UNIVERSITI PUTRA MALAYSIA

COMMUNITY HAPPINESS INDEX FOR SUSTAINABLE DEVELOPMENT IN PUTRAJAYA, MALAYSIA

MUSA HARUNA DANLADI

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COMMUNITY HAPPINESS INDEX FOR SUSTAINABLE DEVELOPMENT IN PUTRAJAYA, MALAYSIA

By

MUSA HARUNA DANLADI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Doctor of Philosophy

April 2017

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DEDICATION

To:

ALLAH (SWT),

The Most Beneficent, the Most Merciful.

My Mother,

Your love is always with me no matter where I go.

My Father (Late),

You enlightened me to do all right things and only the right,

reminding me that there can be no gain without pain

My Brother,

Your unconditional support is treasured for always.

My Wife,

For all that you have been, for all that you are and will always be.

My Children,

For your scarifies, love and prayers, I am grateful.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Doctor of Philosophy

COMMUNITY HAPPINESS INDEX FOR SUSTAINABLE DEVELOPMENT IN PUTRAJAYA, MALAYSIA

By

MUSA HARUNA DANLADI

April 2017

Chairman : Associate Professor Mohd Rusli Yacob, PhD
Faculty : Environmental Studies

Urbanisation in Malaysia has led to significant pressure on local and state governments to provide planning and urban development strategies that are intended to improve the quality of urban services in ensuring citizens' well-being or happiness. Cities are facing increasing complex issues and rapid changes that challenge their future direction. The problems in cities have highlighted the need for policy makers to foster well-being as an essential element of sustainable development. Thus, creating healthy and viable communities aim to provide high quality of life has become a focus of contemporary public policies that target city communities across the nation, especially in a new town development including Putrajaya. However, the mainstream sustainable community development frameworks neglect to make happiness a goal. The general objective of this study therefore, is to develop a community happiness index (CH-index) framework to measure resident's satisfaction based on sustainable development indicators in Putrajaya city, from subjective well-being context. The study utilised mixed method approach with triangulation design in the development of this framework to achieve the primary research aim and specific objectives. Two sources of data sets were collected and used in this research analysis. Combined qualitative and quantitative data were collected from a two-round Delphi survey from a purposively sampled panel of experts in the sustainable development field in Malaysia, and the quantitative data gathered from the public survey of residents. The Delphi expert's panel identified and selected relevant indicators, assigned weights to indicators, dimensions and domains attribute required to develop community well-being framework that facilitate urban policy initiatives. Consensuses were reached on 37 key indicators within four-sustainability dimensions with a high level of group agreement (Kendall's W= 0.485, $p < 0.001$), and high correlation in rounds rankings (rho = 0.945, $p < 0.01$). Before application to the case study, the framework was tested to validate the psychometric property using Partial Least Square Structural Equation Modelling (PLS-SEM) to establish its robustness in measuring community happiness. Linear Additive aggregation model was used with the weightings to construct composite indices that consider the unique characteristics of communities and municipalities in Malaysia. Following a cross-sectional survey using the newly

constructed composite framework to measuring level of community happiness in Putrajaya, we found out that the municipality has medium-high level of community happiness (6.866) on a 10-point response scale at almost sustainable level. The framework provide provides a mechanism for continuous monitoring and assessment of sustainable interventions, facilitate comparison of trends of sustainability over time and guide urban planning and policy making decisions process to evaluate progress and impact to promote appropriately efficient happiness and further sustainability.

