Yu and Halog, 2015; Sahimi *et al.*, 2017); airways (Lenzen *et al.*, 2003); etc. However, within impact assessment of URD in real-world practices, these aspects are often not thoroughly evaluated. It has identified that, the assessment focuses either on only one aspect or multiple aspects, but incomprehensive manner. For example, Millennium Ecosystem Assessment (2005), Desai (2012), and Che *et al.* (2012) focused on ecological and social benefits; Bryson (2013) and Ahn *et al.* (2016) concentrated on environmental attributes; and Gross *et al.* (1981), Stein (2001), Development (2002), Levine (2003), Spörri *et al.* (2007), Hjerpe and Kim (2007), Nelson (2013) addressed only on economic benefits. Thus, these inadequate assessments have led to poor

standards of urban sustainability especially in URD projects (Satterthwaite, 1997; Dixon and Eames, 2014).

Difficulty in achieving sustainability standards has not only occurred in outside countries but yet become an issue in Malaysia (Yassin and Bond, 2011; Yassin and Meryam, 2012; Yassin *et al.*, 2012). Reviews of past literature have identified that current status of URD in Malaysia have difficulties in attaining sustainability, further impairing efforts to achieve sustainable urban development in Malaysia. This is due to a few factors that impede URD in Malaysia which are: 1) difficulty in balancing various social, economic and environmental needs of many stakeholders, 2) insufficient financial resources, 3) lack of human expertise, and 4) difficulty in obtaining planning permission (Yassin and Eves, 2010; Yassin and Bond, 2011; Yassin *et al.*, 2012).

On top of that, there is no specific assessment tool that could be used to specifically assess the impacts of URD. Even though, most of stakeholders and practitioners used SIA: Social Impact Assessment and EIA: Environmental Impact Assessment as assessment tools practiced in Malaysia, but it has identified that they tend to focus more on social and environmental aspects in actual impact assessment practices. Moreover, it has also acknowledged that there is still lacking of specific emphasis on socio-economic aspect especially related to property market, which is a driver of economic growth within real estate industry; and an essential in contributing towards sustainable urban development. It perceived was left behind even though it significantly important. It is in line with Shen *et al.* (2011) who revealed that the economic contribution is poorly highlighted in impact assessment practices and therefore, needs to be uplifted.

Hence, this study seeks to propose a strategic assessment model for assessing URD through investigation issues regarding the current impact assessment practices for URD throughout the world including Malaysia and then, finds out the indicators that could be used for assessing URD in Malaysia. Apart from that, this study considered as an effort of improving the impact assessment practice in Malaysia as

pointed out by few researchers that there is still have weaknesses and lack of standardization in impact assessment practice in Malaysia.

1.3 Problem Statement

Urban vibrancy, and with the growth of various social and economic activities including river infrastructure development (i.e. URD) within the urban areas, positively impact the respective state and country. The tangible benefits of URD also extend to the riverfront area as well as surrounding communities. In addition, URD affects the social and economic aspects of human well-being (Abdullah, 2002; Bogena, 2015). But, the impact assessment practices on URD in Malaysia focus more on the environmental and social aspects, and lacks emphasis on the socio-economic aspect especially on property market dimension. This however, differs from other countries throughout the world such as US, UK, Japan, China and Singapore where socio-economic aspects including property market has long been explored by researchers (Florida, 2000; Zimmerman, 2008; Huang and Kao, 2014; Dauffenbach *et al.*,2016).

As for the impact assessment practice of URD in Malaysia, it has been identified that there are only two assessment tools used to evaluate urban infrastructure development projects; EIA and SIA. In this regards, the Department of Environment, Ministry of Natural Resources and Environment, has declared the EIA as a well-established tool to assess the environmental impacts of development projects in Malaysia, while the Department of Town and Country Planning, Ministry of Welfare Township, Housing and Local Government has declared the SIA as an applicable tool to evaluate the social impact of development projects in Malaysia. Research findings on applicable impact assessment tools for infrastructure development projects including URD have identified that the assessments were more focused on social and environment indicators. For example, research by Findlay and Taylor (2006) had revealed that they only focused on environment aspects. While, Du Pisani and Sandham (2006) had discovered that the social indicators have not fully emphasized in impact assesment practice in South Africa. In addition to this

limitation, the economic indicators were also assessed by using the EIA and SIA tools, but it has identified that still ambiguous, insufficient and hence, need more thorough investigations.

According to Briffett *et al.* (2004) and Makmor and Ismail (2016), the EIA tool concentrates primarily on environmental indicators and less on the social and economic indicators. In fact, there is lacking focuses on socio-economic impacts particularly those related to property market. Although there are several non-academic studies on the impacts of URD on property market in Malaysia, their findings may be deficient as they are not published in academic researches and the socio-economic indicators that linked with property market are ambiguous due to poor investigation procedures. Thus, it perceived needs a meticulous exploration. In this regards, findings from academic researches may be able to assist researchers and field experts in gathering useful information for future practices (Zhang *et al.*, 2016).

Moreover, Burdge and Jonhson (1994); Burdge and Vanclay (1995); Burdge and Vanclay (1996); Barrow (1997); Doling (2007); and Abdullah Mohamad Said (2010) reported several weaknesses of the SIA tool especially in defining the scopes of impact baseline description and impact quantification, thus, causing ambiguity in determining the social and economic indicators. In this respect, most stakeholders, particularly the URD managers, have admitted confusion in assessing the economic impact of URD using the assessment tools applicable in Malaysia. This occurs when they tried to choose the best assessment tools to evaluate economic attributes, but it is questionable. Besides, it has identified that there is still no specific assessment tool withstanding of socio-economic base that also considers the property market. This problem has led towards the usage of wrong assessment tool, and consequently, produced an imprecise and incorrect assessment report. Additionally, previous study by Abdullah Mohamad Said (2010) discovered that most stakeholders prepared the SIA or EIA reports for a proposed development project simply to fulfil the requirements needed to obtain planning permission. This issue has propagated the crucial need for researchers to develop a more effective assessment tool for URD, which will also comprise the socio-economic aspects including property market in Malaysia. Thus, this will benefit and assist stakeholders such as planners, policy

maker, project managers, developers, investors and property valuers in assessing and measuring the socio-economic impact indicators accurately, and producing a good and truthful assessment report.

Furthermore, the socio-economic impacts' indicators of URD are identified uncritically measured using quantitative approach. In regard this issue, a research by Azlina *et al.* (2016) who assessing three waterfronts in Malaysia had proved that it is very qualitative in nature. Moreover, previous researches have also identified several tools that has been utilized quantitative measures in assessing URD such as Cost-Benefit Analysis (CBA) (Dubgaard *et al.*, 2002; Hitzhusen, 2006; Alam, 2008); Input-Output Analysis (Reitano and Hendricks, 1980; Hjerpe and Kim, 2007; Spörri *et al.*, 2007). But, the major focus is on econometric basis that calculates cost effectiveness and profitability which have different points of view and these have ascertained that not yet been firmed into real estate industry whereas it have interconnected with URD. Therefore, this research focuses on socio-economic impact of URD by considering property market to support real estate industry.

In respect to this issue, Yeh & Li, (1997), Azman Ariffin *et al.*(2014) and Sala *et al.* (2015) highlighted the importance of using spatial-based impact assessment in evaluating indicators of urban infrastructure development in order to enhance the model truthfulness. Preferably, the emphasis on spatial measurement in evaluating indicators is widely adopted within various countries throughout the world such as United State (US), United Kingdom (UK), Europe, Japan, and China. But this practice is not implemented extensively in Malaysia even though it is able to visualize the impacts evidently. It perceived less explored and lacks fundamental basis in Malaysia. According to Azman Ariffin *et al.* (2014), the use of spatial-based indicators in impact assessment of urban infrastructure development, encompassing URD, is still at its infancy in Malaysia. Whereas, previous studies on the spatial-based indicators of the URD has been recognized by other countries over the world including Asian countries (Yeh & Li, 1997; Sala *et al.*, 2015). According to researches on spatial-based assessments in achieving sustainable urban development in Malaysia are limited, despite the increasing demand of scientific findings in this area of interest (Azman Ariffinet *al.*, 2014). Yet, previous studies on spatial-based

assessment of URD in other countries including Asia have already included it in the impact assessment practices on URD (Yeh and Li, 1997; Sala *et al.*, 2015). Hence, it is imperative for researcher to explore and gather information on the concepts underlying the practice of spatial-based socio-economic indicators for URD in Malaysia.

Therefore, this research attempts to develop and establish a specific spatial-based assessment model for URD in Malaysia. Findings of this research would be based on real problems that occur in current assessment practices on URD in Malaysia, and consequently may assist stakeholders in their role as decision makers to make the right decisions particularly in assessing the socio-economic indicators of URD in the future.

1.4 Research Gaps

This research attempts to solve the research gaps below:

1.4.1 Assessment tool in Malaysia

Reviews of previous literature indicated that the EIA and SIA assessment tools applicable in evaluating infrastructure development projects in Malaysia are inadequate as they focus more on the environment and social aspects, with the former emphasizing on the environmental indicators. Through a thorough study on the contents of SIA in Development Proposal Report (DPR), Abdullah Mohamad Said (2010) found that quality of the impact assessment was unsatisfactory due to 1) an overgeneralized SIA in DPR, 2) ambiguous description of background condition, 3) lack of quantitative data usage, and 4) imprecise identification of impacts. This indicates that the implementation of SIA in real practices is still weak. The researcher also addressed the (1) need to improve SIA limitations, (2) uncertainty issues faced by stakeholders and practitioners in choosing and using the tool, and (3) impracticality of SIA to assess socio-economic indicators especially those related to property market. Besides, the complexity of economic growth indicators such as

property market, employment index, land use pattern, trades or business expansion, dumping visitors and quality of living of the local community requires a systematic assessment which will rely on assessment standard (Lim and Biswas, 2015). Therefore, a strategic assessment tool needs to be developed to assess the socio-economic impacts for the URD in Malaysia.

1.4.2 Socio-economic indicators in impact assessment practice

Reviews of past literature have identified that the impact assessment of URD which emphasizes on the economic aspects including property market has long been explored by researchers particularly in developed countries such as US, UK, Japan, China, and Singapore (Florida, 2000; Zimmerman, 2008; Huang and Kao, 2014; Dauffenbach et al., 2016). However, the nature of impact assessment of URD in Malaysia focuses more on the environmental and social aspects and therefore, lacks emphasis on the economic dimension particularly related to property market. On top of that, the mechanism of socio-economic indicators on the property market in Malaysia is still unclear due to lack of research. Thus, it is necessary to ascertain the parameters of each socio-economic indicator to consolidate the assessment of URD in Malaysia.

1.4.3 Method of Analysis

In previous literature, the use of different methods of analysis has long been debated by researchers. Glasson and Heaney (1993) identified that the problem regarding the methods used to analyse SIA was due to the emphasis given on qualitative techniques in previous studies. In contrast, quantitative techniques are less emphasized by practitioners and researchers, and quantification of impact assessment indicators has lesser weighting. Moreover, Abdullah Mohamad Said (2010) reported that the depth of the analysis is inadequate. Hence, there is a need to consider a quantitative approach to improve method used in impact assessment analysis. Therefore, this research utilizes a quantitative approach to analyse socio-economic indicators and their parameters of URD.

To ensure the analysis of socio-economic indicators is also quantitatively in nature, this research attempts to use spatial data analysis and spatial statistical analysis for analysing the socio-economic indicators and parameters. Spatial data analysis is a Geographic Information System (GIS) technique that precisely measures indicators, which in this research are the socio-economic indicators of URD. According to Stillwell and Clarke (2003), the spatial analysis is an objective method that can be used to generate a unit of spatial measurement. In Malaysia however, the emphasis of spatial-based socio-economic indicators in assessing URD is still new, and the theoretical basis of spatial measurements lacks fundamental researches. Therefore, it is necessary to study the theoretical knowledge of spatial measurements for socio-economic indicators, and determine its quantitative values. Thus, the GIS technique which employs spatial data analysis, spatial statistical analysis is chosen as the relevant tool to measure the socio-economic indicators for URD in this study.