Keywords: Community happiness, index, measuring instruments, subjective well-being, urban planning, urban sustainability.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

INDEKS KEBAHAGIAAN KOMUNITI BAGI PEMBANGUNAN MAMPAN DI PUTRAJAYA, MALAYSIA

Oleh

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Urbanisasi di Malaysia telah menyebabkan tekanan yang signifikan ke atas kerajaan tempatan dan negeri bagi menyediakan strategi perancangan dan pembangunan bandar yang diharap dapat memperbaiki kualiti perkhidmatan bandar dalam memastikan kebahagiaan atau kesejahteraan rakyat. Bandar-bandar sedang menghadapi peningkatan isu yang kompleks dan perubahan cepat yang mencabar arah tuju masa hadapan mereka. Masalah di bandar telah memperlihatkan keperluan bagi penggubal polisi supaya dapat menggalakkan kesejahteraan sebagai elemen yang penting bagi pembangunan mampan. Oleh sebab itu, mewujudkan komuniti yang sihat dan berdaya maju yang bertujuan untuk memberikan kualiti hidup tinggi merupakan fokus polisi awam kontemporari yang mensasarkan komuniti bandar merentas negara, terutama dalam pembangunan bandar baharu, termasuk Putrajaya. Walau bagaimanapun, kerangka pembangunan komuniti mampan lazim telah mengabaikan pelaksanaan kebahagiaan sebagai suatu matlamat. Objektif umum kajian ini adalah untuk membangunkan kerangka Indeks Kebahagiaan Komuniti (indeks CH) bagi mengukur kepuasan penduduk berdasarkan indikator pembangunan mampan di Putrajaya, dari konteks kesejahteraan subjektif. Kajian ini menggunakan reka bentuk penyelidikan kaedah campuran dengan reka bentuk triangulasi dalam pembangunan kerangka ini bagi memperoleh matlamat utama penyelidikan dan juga objektif spesifik. Dua sumber set data telah dikumpul dan digunakan dalam analisis penyelidikan ini. Gabungan data kualitatif dan kuantitatif telah diperoleh dari dua pusingan tinjauan Delphi daripada panel sampel pakar dalam bidang pembangunan mampan di Malaysia, dan data kuantitatif diperoleh daripada tinjauan awam penduduk. Panel pakar Delphi mengenal pasti dan memilih indikator relevan yang terpilih, memberi pemberatan pada indikator, dimensi, dan atribut domain yang diperlukan untuk membangunkan kerangka kebahagiaan komuniti bagi menggalakkan inisiatif polisi bandar. Konsensus telah diperoleh ke atas 37 indikator utama dalam empat dimensi kemampanan dengan tahap tinggi persetujuan kumpulan (Kendall W= 0.485, $p <$ 0.001), dan korelasi yang tinggi dalam ranking pusingan (rho = 0.945, $p < 0.01$). Sebelum pengaplikasian pada kajian kes, kerangka tersebut telah diuji bagi

menvalidasikan ciri psikometrik menggunakan Permodelan Persamaan Berstrukur Kuasa Dua Terkecil Separa (PLS-SEM) bagi menentukan kekukuhannya dalam mengukur kebahagiaan komuniti. Model Agregasi Tambahan Linear telah digunakan dengan pemberatan untuk mengkonstruk indeks komposit yang mempertimbangkan ciri unik komuniti dan majlis pembandaran di Malaysia. Mengikut tinjauan keratan rentas menggunakan kerangka komposit yang baharu dikonstruk bagi mengukur tahap kebahagiaan komuniti di Putrajaya, kajian ini mendapati bahawa majlis perbandaran mempunyai tahap kebahagiaan yang sederhana - tinggi (6.866) pada respon skala 10 mata pada hampir setiap tahap kemampanan. Kerangka tersebut diharap dapat menyediakan suatu mekanisme untuk pemantauan dan penilaian yang berterusan dan penilaian intervensi kemampanan, menggalakkan perbandingan trend kemampanan bagi sesuatu jangka masa dan membimbing perancangan bandar dan proses membuat keputusan polisi untuk menilai perkembangan dan impak bagi menggalakkan kebahagiaan berkesan yang sesuai dan kemampanan seterusnya.

Kata kunci: Kebahagiaan komuniti, indeks, pengukuran instrumen, kesejahteraan subjektif, perancangan bandar, kemampanan bandar.

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I certify that a Thesis Examination Committee has met on 6 April 2017 to conduct the final examination of Musa Haruna Danladi on his thesis entitled "Community Happiness Index for Sustainable Development in Putrajaya, Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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

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Signature: _____
Name of Member of Supervisory Committee: Dr. Mohd Yusoff bin Ishak

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LIST OF ABBREVIATIONS

GNI	Gross National Income
GDP	Gross Domestic Product
UGEC	Urbanisation and Global Environmental Change
UNCSD	United Nations Conference on Sustainable Development
EPA	Environmental Protection Agency
ORD	Office of Research and Development
USEPA	United State Environmental Protection Agency
CH-index	Community Happiness index
SWB	Subject Well-being
CWB	Community Well-being
MQOLI	Malaysian Quality of Life Index
MYI	Malaysian Youth Index
SUD	Sustainable Urban Development
MURNInet	Malaysian Urban Rural National Indicator network
MWR	Malaysian Well-being Report
WLS	Whole Life Satisfaction
HM	Happiness Measure
OECD	Organisation for Economic Co-operation and Development
UNECE	United Nations Economic Commission for Europe
UN WCED	United Nations World Commission on Environment and Development
WI	Well-being Index
ESI	Environmental Sustainability Index
EFA	Ecological Footprint Assessment

EIA	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
MCA	Multi Criteria Assessment
CBA	Cost Benefit Analysis
BM	Biocapacity Measure
LEED	Leadership in Energy and Environmental Design
BREEAM	Building Research Establishment Environmental Assessment Methodology
UNDP	United Nations Development Programme
LCD	Least Developed Countries
DC	Developed Countries
OLS	Ordinary Least Square
SCI	Sustainable City Index
MUQOL	Malaysian Urban Quality of Life
HW	Human Well-being
EW	Eco-environmental Well-being
SoW	Social Well-being
EcW	Economic Well-being
EnW	Environmental Well-being
UGv	Urban governance
UNDESA	United Nations Department of Economic and Social Affairs
CALC	Centre for the Advancement of Language Competence
AVE	Average Variance Extracted
VIF	Variance Inflation Factor
TOL	Tolerance
PLS	Partial Least Square

SEM	Structural Equation Modeling
PLS-SEM	Partial Least Square - Structural Equation Modeling
LISREL	LInear Structural RELations
AMOS	Analysis Moment of Structure
LV	Latent Variable
IQR	Inter Quartile Range
CV	Coefficient of Variance
BAP	Budget Allocation Process

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Creating a place where people want and choose to live is a top agenda in today's globally mobile world (The New ClimateEconomy, 2015). People are now attracted by the quality of life or happiness that cities offer. Everyone wants to be happy in life and to live in a happy society (Changrian, 2010). Human satisfaction is a basic requirement in determine quality of one's life (Jirava et al., 2010). Quality of life takes into account the material standard of living and also the intangible aspects that constitute human life such as leisure, safety, social connectedness, physical health, environmental quality issues, etc.

In the past few decades, sustainability measures have been increasingly used in efforts to conserve natural resources for future generations. Many communities seek to maintain and improve the economic, social, and environmental conditions for present and future generations through such sustainability initiatives (Mascarenhas et al., 2010). Sustainability includes environmental, economic and social conditions (Cloutier et al., 2014). However, Because of the complex relationships between these factors, sustainability has been defined and redefined by many researchers trying to make the concept tangible (Doka et al., 2011).