1.4.4 Information from preliminary study

A preliminary study has been carried out to clarify the real issues involved in this research area, where several stakeholders were contacted personally for more information and industrial feedback. Findings from the preliminary study are described below:

1.4.4.1 Iskandar Regional Development Authority (IRDA)

The project manager of the URD at Johor Bahru stated that the impact assessment which is being practiced does not rely on a standard and specific assessment tool that suitable for URD. He admitted to being confused as to what applicable tools can be used to best assess the economic indicators and impact of URD in Malaysia. As no specific assessment tool is available to assess economic indicators, unsuitable assessment tool is then used, thus, resulting in substandard and inaccurate assessment report. Hence, it can be concluded that there is a real gap that needs to be solved to uplift the impact assessment practice as well as achieving a sustainable urban development in Malaysia.

1.4.4.2 Federal Department of Town and Country Planning (Malaysian Urban Planning)

The policy maker and planner admitted that there is still no specific impact assessment tool to evaluate the economic impacts of URD in Malaysia. In fact, the existing impact assessment tools like SIA have weaknesses in terms of scope and limitation in impact description, identification and quantification. Additionally, the SIA for DPR focuses on the URD is still at its infancy and needs to be improved. On top of that, one of the policy makers had asserted that the development of an assessment tool which focuses on socio-economic indicators with quantitative base approach as well as spatial dimension is one of the best contributions to both knowledge and the industry. Therefore, the idea to focus on the socio-economic aspect of URD has been supported by practitioners. Hence, this research is essential in uplifting the impact assessment practice of URD in Malaysia. In this regard, Adams and Tiesdell (2010) stated that planners are market actors who are involved in framing and re-framing land and property markets. They cannot directly enhance the property market value, but they have the power to gradually change the spatial aspect of property market, and therefore plays an important role in influencing property market.

1.5 Research Questions

This research attempt to answer the questions:

- (a) What are the socio-economic indicators of the URD?
- (b) What are the weakness of traditional analysis and the strength of spatial measurement of socio-economic indicators of URD?
- (c) How could the socio-economic impacts of URD be assessed? and which spatial parameters have been influenced by URD?

- (d) How to use the developed spatial-based socio-economic model to assess the significant socio-economic indicators impacted by URD?

1.6 Research Aim

The aim of this research is to strengthen the impact assessment practice for URD in Malaysia by emphasizing on socio-economic aspect within impact assessment practice, including clarifying the socio-economic indicators of URD particularly related to property market as well as precisely measure the socio-economic indicators and impacts of URD.

1.7 Research objectives

The objectives of this research are:

- (a) To ascertain the socio-economic indicators of URD.
- (b) To determine the spatial measurements of socio-economic indicators of URD.
- (c) To develop a spatial-based socio-economic model for URD.
- (d) To assess socio-economic impacts of URD using the developed spatial-based socio-economic model.

1.8 Significant of the Research

This research is intended for the development of an impact assessment tool for URD as a complement to the existing tools. The developed spatial-based socio-economic model may be established as a new model for URD in Malaysia. This model utilizes a novel approach of impact assessment analysis using spatial elements and statistics obtained from GIS software, and may assist stakeholders in reporting

precise impact assessment analysis and making informative decision involving URD. Therefore, this research could strengthen the impact assessment practice of URD in Malaysia.

1.9 Scopes and Limitation of Research

The scope and limitation of this research are as follows:

- (a) This research attempts to examine the socio-economic impact of the URD in Malaysia. Participatory Impact Assessment (PIA) approach will be utilized to evaluate the impact of URD. This approach considers the residents within riverfront area. Hence, this research will be based on the case study of Melaka River in Melaka, Malaysia.
- (b) The URD defined within this research is the river-and-riverfront development, redevelopment and proposed projects within the urban area. However, this research only considered the impact assessment for post-construction, which is after the completion of project development.
- (c) The impact assessment of URD focuses on the socio-economic aspect only, along with the three pillars of sustainability. In addition, this research will also analyse the impact of URD on adjacent property market. Nonetheless, the ecological aspect in regards URD is not the main focus of this research which mean not investigated rigorously through this research.
- (d) The impact assessment of URD considers the spatial dimension to stimulate a novel approach of specific assessment tool for URD in Malaysia. Investigation on the spatial measurement will be done both theoretically and practically.

- (e) For assessing location and sub-location attributes which related to spatial data, it is only based on data availability, applicability as well as suitability for this research scopes.

1.10 Research Methodology

This research has four phases of methodology, and summary of each phase is explained in the sub-sections below. A quantitative approach was used for data collection and analysis. One case study, based at the Melaka River within urban area, was selected for this research. Figure 1.1 shows the complete study design of this research. Further details of the methodology are elaborated in chapter 4.

1.10.1 Phase One

This phase focused on the preliminary study. It involved the process of identifying research issues and gaps, research questions, aims, objectives, scopes and limitations, as well as significance of the research.

1.10.2 Phase Two

Phase two concentrated on the development of theoretical framework, which was designed based on literature review. Various types of sources were referred, from journals, articles, reports, books and newspapers, to extract information on URD, socio-economic assessment, socio-economic indicators and GIS application. The information was extracted from journals, articles, reports, books and newspapers.

1.10.3 Phase Three

Phase three emphasized on the methodology used to achieve the research objectives. It involved three stages which were 1) data collection and analysis; 2) model development; and 3) model validation.

Stage one focused on the first and second objectives, where information gathered from literature review and field survey was used to formulate the data collection methods. The data was analysed using frequency and descriptive analyses, and Relative Important Index (RII). As for the field survey, a total of 500 questionnaires were distributed to respondents (i.e. property buildings' occupiers) located in the property buildings along Melaka River, Melaka, Malaysia. Stage two addressed the third objectives which involved strategies undertaken to develop a spatial-based socio-economic model for URD. In this respect, the model was derived using Structural Equation Model-Partial Least Square (SEM-PLS) modelling. The socio-economic indicators were also analysed using GIS software to evaluate their spatial elements. Stage three concentrated on the fourth objective which involved the validation process of the developed model. An assessment index for URD was developed, namely Socio-economic Assessment (SEA) of URD index. This index was used to simultaneously evaluate the impact of URD in the selected case study area and validate the developed model.

1.10.4 Phase Four

The phase four emphasizes conclusion and recommendations for future research. It includes final outcomes and summary of socio-economic impacts of URD.

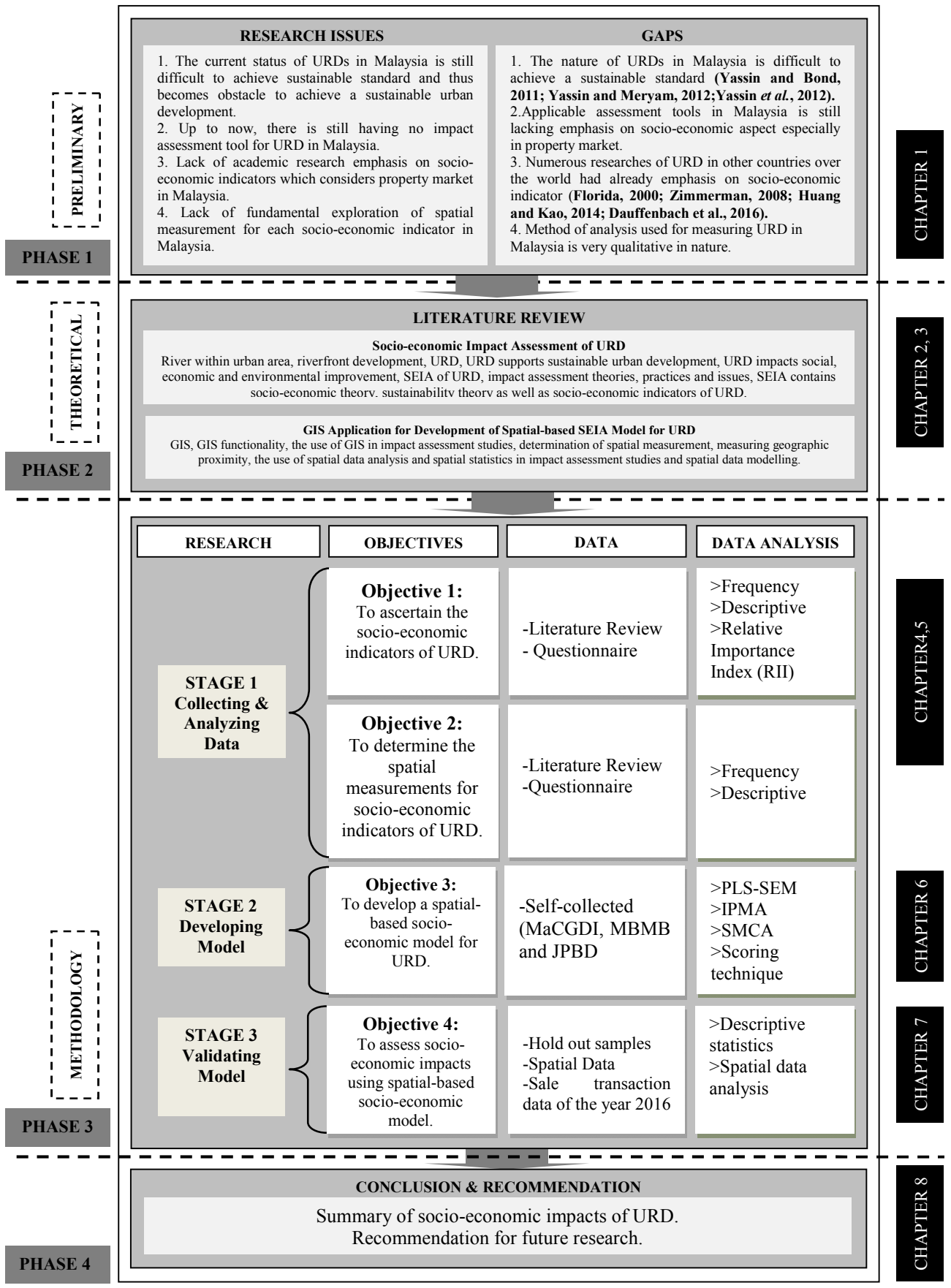


Figure 1.1 Research Design

1.11 Chapter Layout

This thesis is structured into eight chapters. The chapters are organized to ensure achievement of desired goals and objectives, as follows:

Chapter 1 is an introduction to the research. This chapter contains the general framework of the research that includes research background, problem statement, research questions, research aims, objectives, scopes and limitations, significance of research, and the overview of research methodology.

Chapter 2 reviews the literature on river and urban river, riverfront development, evolution of urban riverfront, URD, URD-supported sustainable urban development, and URD impacts on social, economic and environmental growth. This chapter also elaborates on SEA and socio-economic indicators, its current practices on URD in Malaysia as well as other countries.

Chapter 3 discusses the spatial-based socio-economic modelling of the URD, the importance of emphasizing spatial elements in socio-economic modelling of URD, basic concepts of the spatial assessment of URD. This chapter also highlights spatial statistical procedures undertaken for socio-economic modelling, spatial measurement of socio-economic indicators specifically on accessibility, neighbourhood and environmental measures. The GIS software procedures are also outlined in this chapter.

Chapter 4 elucidates the research methodology of this study. Details on the research approach, sampling, methods of data collection and analysis are explained.

Chapter 5 presents the geographical study area of Melaka River, Melaka, Malaysia. This chapter also describes the overall population growth of Melaka as well as expected respondents recruited in this study, and focuses on empirical investigation of the study area.

Chapter 6 elaborates on the data analysis and results based on descriptive analysis, Structural Equation Model-Partial Least Square (SEM-PLS), spatial data analysis and spatial statistical analysis. Precisely, the SEM-PLS analysis was conducted using SmartPLS software version 3.6.2, while spatial data analysis was carried out using ArGIS software version 10.4.

Chapter 7 focuses on spatial-based socio-economic modelling for URD. This chapter also includes indexing socio-economic of URD variables. Then, a validation of the developed model was carried out using statistical-based assessment (i.e. statistical approach-using hold-out samples) and spatial-based assessment (integrated approach-using hold-out samples and spatial data), where the both results were compared to evaluate the applicability of the model in determining the socio-economic impacts of the URD. To carry out this assessment procedures, the empirical investigation was conducted within the case study area (i.e. Melaka River, Melaka, Malaysia).

Chapter 8 summarizes the research according to the research objectives' achievement and gives some recommendations for further researches. This was followed by an explanation of research strengths, limitations and potential areas for future researches. This chapter concludes the thesis with contributions of the research to both knowledge and industry.

REFERENCES

- A.Santos, J. R. (2013) 'Cronbach ' s Alpha : A Tool for Assessing the Reliability of Scales', *Journal of Extension*.
- Abdullah, K. (2002) *Integtrated river basin management*. Penang, Malaysia: Universiti Sains Malaysia Press.
- Abdullah Mohamad Said (2010) *Social Impact Assessment in Malaysia: Present Applications and The Way Forward*. Professori. Shah Alam, Selangor, Malaysia: University Publication Centre (UPENA), Universiti Teknologi MARA (UiTM).
- Abubakar, I. and Yusuf, A. A. (2018) 'GIS and Space Syntax: An Analysis of Accessibility to Urban Green Areas in Doha District of Dammam Me', in *International Symposium of Ecology 2018*. Kastamonu, Turkey, pp. 1–8.
- Adams, D. and Tiesdell, S. (2010) 'Planners as Market Actors : Rethinking State – Market Relations in Land and Property', *Planning Theory & Practice ISSN:*, 11(2), pp. 187–207.
- Adegoke, O. J. (2014) 'Critical factors determining rental value of residential property in Ibadan metropolis, Nigeria', *Property Management*.
- Adelle, C. and Weiland, S. (2012) 'Policy assessment: The state of the art', *Impact Assessment and Project Appraisal*, 30(1), pp. 25–33.
- Adom, A. Y., Jussem, B., Pudun, J. and Yatim, A. (2012) 'Factors That Influence Visitors ' Satisfaction Toward Kuching Waterfront', *Journal for The Advancement of Science & Arts*, 3(2), pp. 40–48.
- Afra Neitzke, A. C., Colauto, R. D. and de Almeida, V. E. (2014) 'Victoria Grocery: Challenges and Surprises in that "Be Entrepreneur"', *Merceria Victoria: Retos Y Sorpores As Em 'Ser Empresario'*.
- Ahn, K.-W., Lim, J.-C., Lee, Y.-K., Choi, T.-B., Lee, K.-S., Im, M.-S., Go, Y.-H. and Suh, J.-H. (2016) 'Vegetation Classification and Distributional Pattern in Damyang Riverine Wetland', *J. Environ. Impact Assess.*, 25(2), pp. 89–102.
- Alaghmand, S., Abdullah, R., Abustan, I. and Vosoogh, B. (2010) 'GIS-based River Flood Hazard Mapping in Urban Area (A Case Study in Kayu Ara River Basin, Malaysia)', *International Journal of Engineering and Technology*.

- Alam, B. M. (2015) 'Influence of transit accessibility to jobs on the employability of the welfare recipients: The case of Broward County, Florida', *Dissertation Abstracts International, A: The Humanities and Social Sciences*.
- Alam, K. (2008) 'Cost-benefit analysis of restoring buriganga river, Bangladesh', *International Journal of Water Resources Development*, 24(4), pp. 593–607.
- Aliyu, M. and Muhammad Ludin, A. N. (2015) 'A Review of Spatial Multi Criteria Analysis (SMCA) Methods for Sustainable Land Use Planning (SLUP)', *Journal of Multidisciplinary Engineering Science and Technology*, 2(9), pp. 2581–2590.
- Amiril, A., Nawawi, A. H., Takim, R. and Latif, S. N. F. A. (2014) 'Transportation Infrastructure Project Sustainability Factors and Performance', *Procedia - Social and Behavioral Sciences*, 153, pp. 90–98.
- Anderson, S. . and West, S. E. (2006) 'Open space , residential property values , and spatial context', *Regional Science and Urban Economics*, 36, pp. 773–789.
- Anderson, S. and West, S. (2006) 'Open space, residential property values, and spatial context', *Regional Science and Urban Economics*.
- Ansar, A., Flyvbjerg, B., Budzier, A. and Lunn, D. (2016) 'Does infrastructure investment lead to economic growth or economic fragility? Evidence from China', *Oxford Review of Economic Policy*.
- Anseel, F., Lievens, F., Schollaert, E. and Choragwicka, B. (2010) 'Response rates in organizational science, 1995-2008: A meta-analytic review and guidelines for survey researchers', *Journal of Business and Psychology*.
- Anselin, L. (1992) *Spatial Data Analysis With GIS: An Introduction To Application in the Social Sciences*.
- Anselin, L., Syabri, I. and Kho, Y. (2006) 'GeoDa: An introduction to spatial data analysis', *Geographical Analysis*.
- Arora, A. and Tiwari, G. (2017) *A Handbook for Socio-Economic Impact Assessment (SEIA) Methodology for Future Urban Transport (FUT) Projects A Handbook for Socio-economic Impact Assessment (SEIA) of Future Urban Transport (FUT) Projects*. Transporta. New Delhi, India: Indian Institute of Technology Delhi.
- Astrachan, C. B., Patel, V. K. and Wanzienried, G. (2014) 'A comparative study of CB-SEM and PLS-SEM for theory development in family firm research', *Journal of Family Business Strategy*.

- Atkinson, S. F. and Canter, L. W. (2011) 'Assessing the cumulative effects of projects using geographic information systems', *Environmental Impact Assessment Review*.
- Awange, J. L. and Kiema, J. B. K. (2013) Environmental Geoinformatics Monitoring and Management.
- Azizi Jalilian, M., Danehkar, A. and Shaban Ali Fami, H. (2012) 'Determination of indicators and standards for tourism impacts in protected Karaj River, Iran', *Tourism Management*, 33(1), pp. 61–63.
- Azlina, M. Y., Abdul Jalil, O., Rohaizan, R. and Mohd. Najib, M. R. (2016) 'Assessing the effect of waterfront development in Malaysia', *Social Sciences (Pakistan)*, 11(11), pp. 2897–2901.
- Azman Ariffin, Haziq Kamal Mukhelas, Abd. Hamid Mar Iman, Ghazali Desa, I. and Mohammad, S. (2014) 'Spatial-Based Sustainability Assessment of Urban Neighbourhoods: A Case Study of Johor Spatial-Based Sustainability Assessment of Urban Neighbourhoods: A Case Study of Johor', *Jurnal Teknologi*, (January).
- Azman Ariffin, Haziq Kamal Mukhelas, Abd. Hamid Mar Iman, Ghazali Desa, I. S. M. (2014a) 'Spatial-Based Sustainability Assessment of Urban Neighbourhoods: A Case Study of Johor Bahru City Council, Malaysia', *Jurnal Teknologi*, pp. 1–17.
- Azman Ariffin, Haziq Kamal Mukhelas, Abd. Hamid Mar Iman, Ghazali Desa, I. S. M. (2014b) 'Spatial-Based Sustainability Assessment of Urban Neighbourhoods: A Case Study of Johor Bahru City Council, Malaysia', *Jurnal Teknologi*, pp. 1–17.
- Bahari, N. I., Arshad, A. K. and Yahya, Z. (2013) 'Assessing the pedestrians' perception of the sidewalk facilities based on pedestrian travel purpose', in *Proceedings - 2013 IEEE 9th International Colloquium on Signal Processing and its Applications, CSPA 2013*.
- Baker, G., Michalk, D., Whitby, W. and O'Grady, S. (2002) 'Influence of sewage waste on the abundance of earthworms in pastures in south-eastern Australia', *European Journal of Soil Biology*.
- Baker, M. J. (2002) 'Sampling', *The Marketing Review*.

- Balen, M. Van, Dooms, M. and Haezendonck, E. (2012) 'The economic impact of river tourism on ports: The case of Brussels', in *International Association of Maritime Economists 2012 Conference*, p. 14.
- Balzano, S., Porzio, G. C., Trinchera, L., Balzano, S., Porzio, G. C., Trinchera, L., Path, P. L. S., Data, O., Balzano, S., Porzio, G. C. and Trinchera, L. (2010) 'PLS Path Modeling with Ordinal Data', in *34th Annual conference of the German Classification Society (GFKL'10)*.
- Barrow, C. J. (1997) *Environmental and social impact assessment: an introduction*, Environmental and social impact assessment: an introduction.
- Bartlett, R. V and Kurian, P. A. (1999) 'The Theory of Environmental Impact Assessment: Implicit models of policy making What makes EIA work?', *Policy and Politics*, 27(4).
- Barua, M. (2016) 'Lively commodities and encounter value', *Environment and Planning D: Society and Space*.
- Baruch, Y. (1999) 'Response Rate in Academic Studies-A Comparative Analysis', *Human Relations*.
- Beca, P. L. (2007) *Odour Buffer Distances for Ballarat North, Ballarat South and Cardigan Village WWTPs*.
- Belka, K. M. (2005) *Multicriteria analysis and GIS application in the selection of sustainable motorway corridor*. Linköpings universitet.
- Bender, A., Din, A., Hoesli, M. and Laakso, J. (1999) 'Environmental quality perceptions of urban commercial real estate', *Journal of Property Investment & Finance*.
- Bennett, G. and Mulongoy, K. J. (2006) 'Review of experience with ecological networks, corridors and buffer zones', *CBD Technical Series*.
- Bennett, R. J. (1985) 'A reappraisal of the role of spatial science and statistical inference in geography in Britain', *Espace géographique*, 14(1), pp. 23–28.
- Benson, E. D., Hansen, J. L., Schwartz, Jr, A. L. and Smersh, G. T. (1998) 'Pricing Residential Amenities: The Value of a View', *Journal of Real Estate Finance and Economics*, 16(1), pp. 55–73.
- Benson, J. F. (2003) 'What is the alternative? Impact assessment tools and sustainable planning', *Impact Assessment and Project Appraisal*, 21(4), pp. 261–280.

- Bereitschaft, B. (2015) 'Pedestrian exposure to near-roadway PM2.5 in mixed-use urban corridors: A case study of Omaha, Nebraska', *Sustainable Cities and Society*.
- Bertram, C., Meyerhoff, J., Rehdanz, K. and Wüstemann, H. (2017) 'Differences in the recreational value of urban parks between weekdays and weekends: A discrete choice analysis', *Landscape and Urban Planning*.
- Bhat, C., Handy, S., Kokkelman, K., Mahmassani, H., Chen, Q. and Weston, L. (2000) *Development of An Urban Accessibility Index: Literature Review*. Austin.
- Bisson, P. A., Montgomery, D. R. and Buffington, J. M. (2017) 'Valley Segments, Stream Reaches, and Channel Units', in *Methods in Stream Ecology: Third Edition*.
- Bissonnette, L., Wilson, K., Bell, S. and Shah, T. I. (2012) 'Neighbourhoods and Potential Access To Health Care : The Role of Spatial and Aspatial Factors', *Health & Place*, 18(4), pp. 841–853.
- Biswas, T., Wang, T.-H. and Krishnamurti, R. (2013) 'From Design To Pre-certification Using Building Information Modeling', *Journal of Green Building*.
- Bivand, R. (1998) 'A review of spatial statistical techniques for location studies', *Business*.
- Blumenberg, E., Pierce, G. and Rutgers, M. S. (2015) 'Transportation Access, Residential Location, and Economic Opportunity: Evidence From Two Housing Voucher Experiments', *Cityscape: A Journal of Policy Development and Research*.
- Bogena, H. (2015) 'Water and Sustainable development', UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC), pp. 1–6.
- Bond, A., Morrison-Saunders, A. and Pope, J. (2012) 'Sustainability assessment: The state of the art', *Impact Assessment and Project Appraisal*, 30(1), pp. 53–62.
- Bowker, J. M., English, D. B. K. and Cordell, H. K. (1999) 'Projections on outdoor recreation participation to 2050', in *Outdoor recreation in American life: a national assessment of demand and supply trends*.
- Breton, A. and Breton, R. (1969) 'An Economic Theory of Social Movements', *The American Economic Review*, 59(2), pp. 198–205.