Sustainability of a community's well-being is a concern for all its citizens (Gourley et al., 2013). Quality of life and well-being are important motivators of local sustainability initiatives and progress toward sustainable development (McCrea et al, 2015). In every community, there are unique conditions that affect the well-being of the people living within the community (Quercia et al., 2012). Sustainability begins with local communities because no matter the size of the community, the underlying social, economic and environmental interactions connect people (Mascarenhas et al., 2010). Happiness offers a new approach that reflect on sustainability issues with opportunities to improve quality of life and contribute to individual, community, and global well-being (Rosly & Rashid, 2014). Bhutan has developed an official happiness index in 1972 and declared that Gross National Happiness (GNH) rather than Gross National Income (GNI) would be the principal benchmark for measuring the nation's progress (Ura et al, 2012). The framework presented at the UN General Assembly resolution A/65/L.86 in 2011 call for "holistic approach to development aimed at promoting sustainable happiness and well-being" (General Assembly of the United Nations, 2011).

Urban development is significant in the context of sustainability (Xing et al., 2009), and holds the key to several challenges faced in interactions with the environment (UGEC, 2008). Presently, urban population accounting for 3.4 billion people of the global population (7 billion), with expected increase of more than 6.25 billion people

to live in cities by 2050 (United Nations, 2013; World & Bank, 2011). Rapid urbanisation underlined the urgency to address multiple sustainable development challenges due to consequences for population distribution and huge challenges for national and local governments such as constrained capacity and finance for delivery of basic urban services, infrastructures, proper planning and governance (World Economic and Social Survey, 2013). Nevertheless, this global urban transition presents significant opportunities, with vast potential for emerging cities to act as powerful and inclusive development tools (Hall & Pfeiffer, 2013).

Cities are the economic driver and powerhouses of the global economy. In 2015, 85% of global GDP was generated in cities (The New ClimateEconomy, 2015). However, economic prosperity has caused an undesirable outcome that creates a negative impact on people living in community and society. In Malaysia, urbanisation and industrial processes have led to the emergence of big towns such as Kuala Lumpur, Shah Alam, Johor Bahru, Malacca and Penang (Choon et al., 2011) with the growing pressure on the living environment such as increase pollutions, congestion,decrease in safety, decline in the well-being of the community. Consequences of which led to the creation of a new town such as Putrajaya to have a healthy urban environment for residents (Hamsa et al., 2015; Moser, 2010). In Putrajaya, the socio-cultural needs of the inhabitants are a top priority. However, quality urban living goes beyond just providing places of work and residence (D. B. Omar, 2006), it also includes essential facilities and amenities for individual fulfilment and community life (John, 2006). Furthermore, public services have not always been effective in improving communities when public policies are created without regard for the local communities needs (Lee et al., 2015). Quality of life in a city has often been linked with the public services and the city environment without consideration to the perceptions of the dwellers that live in the communities (Y. Kim & Lee, 2014), and fundamental in gauging the quality of life (Hamsa et al., 2015).

Sustainability has become the pillar of development and is assuming profound implications for the quality of life and livelihood of local communities (Dahlia Rosly & Rashid., 2014). However, cities sustainability has a broader concept which integrates environmental management, social development, economic development, and urban governance (Hamzah, 2014). This study, therefore, is motivated to measure the level of community happiness based on the perceptions of the residents in Putrajaya a new urban setting, based on sustainable development. The study integrates four sustainability dimensions (social, economic, environmental and governance) and the subjective well-being (SWB) approach which evaluates the residents' perception and satisfaction in an assessment framework to mirror resident living condition in the community based on sustainable development. Such investigation in Putrajaya is new, and the finding from the study will increase the understanding of community well-being and provide vital information for urban planning policy to improve the quality of life holistically for a more sustainable urban community.

1.2 Statement of Research Problem

Urbanisation in Asia is proceeding at a rate much higher than the world average due to rural–urban migration (United Nations, Department of Economic and Social Affairs, 2014). Asian cities remained home to 1.76 billion people (Dahiya, 2012). In Malaysia, at least 62% (16 millions) of people live in towns and cities (Siong, 2008) and over 70% of the populations projected to live in urban areas by the year 2020 (Economic Planning Unit(EPU), 2010). Figure 1.1 and Figure 1.2 present the trend and rate of urbanisation in Malaysia. In Malaysia, cities are confronted with social, economic and environmental challenges related with urbanisation such as pollutions, increase mobility; and a decline in quality of living (Choon et al., 2011).