- Briffett, C., Obbard, J. and Mackee, J. (2004) 'Environmental assessment in Malaysia: A means to an end or a new beginning?', *Impact Assessment and Project Appraisal*, 22(3), pp. 221–233.
- Briguglio, L., Cordina, G., Farrugia, N. and Vella, S. (2009) 'Economic vulnerability and resilience: Concepts and measurements', *Oxford Development Studies*.
- Brown, R. K. and Duff, R. (2015) 'Urbanism , Religion , and Race-based Residential Preferences', *Journal of Religion and Society*, 17, pp. 1–16.
- Bryson, J. (2013) 'Greening urban renewal: Expo '74, urban environmentalism and green space on the spokane riverfront, 1965-1974', *Journal of Urban History*, 39(3), pp. 495–512.
- Buja, A., Cook, D., Hofmann, H., Lawrence, M., Lee, E.-K., Swayne, D. F. and Wickham, H. (2009) 'Statistical inference for exploratory data analysis and model diagnostics', *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*.
- Burdge, R. J. and Jonhson, S. (1994) Environmental impact statements and social scientist: A conceptual approach to sicial impact assessment: collection of writings, middle, wisconsin: Social Ecology Press. Edited by R. J. Burdge.
- Burdge, R. J. and Vanclay, F. (1995) 'Social Impact Assessment: A Contribution to the State Of The Art Series', *Environmental and Social Impact Assessment*.
- Burdge, R. J. and Vanclay, F. (1996) 'Social impact assessment: A contribution to the state of the art series', *Environmental and Social Impact Assessment*, 14, pp. 59–86.
- Butuner, B. (2006) 'Waterfront Revitalization as a Challenging Urban Issue in Istanbul', in *42nd ISoCaRP Congress 2006*, pp. 1–11.
- Candes, E. J. and Wakin, M. B. (2008) 'An Introduction To Compressive Sampling', *IEEE Signal Processing Magazine*.
- Castelle, A. J., Johnson, A. W. and Conolly, C. (1994) 'Wetland and Stream Buffer Size Requirements—A Review', *Journal of Environment Quality*.
- Castelnovo, W. and Simonetta, M. (2008) 'A Public Value Evaluation of e-Government Policies', *Electronic Journal of Information Systems Evaluation*.
- Chadwick, A. and Glasson, J. (2017) Socio-economic impacts 2: Social impacts, Methods of Environmental and Social Impact Assessment.

- Chang, H. and Liao, C. (2011) 'Exploring an integrated method for measuring the relative spatial equity in public facilities in the context of urban parks', *Cities*, 28, pp. 361–371.
- Che, Y., Yang, K., Chen, T. and Xu, Q. (2012) 'Assessing a riverfront rehabilitation project using the comprehensive index of public accessibility', *Ecological Engineering*, 40, pp. 80–87.
- Checkley, W., Gilman, R. H., Black, R. E., Epstein, L. D., Cabrera, L., Sterling, C. R. and Moulton, L. H. (2004) 'Effect of water and sanitation on childhood health in a poor Peruvian peri-urban community', *Lancet*.
- Chegut, A. M., Eichholtz, P. M. A. and Rodrigues, P. J. . (2014) 'Spatial Dependence in International Office Markets', *The Journal of Real Estate Finance and Economics*.
- Chen, C. H., Wu, R. S., Liu, W. L., Su, W. R. and Chang, Y. M. (2009) 'Development of a methodology for strategic environmental assessment: application to the assessment of golf course installation policy in Taiwan', *Environmental Management*.
- Chen, S.-C. and Quester, P. G. (2005) 'Developing a Value-Based Measure of Market Orientation in an Interactive Service Relationship', *Journal of Marketing Management*.
- Chiaradia, A., Hillier, B. and Schwander, C. (2009) 'Residential Property Value Patterns in London Space Syntax spatial Analysis', in *7th International Space Syntax Symposium*, pp. 1–12.
- Chin, W. (1998) 'The Partial Least Squares Approach to SEM chapter', *Modern Methods for Business Research*.
- Chislock, M. F., Doster, E., Zitomer, R. a. and Wilson, A. E. (2013) 'Eutrophication : Causes , Consequences , and Controls in Aquatic Ecosystems', *Nature Education Knowledge*.
- City, B. (2017) *Riverfront Activation Feasibility Study*. City of Delta, Colorado.
- City of Edinburgh Council (2014) Case Studies: Waterfront Regeneration.
- Cohen, J. (1960) 'A Coefficient of Agreement for Nominal Scales', *Educational and Psychological Measurement*.
- Cohen, J. (1988) 'Statistical power analysis for the behavioral sciences', *Statistical Power Analysis for the Behavioral Sciences*.

- Conley, T. G. and Molinari, F. (2007) 'Spatial correlation robust inference with errors in location or distance', *Journal of Econometrics*.
- Cooper, D. and Schindler, P. (2014) 'Business Research Methods', *Social Research*.
- Corazza, M. V., Di Mascio, P. and Moretti, L. (2016) 'Managing sidewalk pavement maintenance: A case study to increase pedestrian safety', *Journal of Traffic and Transportation Engineering (English Edition)*.
- Cordell, H. K., Bergstrom, J. C. and Watson, A. E. (1992) 'Economic-Growth and Interdependence Effects of State-Park Visitation in Local and State Economies', *Journal of Leisure Research*, 24(3), pp. 253–268.
- Cortina, J. M. and Greenberg, J. (2013) 'Nunnally - 1994 - Ch.6 Theory of Measurement Error.pdf', *Journal of Applied Psychology*.
- Costanza, R. (1999a) 'Costanza, 1999 - The ecological, economic, and social importance of the oceans', *Ecological Economics*, 31, p. 15.
- Costanza, R. (1999b) 'Costanza, 1999 - The ecological, economic, and social importance of the oceans', *Ecological Economics*, 31, p. 15.
- Crawford, T. W., Jilcott Pitts, S. B., McGuirt, J. T., Keyserling, T. C. and Ammerman, A. S. (2015) 'Conceptualizing and Comparing Neighborhood and Activity Space Measures for Food Environment Research', *Health Place*, 01, pp. 215–225.
- Creswell, J. W. (2013) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Research design Qualitative quantitative and mixed methods approaches.
- Creswell, J. W. (2014) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Research design Qualitative quantitative and mixed methods approaches.
- Croasmun, J. T. and Ostrom, L. (2011) 'Using Likert-Type Scales in the Social Sciences', *Journal of Adult Education*.
- Crotty, M. (1998) *The Foundations of Social Research, Meaning and perspective in the research process*. London: SAGE Publications.
- Csillag, F. and Boots, B. (2005) 'A Framework for Statistical Inferential Decisions in Spatial Pattern Analysis', *The Canadian Geographer*, 49(2), pp. 172–179.
- Dalvi, M. Q. and Martin, K. M. (1976) 'The Measurement of Accessibility: Some Preliminary Results', *Transportation*, 5, pp. 17–42.

- Dang, L., Xu, Y. and Tang, Q. (2015) 'The pattern of available construction land along the Xijiang River in Guangxi, China', *Land Use Policy*.
- Dauffenbach, R., Abrogar, E., Reim, M. and Teufel, D. (2016) The "Economics of Place" and Potential Impacts of Arkansas River Development Project.
- Davidson, M. (2009) 'Urban Geography: Waterfront Development', *International Encyclopedia of Human Geography*, pp. 215–221.
- Davidson, M. (2013) 'Waterfront Development', *Urban Geography*, March(February), pp. 215–221.
- Dawkins, R. (1995) River out of Eden: a Darwinian view of life, Science.
- Department of Environment, M. of N. R. and E. M. (2012) *Guidelines for Siting and Zoning of Industry and Residential Areas, Ministry of Natural Resources and Environment Malaysia*. Malaysia: Department of Environment, Ministry of Natural Resources and Environment Malaysia.
- Department of Irrigation and Drainage (DID) (2011) *Profil Daerah Melaka Tengah*. Melaka.
- Department of Irrigation and Drainage (DID) (2018) Melaka River, Department of Irrigation and Drainage Ministry of Water, Land and Natural Resources.
- Department of Statistics Malaysia (DOSM) (2018) Melaka, Department of Statistics Malaysia Official Portal.
- Desai, R. (2012) 'Governing the Urban Poor: Riverfront Development, Slum Resettlement and the Politics of Inclusion in Ahmedabad', *Economic and Political Weekly*, 47(2), pp. 49–56.
- Deutskens, E., De Ruyter, K., Wetzels, M. and Oosterveld, P. (2004) 'Response rate and response quality of Internet-based surveys: An experimental study', *Marketing Letters*.
- Development, L. E. (2002) 'Tourism and Local Economic Development', *Annals of Tourism Research*, 29(4), pp. 1–8.
- Dey, P. K. (2006) 'Integrated project evaluation and selection using multiple-attribute decision-making technique', *International Journal of Production Economics*.
- Dillman, D. A., Phelps, G., Tortora, R., Swift, K., Kohrell, J., Berck, J. and Messer, B. L. (2009) 'Response rate and measurement differences in mixed-mode surveys using mail, telephone, interactive voice response (IVR) and the Internet', *Social Science Research*.

- Dixon, T. J. and Eames, M. (2014) 'Sustainable urban development to 2050', *Urban Retrofitting for Sustainability: Mapping the Transition to 2050*, (October), pp. 19–48.
- Dobbs, S. (2002) 'Urban redevelopment and forced eviction of lighters from the Singapore River', *Singapore Journal of Tropical Geography*, 23(3), pp. 288–230.
- DOE (2010) Environmental Requirements: A Guide For Investors. Putrajaya, Malaysia.
- Doling, J. (2007) 'Social impact assessment: some lessons from abroad', *Malaysian Journal of Social Administration*, 4, pp. 1–10.
- Dong, L. (2004) Waterfront Development : A Case Study of Dalian, China.
- Douglas, A. J. and Harpman, D. A. (1995) 'Estimating recreation employment effects with IMPLAN for the Glen Canyon Dam region', *Journal of Environmental Management*, 44(3), pp. 233–247.
- Dubgaard, A., Kallesøe, M. F., Petersen, M. L. and Ladenburg, J. (2002) 'Cost-benefit Analysis of the Skjern River Restoration Project', *Department of Economics and Natural Resources, Royal Veterinary and Agricultural University Copenhagen*, p. 42.
- Ebregt, A. and Pol De, G. (2000) Buffer Zones and their Management, Policy and Best Practices for Terrestrial Ecosystems in Developing Countries. Netherland.
- Economic Planning Unit (2015a) Eleventh Malaysia Plan, Rancangan Malaysia Kesebelas (Eleventh Malaysia Plan) : 2016-2020.
- Economic Planning Unit (2015b) Strengthening Infrastructure to Support Economic Expansion, Rancangan Malaysia Kesebelas (Eleventh Malaysia Plan) : 2016-2020.
- English, D. B. K. and Bowker, J. M. (1996) 'Economic Impacts of Whitewater Rafting: A Study of Five Rivers', *Water Resources Bulliten*, pp. 1319–1328.
- Erham, A. and Hamzah, A. (2014) 'An Evolution of Urban Waterfront and Tourism : A Case in Makassar', *Asian Journal of Social Sciences & Humanities*, 3(November), pp. 124–131.
- Erkip, F. B. (1997) 'The distribution of urban public services: the case of parks and recreational services in Ankara', *Cities*, 14(6), pp. 353–361.

- Erkök, F. (2009) 'Waterfronts : Potentials for improving the quality of urban life *', *Istanbul Technical University-Architecture*, 6(1), pp. 126–145.
- Esfahani, H. S. and Ramirez, M. T. (2003) 'Institutions, infrastructure, and economic growth', *Journal of Development Economics*.
- ESRI (2016a) 'Arcgis 10.4 for server', *Matrix, Functionality*.
- ESRI (2016b) Buffer, Environmental Systems Research Institute, Inc. Copyright 2016.
- ESRI (2016c) Proximity Analysis, Environmental Systems Research Institute, Inc. Copyright 2016.
- ESRI (2016d) Statistical analysis, Environmental Systems Research Institute, Inc. Copyright 2016.
- ESRI (2016e) Union, Environmental Systems Research Institute, Inc. Copyright 2016.
- ESRI (2016f) Using Viewshed and Observer Points for visibility analysis, Environmental Systems Research Institute, Inc. Copyright 2016.
- Esteves, A. M., Franks, D. and Vanclay, F. (2012) 'Social impact assessment: The state of the art', *Impact Assessment and Project Appraisal*, 30(1), pp. 34–42.
- Farrington, D. P. and Welsh, B. C. (2002) 'Improved street lighting and crime prevention', *Justice Quarterly*.
- Fazal, S. (2008) *GIS Basics*. New Age International Publishers.
- Featherman, D. L., Lancaster Jones, F. and Hauser, R. M. (1975) 'Assumptions of social mobility research in the U.S.: The case of occupational status', *Social Science Research*, 4(4), pp. 329–360.
- Fenger, J. (1999) 'Urban air quality', *Atmospheric Environment*.
- Findlay, J. S. and Taylor, M. P. (2006) 'Why rehabilitate urban river systems?', *Area*, 38(3), pp. 312–325.
- Firestone, W. A. (1987) 'Meaning in Method: The Rhetoric of Quantitative and Qualitative Research', *Educational Researcher*, 16(7), pp. 16–21.
- Fisher, J. A. (2009) 'Environmental Aesthetics', in *The Oxford Handbook of Aesthetics*.
- Fisher, R. A. (1915) 'Frequency Distribution of the Values of the Correlation Coefficient in Samples from an Indefinitely Large Population', *Biometrika*.
- Fitzpatrick, T. (2018) *The Exotic Magic of Malacca*, World Footprints LLC.

- Florida, R. (2000) *Competing in The ge of Talent: Quality of Place and The New Economy*.
- Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J. and Bryant, B. E. (1996) 'The American Customer Satisfaction Index: Nature, Purpose, and Findings', *Journal of Marketing*.
- Fotheringham, S., Brunsdon, C. and Charlton, M. (2000) *Quantitative Geography: Perspectives on Spatial Data Analysis, Applied Geography*.
- Francis, J., Giles-corti, B., Wood, L. and Knuiman, M. (2012) 'Creating Sense of Community: The role of public space Creating', *Journal of Environmental Psychology*, 32, pp. 401–409.
- Franz, J. and Kirkpatrick, C. (2007) 'Intergrating sustainable development into european policymaking: the role of impact assessments', *Journal of Environmental Assessment Policy and Management*, 9(2), pp. 141–160.
- Freiberg, A. B. (2004) *Regulatory Basis of Environmental Impact Assessment, Current Environmental Status, Methodological Aspects of Environmental and Socio-Economic Impact Assessment*. Republic of Kazakhstan.
- Frey, H. and Bagaen, S. (2010) 'Adapting the City', in *Chapter 8*, pp. 163–182.
- Fujita, M. (1999) *Urban Economic Theory Land Use and City Size*. University of Pennsylvania: Cambridge University Press.
- Fuller, W. A. (2009) *Sampling Statistics, Sampling Statistics*.
- Fundingsland Tetlow, M. and Hanusch, M. (2012) 'Strategic environmental assessment: The state of the art', *Impact Assessment and Project Appraisal*, 30(1), pp. 15–24.
- Gallimore, P., Fletcher, M. and Carter, M. (1996) 'Modelling the influence of location on value', *Journal of Property Valuation and Investment*.
- Gantsetseg, B. and Basting, I. (2001) *EIA Approach With Application of Spatial Multi-Criteria Analysis*. Mongolia.
- Garson, G. D. (2016) *Partial Least Squares: Regression and Structural Equation Models*.
- Gaskin, J. (2016) 'Data Screening', *Gaskination's StatWiki*.
- Getis, A. and Ord, J. K. (1992) 'The Analysis of Spatial Association by Use of Distance Statistics', *Geographical Analysis*.

- Geurs, K. T. and van Wee, B. (2004) 'Accessibility evaluation of land-use and transport strategies: Review and research directions', *Journal of Transport Geography*.
- Gilmour, D., Blackwood, D., Banks, L. and Wilson, F. (2007) 'A Sustainability Enhancement Framework for the Dundee Central Waterfront Development', in *International Conference on Whole Life urban Sustainability and its Assessment*. Glasgow.
- Gimpelevich, D. (2011) 'Simulation-based excess return model for real estate development', *Journal of Property Investment & Finance*.
- Glasson, J. and Heaney, D. (1993) 'Socio-economic impacts: The poor relations in british environmental impact statements', *Journal of Environmental Planning and Management*, 36(3), pp. 335–343.
- Gliem, J. a and Gliem, R. R. (2003) 'Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales', *Midwest Research to Practice Conference in Adult, Continuing, and Community Education*.
- Goodchild, M. F. (2012) 'Measurement-based GIS', in Wenzhong, S. and Fisher, P. (eds) *Spatial Data Quality*. Santa Barbara, California: National Center for Geographic Information and Analysis, and Department of Geography, University of California, Santa Barbara, pp. 1–12.
- Grau, D. and Kekez, Z. C. (2015) *Where Water Meets the Land : The Rediscovery of the Waterfront*.
- Gravetter, F. J. and Wallnau, L. B. (2013) 'Introduction to Hypothesis Testing', *Essentials of statistics for the behavioral sciences*.
- Graymore, M. L. M., Sipe, N. G. and Rickson, R. E. (2008) 'Regional sustainability: How useful are current tools of sustainability assessment at the regional scale?', *Ecological Economics*.
- Graymore, M. L. M., Wallis, A. M. and Richards, A. J. (2009) 'An Index of Regional Sustainability: A GIS-based multiple criteria analysis decision support system for progressing sustainability', *Ecological Complexity journal*, 6, pp. 453–462.
- Griffith, D. A. (1987) 'Toward a Theory of Spatial Statistics: Another Step Forward', *Geographical Analysis*, 19(1), pp. 69–82.

- Gross, M., Mullin, J. and Palmer, J. (1981) 'Assessing economic impacts of urban recreation development: Lowell National Historical Park', *Environmental Impact Assessment Review*, 2(2), pp. 159–174.
- Guba, E. and Lincoln, Y. (1994) 'Guba & Lincoln 1994.pdf', *Handbook of qualitative research*.
- Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. E. (2010) 'Multivariate Data Analysis', *Vectors*.
- Hair, J. F. J., Hult, G. T. M., Ringle, C. and Sarstedt, M. (2014) A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), Long Range Planning.
- Hair, J. F., Ringle, C. M. and Sarstedt, M. (2011) 'PLS-SEM: Indeed a silver bullet', *Journal of Marketing Theory and Practice*, 19(2), pp. 139–152.
- Hair, J. F., Ringle, C. M. and Sarstedt, M. (2012) 'Partial Least Squares: The Better Approach to Structural Equation Modeling?', *Long Range Planning*.
- Hair, J. F., Ringle, C. M. and Sarstedt, M. (2013) 'Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance', *Long Range Planning*.
- Hamacher, H. W. and Nickel, S. (1998) 'Classification of location models', *Location Science*.
- Handy, S. L. and Niemeier, D. A. (1997) 'Measuring accessibility: An exploration of issues and alternatives', *Environment and Planning A*.
- Haq, S. M. A. (2011) 'Urban Green Spaces and an Integrative Approach to Sustainable Environment', *Journal of Environmental Protection*.
- Harris-Roxas, B. and Harris, E. (2013) 'The impact and effectiveness of health impact assessment: A conceptual framework', *Environmental Impact Assessment Review*, 42, pp. 51–59.
- Hashim, Z. (2010) 'House price and affordability in housing in Malaysia', *Akademika*.
- Henseler, J. (2017) 'Partial Least Squares Path Modeling', *Advanced Methods for Modeling Markets*.
- Hewko, J., Smoyer-tomic, K. E. and Hodgson, M. J. (2002) 'Measuring neighbourhood spatial accessibility to urban amenities: does aggregation error matter?', *Environment and Planning A*, 34, pp. 1185–1206.

- Heyman, A. V, Chen, X., Manum, B., Nowell, M. and Barton, D. N. (2017) 'Attributes of location and housing prices in oslo: A monetary valuation with spatial configuration in mind', in *11th International Space Syntax Symposium, SSS 2017*.
- Hillsdon, M., Coombes, E., Griew, P. and Jones, A. (2015) 'An assessment of the relevance of the home neighbourhood for understanding environmental influences on physical activity: How far from home do people roam?', *International Journal of Behavioral Nutrition and Physical Activity*.
- Hillsdon, M., Panter, J., Foster, C. and Jones, A. (2006) 'The relationship between access and quality of urban green space with population physical activity', *Public Health*.
- Hinshaw, M. (2001) *River in the City, Landscape architecture*.
- Hitzhusen, F. J. (2006) 'Cost-benefit analysis: Applications to restoration of rivers', *WIT Transactions on Ecology and the Environment*, 98, pp. 215–224.
- Hjerpe, E. E. and Kim, Y. S. (2007) 'Regional economic impacts of Grand Canyon river runners', *Journal of Environmental Management*, 85(1), pp. 137–149.
- Hock, C., Ringle, C. M. and Sarstedt, M. (2010) 'Management of multi-purpose stadiums: importance and performance measurement of service interfaces', *International Journal of Services Technology and Management*.
- Hogg, D. W. (2000) 'Distance measures in cosmology Cosmographic parameters', *New York*.
- Homburg, C., Artz, M. and Wieseke, J. (2012) 'Measurement Systems : Does Performance ?', *Journal of Marketing*.
- Hosking, J. R. M. and Wallis, J. R. (1993) 'Some statistics useful in regional frequency analysis', *Water Resources Research*.
- Hoyle, B. (2002a) 'Urban renewal in East African port cities : Mombasa ' s Old Town waterfront', pp. 183–197.
- Hoyle, B. (2002b) 'Urban waterfront revitalization in developing countries: The example of Zanzibar's Stone Town', *Geographical Journal*, 168(2), pp. 141–162.
- Hoyle, B. (2013) 'Global and Local Change On the Port-City Waterfront', 90(3), pp. 395–417.

- Huang, R. and Yeh, C. (2008) 'Development of an assessment framework for green highway construction', *Journal of the Chinese Institute of Engineers*, 31(4), pp. 573–585.
- Huang, W.-C. and Kao, S.-K. (2014) 'Public e private partnerships during waterfront development process: The example of the world exposition', *Ocean & Coastal Management*, 92, pp. 28–39.
- Hui, E. C. M., Chau, C. K., Pun, L. and Law, M. Y. (2007) 'Measuring the neighboring and environmental effects on residential property value: Using spatial weighting matrix', *Building and Environment*, 42(6), pp. 2333–2343.
- Humpel, N., Owen, N., Iverson, D., Leslie, E. and Bauman, A. (2004) 'Perceived environment attributes, residential location, and walking for particular purposes', *American Journal of Preventive Medicine*.
- Hussein, H. (2009) 'Urban Recreational Riverfronts: Successful Revitalisation Elements', *Journal of Design and the Built Environment*, pp. 1–14.
- Iacono, M. and Levinson, D. (2011) 'Location, Regional Accessibility, and Price Effects: Evidence from Home Sales in Hennepin County, Minnesota', *Transportation Research Record: Journal of the Transportation Research Board*.
- Ibem, E. O. and Amole, O. O. (2011) 'Assessment of the qualitative adequacy of newly constructed public housing in Ogun State, Nigeria', *Property Management*.
- Ibrahim, E. I. E. (2011) Sustainable Development of the Nile River at Greater Khartoum. University of Huddersfield.
- İlhan, B. Şı. and Özdemir, Z. (2014) 'Public Space Production as a Part of Urban Riverfront Development Scheme: A Contemporary Approach for Turkey, Case of Amasya', in *50th ISOCARP Congress 2014*, pp. 1–12.
- Israel, G. D. (2003) 'Determining Sample Size', *University of Florida IFAS Extension*.
- Israel, N., Toro, P. A. and Ouellette, N. (2010) 'Changes in the composition of the homeless population: 1992-2002', *American Journal of Community Psychology*.
- János, T. and Tünde, F. (2008) Geoinformatics: GIS functions, Digitalis Tankonyvtar.