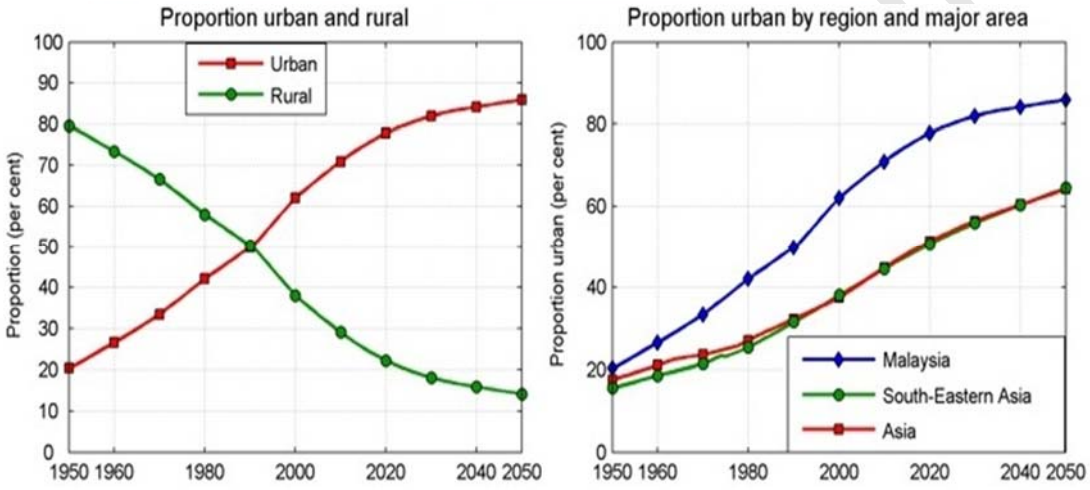

Figure 1.1 : Malaysian Urbanization Trend
(Source: Department of Statistics Malaysia, 2013)

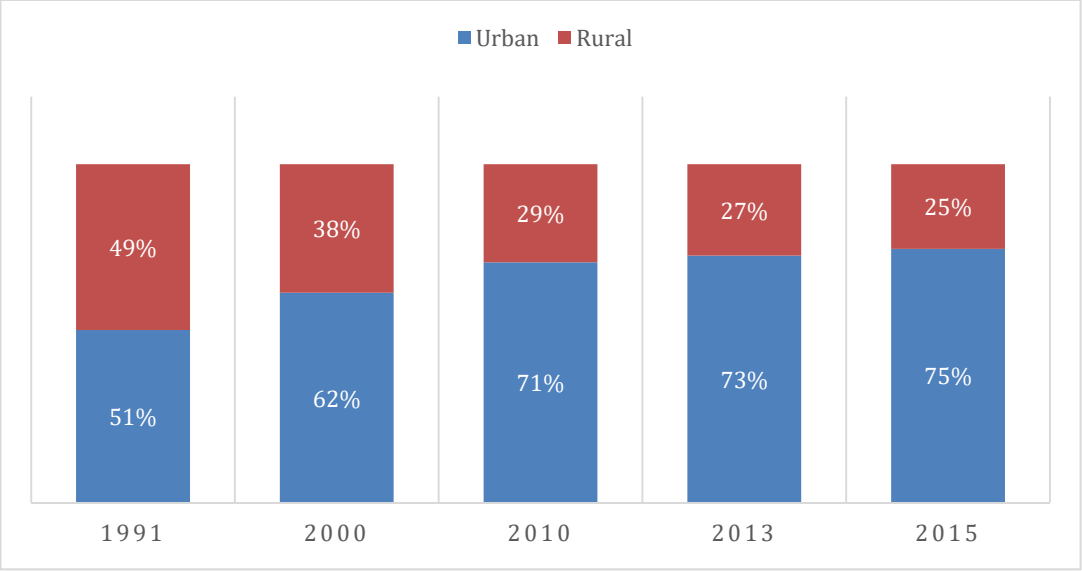

Figure 1.2 : Malaysian Urbanization Rates (%)
(Source: Department of Statistics Malaysia, 2016)