- Javed, M., Ahmad, S. and Ahmad, A. (2013) 'Assessment of neighborhood parks using GIS techniques in Sheikhpura City', *Pakistan Journal of ...*
- Jim, C. Y. and Chen, W. Y. (2006) 'Impacts of urban environmental elements on residential housing prices in Guangzhou (China)', *Landscape and Urban Planning*, 78(4), pp. 422–434.
- Jim, C. Y. and Chen, W. Y. (2009) 'Value of scenic views: Hedonic assessment of private housing in Hong Kong', *Landscape and Urban Planning*, 91(4), pp. 226–234.
- Johanson, G. A. and Brooks, G. P. (2010) 'Initial scale development: Sample size for pilot studies', *Educational and Psychological Measurement*.
- John, S. and Sharma, U. (2014) 'An environmental decision-support system based on sustainability for evaluating alternatives of a road project', *International Journal of Ecology and Development*, 28(2), pp. 87–95.
- Johnson, J. W. and LeBreton, J. M. (2004) 'History and use of relative importance indices in organizational research', *Organizational Research Methods*.
- Johnson, R. L. and Moore, E. (1993) 'Tourism impact estimation', *Annals of Tourism Research*, 20, pp. 279–288.
- Joly, D., Brossard, T., Cavailhes, J., Hilal, M., Tourneux, F.-P., Tritz, C. and Wavresky, P. (2009) 'A Quantitative Approach to the Visual Evaluation of Landscape', *Annals of the Association of American Geographers*.
- Jones, A. (1998) 'Issues in Waterfront Regeneration: More Sobering Thoughts-A UK Perspective', *Planning Practice & Research*, 13(4), pp. 433–442.
- Jones, A. P. (1999) 'Indoor air quality and health', *Atmospheric Environment*.
- Jos, A. and Charlotta, F.-E. (2010) 'Environmental Impact Assessment in Green Procurement and Partnering Contracts Looking for environmental performance beyond EIA', *Paper presented at the 30th Annual Meeting of the International Association for Impact Assessment 6-11 April 2010, Geneva (Switzerland)*, (April), pp. 1–6.
- Jurcău, V. and Popa, H. (2012) 'Tourism and environment', *Quality - Access to Success*.
- Kahn, M. E. and Walsh, R. (2015) 'Cities and the Environment', *Handbook of Regional and Urban Economics*.

- Kamel, A. A., Ford, P. B. and Kaczynski, A. T. (2014) 'Disparities in park availability, features, and characteristics by social determinants of health within a U.S.-Mexico border urban area', *Preventive Medicine*.
- Kaplan, R. and Austin, M. E. (2004) 'Out in the country: Sprawl and the quest for nature nearby', *Landscape and Urban Planning*, 69(2–3), pp. 235–243.
- Ken Cordell, H., Bergstrom, J. C., Ashley, G. A. and Karish, J. (1990) 'Economic Effects of River Recreation on Local Economies', *JAWRA Journal of the American Water Resources Association*, 26(1).
- Keskinen, M. and Kummu, M. (2010) Impact assessment in the Mekong—review of Strategic Environmental Assessment (SEA) & Cumulative Impact Assessment (CIA), Espoo: Aalto University.
- Khalid, S., Khalil, T. and Nasreen, S. (2014) 'A survey of feature selection and feature extraction techniques in machine learning', *2014 Science and Information Conference*, pp. 372–378.
- Kiel, K. A. and Zabel, J. E. (2008) 'Location, location, location: The 3L Approach to house price determination', *Journal of Housing Economics*.
- Kline, R. B. (2015) Principles and practice of structural equation modeling, Structural Equation Modeling.
- Koenig, J. G. (1980) 'Indicators of Urban Accessibility: Theory and Application', *Transportation*, 9, pp. 145–172.
- Kohlhase, J. E. (1991) 'The impact of toxic waste sites on housing values', *Journal of Urban Economics*.
- Kondolf, G. M. and Pinto, P. J. (2017) 'The social connectivity of urban rivers', *Geomorphology*, 277, pp. 182–196.
- Kørnø, L. and Thissen, W. A. H. (2000) 'Rationality in decision- and policy-making: Implications for strategic environmental assessment', *Impact Assessment and Project Appraisal*, 18(3), pp. 191–200.
- Kostopoulou, S. (2013) 'On the Revitalized Waterfront: Creative Milieu for Creative Tourism', *Sustainability*, 5, pp. 4578–4593.
- Kovacs, K. F. (2012) 'Integrating property value and local recreation models to value ecosystem services from regional parks', *Landscape and Urban Planning*.
- Krejcie, R. V and Morgan, D. W. (1970) 'Determining Sample Size for Research Activities', *Education and Psychological Measurement*.

- Kristensen, K., Martensen, A. and Gronholdt, L. (2000) 'Customer satisfaction measurement at Post Denmark: Results of application of the European Customer Satisfaction Index Methodology', *Total Quality Management*.
- Lagarese, B. E. S. (1999) 'Urban Tourism Planning for Waterfront Development the Case of Manado, Indonesia'.
- Lake, I. R., Lovett, A. A., Bateman, I. J. and Langford, I. H. (1998) 'Modelling environmental influences on property prices in an urban environment', *Comput., Environ. and Urban Systems*, 22(2), pp. 121–136.
- Lake, P. on the (2012) Economic Impact Analysis of Major Development Projects in Peachland. District of Peachland.
- Landry, S. M. (2009) 'Street trees and equity : evaluating the spatial distribution of an urban amenity', *Environment and Planning A*, 41, pp. 2651–2671.
- Lands, M. of H. and (2007) Planning Policy Guidance 3 Places of Worship. Mauritius.
- Lange, E. and Schaeffer, P. V (2001) 'A comment on the market value of a room with a view', *Landscape and Urban Planning*, 55, pp. 113–120.
- Larsen, S. V. and Kørnøv, L. (2009) 'Impact Assessment and Project Appraisal SEA of river basin management plans: incorporating climate change', *Impact Assessment and Project Appraisal*, 27(4), pp. 291–299.
- Larson, E. K. and Perrings, C. (2013) 'The value of water-related amenities in an arid city: The case of the Phoenix metropolitan area', *Landscape and Urban Planning*.
- Larson, M. G. (2006) 'Descriptive statistics and graphical displays', *Circulation*.
- Latan, H., Noonan, R. and Matthews, L. (2017) 'Partial Least Squares Path Modeling', in Partial least squares path modeling: basic concepts, methodological issues and applications.
- Laurini and Thompson (1992) 'Modeling spatial events on and alongside networks', *Burrough and McDonnell Lo and Yeung*.
- Lavrakas, P. J. and Battaglia, M. (2008) 'Encyclopedia of Survey Research Methods', *Encyclopedia of Survey Research Methods*.
- Lawrence, D. P. (1997) 'The need for EIA theory-building', *Environmental Impact Assessment Review*, pp. 79–107.

- Lee, A. . and Nikraz, H. (2015) ‘BOD: COD Ratio as an Indicator for River Pollution’, *International Proceedings of Chemical, Biological and Environmental Engineering*.
- Lenzen, M., Murray, S. A., Korte, B. and Dey, C. J. (2003) ‘Environmental impact assessment including indirect effects - A case study using input-output analysis’, *Environmental Impact Assessment Review*, pp. 263–282.
- Levac, D., Colquhoun, H. and O’Brien, K. K. (2010) ‘Scoping studies: Advancing the methodology’, *Implementation Science*.
- Levine, M. V. (2003) ‘Tourism-based redevelopment and the fiscal crisis of the city: The case of Montréal’, *Canadian Journal of Urban Research*, 12(1), pp. 102–123.
- Li, F., Liu, X., Hu, D., Wang, R., Yang, W., Li, D. and Zhao, D. (2009) ‘Measurement indicators and an evaluation approach for assessing urban sustainable development: A case study for China’s Jining City’, *Landscape and Urban Planning*.
- Lim, C. I. and Biswas, W. (2015) ‘An evaluation of holistic sustainability assessment framework for palm oil production in Malaysia’, *Sustainability (Switzerland)*.
- Lin, I. H., Wu, C. and De Sousa, C. (2013) ‘Examining the economic impact of park facilities on neighboring residential property values’, *Applied Geography*, 45, pp. 322–331.
- Liu, C. (2011) ‘Spatial analysis in environmental impact assessment (EIA) of road project using ArcGIS’, *Water Transport Engineering*, 11, pp. 5328–5331.
- Lookingbill, T. R., Carter, S. L., Gorsira, B. and Kingdon, C. (2008) ‘Using landscape analysis to evaluate ecological impacts of battlefield restoration’, *ParkScience*.
- Loukaitou-Sideris, a. (2006) ‘Is it Safe to Walk?1 Neighborhood Safety and Security Considerations and Their Effects on Walking’, *Journal of Planning Literature*.
- Lucyk, K., Gilhuly, K., Tamburrini, A.-L. and Rogerson, B. (2016) ‘Incorporating mental health into health impact assessment in the United States: a systematic review’, *Journal of Public Mental Health*, 15(3), pp. 150–176.
- Lukesch, R. and Schuh, B. (2010) Approaches for assessing the impacts of the Rural Development Programmes in the context of multiple intervening factors: European Commission - Agriculture and Rural Development. Brussels.

- Lundin, M., Olofsson, M., Pettersson, G. J. and Zetterlund, H. (2004) 'Environmental and economic assessment of sewage sludge handling options', *Resources, Conservation and Recycling*.
- Lynch, G. (2008) 'Sampling', *Sampling*.
- Macdougall, B. E. (1975) 'The Accuracy of Map Overlays', *Landscape Planning*, 2, pp. 23–30.
- Mackenzie, N. and Knipe, S. (2006) 'Research dilemmas: Paradigms, methods and methodology', *Issues in Educational Research*.
- Mahan, B. L., Polasky, S. and Adams, R. M. (2000) 'Valuing Urban Wetlands: A Property Price Approach', *Land Economics*.
- Makmor, M. and Ismail, Z. (2016a) 'Improving environmental impact assessment (EIA) process in Malaysia', *Jurnal Teknologi*, 78(1), pp. 93–107.
- Makmor, M. and Ismail, Z. (2016b) 'Improving environmental impact assessment (EIA) process in Malaysia', *Jurnal Teknologi*, 78(1), pp. 93–107.
- Makri, M. and Folkesson, C. (1999) 'Accessibility measures for analyses of land use and travelling with geographical information systems', *Department of Technology and Society, Lund*.
- Malczewski, J. (2006) 'GIS - based multicriteria decision analysis : a survey of the literature', *International Journal of Geographical Information Science*, 20(7), pp. 703–726.
- Malo, N., Hanley, J. A., Cerquozzi, S., Pelletier, J. and Nadon, R. (2006) 'Statistical practice in high-throughput screening data analysis', *Nature Biotechnology*.
- Mann, R. (1973) *Rivers in the city*. Newton Abbot: David & Charles.
- Mao, X., Meng, J. and Wang, Q. (2014) 'Modeling the effects of tourism and land regulation on land-use change in tourist regions: A case study of the Lijiang River Basin in Guilin, China', *Land Use Policy*, 41, pp. 368–377.
- Matthew, A. and Shah, A. (2005) *Assessing Local Government Performance in Developing Countries, Public Sector Governance and Accountability Series: Public Services Delivery*.
- Matthews, J. W. (2006) *The Effect of Proximity to Commercial Uses on Residential Prices*.
- Mayer, D. G and Butler, D. G. (1993) 'Statistical validation', *Ecological Modelling*, 68, pp. 21–32.

- McColl, C. and Aggett, G. (2007) 'Land-use forecasting and hydrologic model integration for improved land-use decision support', *Journal of Environmental Management*.
- McFadden, D. (1978) 'Modeling the Choice of Residential Location', *Transportation Research Record*.
- McRoberts, R. W. (1991) 'A Study in Growth: An Economic History of Melaka 1400-1500', *Journal of the Malaysian Branch of the Royal Asiatic Society*, 64(2), pp. 47–78.
- Mecredy, G., Janssen, I. and Pickett, W. (2012) 'Neighbourhood street connectivity and injury in youth: A national study of built environments in Canada', *Injury Prevention*.
- Millennium Ecosystem Assessment (2005) 'Millennium Ecosystem Assessment: Objectives, Focus, and Approach', in *Ecosystems and Human Well-being: Current State and Trends, Volume 1*, pp. 1–23.
- Miyake, K. K., Maroko, A. R., Grady, K. L., Maantay, J. A. and Arno, P. S. (2011) 'Not Just a Walk in the Park: Methodological Improvements for Determining Environmental Justice Implications of Park Access in New York City for the Promotion of Physical Activity', *Cities Environment*, 37(12), pp. 1068–1074.
- Morancho, A. B. (2003) 'A hedonic valuation of urban green areas', *Landscape and Urban Planning*, 66(1), pp. 35–41.
- Morgan, R. K. (2012) 'Environmental impact assessment: The state of the art', *Impact Assessment and Project Appraisal*, 30(1), pp. 5–14.
- Morin Dalton, T. (2004) 'An approach for integrating economic impact analysis into the evaluation of potential marine protected area sites', *Journal of Environmental Management*.
- Morse, J. M. (2000) 'Determining Sample Size', *Qualitative Health Research*.
- Moudon, A., Hess, P., Snyder, M. and Stanilov, K. (1997) 'Effects of Site Design on Pedestrian Travel in Mixed-Use, Medium-Density Environments', *Transportation Research Record*.
- Moudon, A. V. (2009) 'Real Noise from the Urban Environment. How Ambient Community Noise Affects Health and What Can Be Done About It', *American Journal of Preventive Medicine*.
- Murat Celik, H. and Yankaya, U. (2006) 'The impact of rail transit investment on the residential property values in developing countries', *Property Management*.

- Muyambo, F., Jordaan, A. J. and Bahta, Y. T. (2017) 'Assessing social vulnerability to drought in South Africa: Policy implication for drought risk reduction', *Jàmbá: Journal of Disaster Risk Studies*.
- Nai, S. M. and Sargent, D. (2013) Beyond Natural and Economic Impacts: A Model for Social Impact Assessment of Brownfields Development Programs and a Case Study of Northeast Wilmington, Delaware. Northeast Wilmington, Delaware.
- Nelson, F. A. (2013) Economic Impact Study Detroit Riverfront. City of Detroit.
- Neste, J. and Karjalainen, T. P. (2013) A literature review - The use of multi-criteria decision analysis in Environmental Impact Assessment. Finland.
- Niaraki, A. S., Varshozas, M. and Behrooz, H. (2016) 'Implementation of the Resulting Cost Model of Roads Network in the Geographic Information System (GIS)', in *International Society for Photogrammetry and Remote Sensing*. Germany: Institute of Photogrammetry and Geoinformation.
- Nicholls, S. (2001) 'Measuring the accessibility and equity of public parks : a case study using GIS', *Managing Leisure*, 6, pp. 201–219.
- Nicholls, S. (2001) 'Measuring the accessibility and equity of public parks: A case study using GIS', *Managing leisure*.
- Nimmermark, S. (2013) *Odour Impact Assessment From Developments*. Queensland Government: Department of Environment and Heritage Protection.
- Nitz, T. (2001) 'Sea Must Learn How Policy Making Works Sea of Policy (Policy Environmental Assessment)', *Journal of Environmental Assessment Policy and Management*, 3(3), pp. 329–342.
- Nolon, J. R. (1996) 'The National Land Use Policy Act', *Pace Environmental Law Review*, 13(1994), pp. 519–523.
- Novick, M. R. and Lewis, C. (1967) 'Coefficient alpha and the reliability of composite measurements', *Psychometrika*.
- Nunnally, J. and Bernstein, I. (1994) 'Psychometric Theory, 3rd edn, 1994', *McGraw-Hill, New York*.
- Nutsford, D., Reitsma, F., Pearson, A. L. and Kingham, S. (2015) 'Personalising the viewshed: Visibility analysis from the human perspective', *Applied Geography*.

- Oh, K. and Jeong, S. (2007) 'Assessing the spatial distribution of urban parks using GIS', *Landscape and Urban Planning*, 82, pp. 25–32.
- Ola Aluko (2011) 'The effects of location and neighbourhood attributes on housing values in metropolitan Lagos', *Journal of Geography and Regional Planning*.
- Oliver, L. N., Schuurman, N. and Hall, A. W. (2007) 'Comparing Circular and Network Buffers To Examine The Influence of Land Use on Walking for Leisure and Errands', *International Journal of Health Geographics*, 6(41), pp. 1–11.
- Osman, I. H., Anouze, A. L., Irani, Z., Al-Ayoubi, B., Lee, H., Balc, A., Medeni, T. D. and Weerakkody, V. (2014) 'COBRA framework to evaluate e-government services: A citizen-centric perspective', *Government Information Quarterly*.
- Ottensmann, J. R., Payton, S. and Man, J. (2008) 'Urban Location and Housing Prices within a Hedonic Model', *The Journal of Regional Analysis and Policy*.
- Otto, B., McCormick, K. and Leccese, M. (2004) *Ecological Riverfront Design : Restoring Rivers , Connecting Communities*.
- Ozbil, A., Yesiltepe, D. and Argin, G. (2015) 'Modeling walkability: The effects of street design, street-network configuration and land-use on pedestrian movement', *A|Z ITU Journal of Faculty of Architecture*.
- Páez, A., Scott, D. M. and Morency, C. (2012) 'Measuring accessibility: Positive and normative implementations of various accessibility indicators', *Journal of Transport Geography*.
- Palinkas, L. A., Aarons, G. A., Horwitz, S., Chamberlain, P., Hurlburt, M. and Landsverk, J. (2011) 'Mixed method designs in implementation research', *Administration and Policy in Mental Health and Mental Health Services Research*.
- Perbadanan Pembangunan Sungai dan Pantai Melaka (PPSPM) (2017) *River Information, Melaka River and Coastal Development Corporation*.
- Perry, J. N. (1998) 'Measures of spatial pattern for counts', *Ecology*.
- Petrosillo, I., Zurlini, G., Corliano, M. E., Zaccarelli, N. and Dadamo, M. (2007) 'Tourist perception of recreational environment and management in a marine protected area', *Landscape and Urban Planning*.

- Du Pisani, J. A. and Sandham, L. A. (2006) 'Assessing the performance of SIA in the EIA context: A case study of South Africa', *Environmental Impact Assessment Review*, 26(8), pp. 707–724.
- Plan, K. L. M. master (2007) *King's Lynn Marina master plan*. King's Lynn England.
- Plan, S. H. R. R. M. (2010) *Smoky Hill River Renewal Master Plan*. Salina, Saline County.
- Planning, E. A. and D. (2013) *Development Parameters : A Quick Reference for the Provision of Facilities Within Settlements of the Western Cape*. Western Cape Government.
- Pope, J., Annandale, D. and Morrison-saunders, A. (2004) 'Conceptualising sustainability assessment', *Environmental Impact Assessment Review*, 24, pp. 595–616.
- Pope, J. and Otros (2013) 'Advancing the theory and practice of impact assessment: Setting the research agenda', *Environmental Impact Assessment Review*, 41(41), pp. 1–9.
- Popelka, S. and Voženílek, V. (2010) 'Landscape Visibility Analyses and Their Visualization', *ISPRS Achieves*, 4(13), pp. 1–8.
- Potter, S. (2004) 'Undertaking a Literature Review', *Doing Postgraduate Research*.
- Prince, L. (2018) 'Assessing Organizational Health Literacy at an academic health center: A quantitative research study.', *Dissertation Abstracts International Section A: Humanities and Social Sciences*.
- Quercia, D., Schifanella, R., Aiello, L. M. and McLean, K. (2015) 'Smelly Maps: The Digital Life of Urban Smellscapes', in *Ninth International AAAI Conference on Web and Social Media Smelly*, pp. 327–336.
- Quintos, C. (2013) 'Spatial Weight Matrices and Their Use As Baseline Values and Location-Adjustment Factors in Property Assessment Models', *Cityscape: A Journal of Policy Development and Research*, 15(3), pp. 295–306.
- Ramanathan, R. (2001) 'A note on the use of the analytic hierarchy process for environmental impact assessment', *Journal of Environmental Management*.
- Ramdas, M. and Mohamed, B. (2014) 'Impacts of Tourism on Environmental Attributes, Environmental Literacy and Willingness to Pay: A Conceptual and Theoretical Review', *Procedia - Social and Behavioral Sciences*.

- Rasal, S. (2012) Reconnecting the city with the riverfront to revitalize the socio-economic conditions of springfield. Mumbai university.
- Ray, N., Lehmann, A. and Joly, P. (2002) 'Modeling spatial distribution of amphibian populations: A GIS approach based on habitat matrix permeability', *Biodiversity and Conservation*.
- Reitano, B. M. and Hendricks, D. W. (1980) 'Input-Output Modeling for Facility Level Water Planning', *Water supply & management*, 4(5–6), pp. 379–396.
- Ringle, C. M. and Sarstedt, M. (2016) 'Gain more insight from your PLS-SEM results the importance-performance map analysis', *Industrial Management and Data Systems*.
- Robbins, D. B., Armstrong, J. M., Kureth Jr, C. L., Pratt, D. V and Dobson, T. V (1980) 'Urban Riverfront Expansion', in *Southeastcon Region 3 Conference*, pp. 236–255.
- Rojas, C., Pino, J. and Jaque, E. (2013) 'Strategic Environmental Assessment in Latin America: A methodological proposal for urban planning in the Metropolitan Area of Concepción (Chile)', *Land Use Policy*.
- Roudgarmi, P., Monavari, M., Fegghi, J., Nouri, J. and Khorasani, N. (2008) 'Environmental impact prediction using remote sensing images', *Journal of Zhejiang University: Science A*.
- Saayman, M., Marve, P. V. D., Saayman, A. and Mouton, M. E. (2009) The Socio-economic Impact of an Urban Park: The Case of Wilderness National Park.
- Sabri, A. and Wan Mohamad Asyraf, W. A. (2014) 'The importance-performance matrix analysis in partial least square structural equation modeling (PLS-SEM)', *International Journal of Mathematical Research*.
- Sahimi, N. S., Turan, F. M. and Johan, K. (2017) 'Development of Sustainability Assessment Framework in Hydropower sector', *IOP Conference Series: Materials Science and Engineering*, 226(1).
- Sala, S., Ciuffo, B. and Nijkamp, P. (2015) 'A systemic framework for sustainability assessment', *Ecological Economics*, 119, pp. 314–325.
- Salonen, M., Toivonen, T., Cohalan, J. M. and Coomes, O. T. (2012) 'Critical distances: Comparing measures of spatial accessibility in the riverine landscapes of Peruvian Amazonia', *Applied Geography*.

- Samaha, S. A. and Kamakura, W. A. (2008) 'Assessing the market value of real estate property with a geographically weighted stochastic frontier model', *Real Estate Economics*.
- Sanchez, T. W. (1999) 'The connection between public transit and employment: The cases of portland and atlanta', *Journal of the American Planning Association*.
- Sanchez, T. W. (2002) 'The impact of public transport on US metropolitan wage inequality', *Urban Studies*.
- Sander, H. A. and Manson, S. M. (2007) 'Heights and locations of artificial structures in viewshed calculation: How close is close enough?', *Landscape and Urban Planning*.
- Santana-Jiménez, Y., Suárez-Vega, R. and Hernández, J. M. (2011) 'Spatial and environmental characteristics of rural tourism lodging units', *Anatolia*.
- Sarstedt, M., Ringle, C. M. and Hair, J. F. (2014) 'PLS-SEM: Looking Back and Moving Forward', *Long Range Planning*.
- Sasaki Associates (2015) *Three Rivers Park Economic Impact Analysis*. City of Pittsburgh.
- Sati, V. P. (2008) 'Environmental and Economic Implications of Multipurpose River Valley Projects: A Case for The Madikheda Dam (India)', *Journal of Environmental Research And Development*, 2(4), pp. 885–895.
- Satterthwaite, D. (1997) 'Sustainable Cities or Cities that Contribute to Sustainable Development?', *Urban Studies*, 34(10), pp. 1667–1691.
- Savage, V. R., Huang, S. and Chang, T. C. (2004) 'The Singapore River thematic zone : sustainable', *The Geographical Journal*, 170(3), pp. 212–225.
- Scheurer, J. and Curtis, C. (2007) *Accessibility Measures : Overview and Practical Applications*.
- Schlee, M. B. (2017) 'The role of buffer zones in Rio de Janeiro urban landscape protection', *Journal of Cultural Heritage Management and Sustainable Development*.
- Schloderer, M. P., Sarstedt, M. and Ringle, C. M. (2014) 'The relevance of reputation in the nonprofit sector: The moderating effect of socio-demographic characteristics', *International Journal of Nonprofit and Voluntary Sector Marketing*.

- Scorzini, A. R. and Leopardi, M. (2017) 'River basin planning: from qualitative to quantitative flood risk assessment: the case of Abruzzo Region (central Italy)', *Natural Hazards*.
- Scott, L. M. and Janikas, M. V. (2010) 'Spatial Statistics in ArcGIS', in *Handbook of Applied Spatial Analysis*.
- Seneviratne, D. and Sun, Y. (2013) Infrastructure and Income Distribution in ASEAN-5 : What are the Links?, IMF Working Paper.
- Service, C. (2011) Street and Public Place Lighting Policy. Geelong.
- Shafaghat, A., Ghasemi, M. M., Keyvanfar, A., Lamit, H. and Ferwati, M. S. (2017) 'Sustainable riverscape preservation strategy framework using goal-oriented method: Case of historical heritage cities in Malaysia', *International Journal of Sustainable Built Environment*, 6(1), pp. 143–159.
- Shen, L.-Y., Ochoa, J. . . , Shah, M. N. and Zhang, X. (2011) 'The application of urban sustainability indicators e A comparison between various practices', *Habitat International*, 35, pp. 17–29.
- Siguaw, J. A. and Diamantopoulos, A. (1995) 'Measuring market orientation: Some evidence on narver and slater's three-component scale', *Journal of Strategic Marketing*.
- Silverman, D. (2011) 'What Is Qualitative Research?', *Qualitative Research*.
- Simionescu, V. and Silviu, G. (2016) 'Assessing Sustainability of Railway Modernization Projects; A Case Study from Romania', in *Procedia Computer Science*, pp. 458–465.
- Simon, M.K. and Goes, J. (2011) Developing a Theoretical Framework, Dissertation and Scholarly Research: Recipes for Success. Seattle, WA: Dissertation Success LLC.
- de Smith, M. J., Goodchild, M. F., Longley, P. a and Smith, M. J. De (2007) *Geospatial analysis, Matador*.
- Smith, T. E. (2009) 'Estimation bias in spatial models with strongly connected weight matrices', *Geographical Analysis*.
- Spörri, C., Borsuk, M., Peters, I. and Reichert, P. (2007) 'The economic impacts of river rehabilitation: A regional Input-Output analysis', *Ecological Economics*, 62(2), pp. 341–351.
- Stein, R. M. (2001) Hudson River Regional Economic Impact: Impact of Environmental Remediation.

- Stillwell, J. and Clarke, G. (2003) 'Applied GIS and Spatial Analysis', *Livro*, p. 420.
- Streatfield, D. and Markless, S. (2009) 'What is impact assessment and why is it important?', *Performance Measurement and Metrics*, 10(2), pp. 134–141.
- Survey Monkey (2009) 'Tips to Enhance Survey Respondent Participation', *Response Rates & Surveying Techniques*.
- Talen, E. (2003) 'Neighborhoods as service providers : a methodology for evaluating pedestrian access', *Environmental and Planning B: Planning and Design*, 30, pp. 181–200.
- Talen, E. and Anselin, L. (1998) 'Assessing spatial equity: an evaluation of measures of accessibility to public playgrounds', *Environment and Planning A*, 30, pp. 595–613.
- Tamburrini, A.-L., Gilhuly, K. and Harris-Roxas, B. (2011) 'Enhancing benefits in health impact assessment through stakeholder consultation', *Impact Assessment and Project Appraisal*, 29(3), pp. 195–204.
- Tavakol, M. and Dennick, R. (2011) 'Making sense of Cronbach ' s alpha', *International Journal of Medical Education*.
- van Teijlingen, E. and Hundley, V. (2002) 'The importance of pilot studies', *Nursing Standard*.
- Tetlock, P. C. (2007) 'Giving content to investor sentiment: The role of media in the stock market', *Journal of Finance*.
- Thériault, M., Des Rosiers, F., Villeneuve, P. and Kestens, Y. (2003) 'Modelling interactions of location with specific value of housing attributes', *Property Management*.
- Thomas, G. (2014) 'Improving restoration practice by deriving appropriate techniques from analysing the spatial organization of river networks', *Limnologica*.
- Thomas, P. . (2010) 'Research Methodology and Design', *Research Methodology and Design*.
- Torre, A. and Rallet, A. (2005) 'Proximity and localization', *Regional Studies*.
- Torres, I., Greene, M. and Ortúzar, J. de D. (2013) 'Valuation of housing and neighbourhood attributes for city centre location: A case study in Santiago', *Habitat International*.

- Transportation, D. of (2017) *Physical Techniques to Reduce Noise Impacts*, Department of Transportation, Federal Highway Administration, New Jersey Ave, Washington.
- Tukker, A., Cohen, M. J., Hubacek, K. and Mont, O. (2010) ‘The Impacts of household consumption and options for change’, *Journal of Industrial Ecology*.
- Tungka, A. E., Omran, A. A., Gebril, A. O., Wah, W. S. and Suprpti, A. B. (2012) ‘Manado Waterfront Development Concept As Sustainable City of Tourism.’, *Acta Technica Corvininensis - Bulletin of Engineering*, 5(2), pp. 31–36.
- Turok, I. (1992) ‘Property-Led Urban Regeneration: Panacea or Placebo?’, *Environment and Planning A*.
- Unal, M., Uslu, C. and Cilek, A. (2016) ‘GIS-Based Accessibility Analysis for Neighbourhood Parks: The Case of Cukurova District Modelling Accessibility to Urban Greenspaces’, *Journal of Digital Landscape Architecture*, 1, pp. 46–56.
- Unwin, D. J. (1996) ‘GIS, spatial analysis and spatial statistics’, *Progress in Human Geography*.
- Value, E. (2010) ‘Why Parks and Recreation are Essential Public Services’, *National Recreation and Park Association*.
- Völckner, F., Sattler, H., Hennig-Thurau, T. and Ringle, C. M. (2010) ‘The role of parent brand quality for service brand extension success’, *Journal of Service Research*.
- Wallner, R. (2013) ‘GIS Measures of Residential Property Views’, *Journal of Real Estate Literature*.
- Wang, Y., Benner, A. D. and Kim, S. Y. (2015) ‘The cultural socialization scale: Assessing family and peer socialization toward heritage and mainstream cultures’, *Psychological Assessment*.
- Weijia, S. (2011) *Role of Waterfront in Shaping City Center Landscape : Perception of Tianjin Haihe Riverfront Landscape*.
- Welsh, B. C. and Farrington, D. P. (2008) ‘Effects of improved street lighting on crime: a systematic review’, *Campbell Systematic Reviews*.
- Williams, B., Onsmann, A. and Brown, T. (1996) ‘Exploratory factor analysis: A five-step guide for novices’, *Journal of Emergency Primary Health Care*.

- Wilson, J. P. (2017) 'GIScience research at the 2017 Esri International User Conference', *Transactions in GIS*.
- Wise, S. (2002) GIS Basics, The Photogrammetric Record.
- Wood, R., Handley, J. and Kidd, S. (1999) 'Sustainable Development and Institutional Design: The Example of the Mersey Basin Campaign', *Journal of Environmental Planning and Management ISSN:*, 42(3), pp. 341–354.
- Woodhouse, S., Lovett, A., Dolman, P. and Fuller, R. (2000) 'Using a GIS to select priority areas for conservation', *Computers, Environment and Urban Systems*.
- Xiao, Y., Wang, Z., Li, Z. and Tang, Z. (2017) 'Landscape and Urban Planning An assessment of urban park access in Shanghai – Implications for the social equity in urban China', *Landscape and Urban Planning j*, 157, pp. 383–393.
- Xie, F. and Levinson, D. (2007) 'Measuring the structure of road networks', *Geographical Analysis*.
- Xu, D., Zhang, J. and Li, L. (2002) 'Analysis on the present situation of green space and construction of ecological corridor for Majiagou River in Harbin', *Journal of Northeast Forestry University*, 30(2), pp. 90–93.
- Yamane, T. (1967) 'Statistics, And Introductory Analysis, 2nd Ed., New York: Harper and Row.', *Scottish Journal of Arts, Social Sciences and Scientific Studies*.
- Yang, H. J., Song, J. and Choi, M. J. (2016) 'Measuring the Externality Effects of Commercial Land Use on Residential Land Value: A Case Study of Seoul', *Sustainability*, 8(432), pp. 1–15.
- Yasmin, F., Ph, D. and Larsen, J. (2010) 'Examining Travel Distances by Walking and Cycling in Montréal, Canada', *Transportation Research*.
- Yassin, A. B., Bond, S. and Mcdonagh, J. (2012) 'Principles For Sustainable Riverfront Development For Malaysia Keywords: Waterfront, Development guidelines Waterfront Riverfront Riverfront', *Journal of Techno-Social*, 4(1).
- Yassin, A. B. M. and Bond, S. (2011) 'Waterfront development in Malaysia: do we have sustainable governance?', *Pacific Rim Property*.
- Yassin, A., Bond, S. and Mcdonagh, J. (2012) 'Principles For Sustainable Riverfront Development For Malaysia Waterfront and Waterfront Development', *Journal of Techno-Social*, 4(1), pp. 21–36.
- Yassin, A. and Eves, C. (2010) 'An evolution of waterfront development in Malaysia', *Proceedings of the*.

- Yassin, A. M. and Meryam, S. (2012) 'Kelestarian Pembangunan Hadapan Air di Malaysia', *Akademika*, 82(2), pp. 3–13.
- Yeh, A. G.-O. and Li, X. (1997) 'An integrated remote sensing and GIS approach in the monitoring and evaluation of rapid urban growth for sustainable development in the Pearl River Delta , China An Integrated Remote Sensing and GIS Approach in the Monitoring and Evaluation of Rapid Urban', *International Planning Studies*, 2, pp. 193–210.
- Yin, R. K. (2009) *Case Study Research: Design and Methods*, Essential guide to qualitative methods in organizational research.
- Yıldız, R., Nihal, P., Asist, R. and İmren, B. (2015) 'Sustainable urban design guidelines for waterfront developments', in *2nd International Sustainable Buildings Symposium*, pp. 487–494.
- Yu, G. A., Disse, M., Huang, H. Q., Yu, Y. and Li, Z. (2016) 'River network evolution and fluvial process responses to human activity in a hyper-arid environment – Case of the Tarim River in Northwest China', *Catena*, 147, pp. 96–109.
- Yu, M. and Halog, A. (2015) *Solar Photovoltaic Development in Australia—A Life Cycle Sustainability Assessment Study*, Sustainability.
- Yu, S. (2012) *Shaping The Sustainable City Through Water Oriented Urban Design*.
- Zavrl, M. S. and Zeren, M. T. (2010) 'Sustainability of Urban Infrastructures', *Sustainability*.
- Zhang, X., Lu, H. and Holt, J. B. (2011) 'Modeling spatial accessibility to parks : a national study', *International Journal of Health Geographics*, pp. 1–14.
- Zhang, X., Lu, H. and Holt, J. B. (2011) 'Modeling spatial accessibility to parks: a national study', *International Journal of Health Geographics*, 10(31), pp. 1–14.
- Zhuo, H. (2012) *GIS-based Spatial Accessibility Analysis to High Schools by Transit in Toledo Area in 2010*. University of Toledo.
- Zimmerman, J. (2008) 'From brew town to cool town: Neoliberalism and the creative city development strategy in Milwaukee', *Cities*, 25, pp. 230–242.
- Zope, P. E., Eldho, T. I. and Jothiprakash, V. (2015) 'Impacts of urbanization on flooding of a coastal urban catchment: a case study of Mumbai City, India', *Natural Hazards*.