In Malaysia, urbanisation has caused increase mobility with consequences of traffic congestion. According to (Memon et al., 2016), vehicle ownership, especially the private car, have rapidly increased, 90,046 cars were registered in May 2015 and increased to 99,013 cars in June 2015. According to Road Transport Department of Malaysia, average of 64,516.93 cars are registered per month between 1988 to 2015. Also, the energy demand primary energy consumption has increased by an average of 6.8% and electricity consumption by 9.2% annually (Shafie et al., 2011). The rise in demand for transport services and energy has caused the CO_2 emissions level to increase as well in Malaysia. The transportation sector accounts for 22% of total CO_2 emissions, of which 85% comes from road transport, Electricity generation (46%), manufacturing (19%), and other sectors contributed (13%) of the total CO_2 emissions with annual growth increases of 4.4%, 6.4%, 3.6% and 13.9% in the sector respectively (Mustapa & Bekhet, 2015). The situation threaten the nation's vision to achieve 'developed status' by the year 2020 (Federal Department of Town and Country Planning, 2013). Rapid urbanization has also caused rising cost of living, the urban populace suffers from issues such as unemployment, inadequate public services, income inequality, affordable housing, urban poor, overburdened public amenities, public safety, declined health condition and well-being and other socioeconomic conditions (Rani & Mardiah, 2012; Dahlia Rosly & Rashid., 2014).

Presently, Malaysia is an emerging economy (Dow Jones Indexes, 2011), and a newly industrialised country (Mankiw, 2008). The country has significantly achieved economic growth as well as socio-economic development over the years. Since the independence in 1957, Malaysia Growth Domestic Product (GDP) has annually increased at 6.5% for over the past 50 years (Bakar et al., 2015). The economic growth has placed pressure on the environment and caused negative effects on communities and the need for better living standards (Choon et al., 2011; Dahlia Rosly & Rashid., 2014), by efficiently monitor urban progress through assessment of well-being in existing cities and new urban (Putrajaya) community (Hamsa et al., 2015). Since community which is intimately connected to the quality of life of the people (Kim & Lee, 2014). However, there has been few studies in the Malaysian context compared to developed countries like Canada, United States and United Kingdom where happiness research has gained considerable attention.

Previous research revealed that, overall, urbanisation, economic growth and dearth of public services affect quality of life of the community and threaten sustainability (Dahlia Rosly & Rashid., 2014). Well-being relies on well-functioning communities, strong and stable family relationships, security of personal happiness, lack of violence, and social connectedness (O'Riordan, 2013). Several factors such as public security, education, transportation, health, housing, environment, social participation, culture and entertainment, population influence happiness in urban areas (Hamsa et al., 2015; Hassan et al., 2013). However, the dearth of comprehensive and reliable subjective indicators of well-being for sustainable development in the present national measures of well-being disregard the intangible aspects of well-being (Fakhruddin & Khan, 2011), and consequently disregarded the subjective well-being satisfaction of the citizen (Bakar et al., 2015).

Also, studied have highlight lack of suitable items for measuring and defining community well-being in an appropriate operationalization to design an instrument that specifically and directly measures community well-being (McCrea et al., 2015; Morton & Edwards, 2013; Sirgy et al., 2010). In this context, studies on community well-being are desirable to help researchers and policy-makers understand relevant indicators and appropriate applications (Norouzian-Maleki, Bell, Hosseini, & Faizi, 2015). Therefore, Community happiness index framework is proposed to measure the level of subjective well-being of residents in the municipal/city specifically Putrajaya city in Malaysia. Although, the conceptualization would produce community happiness index score which emphasis is important in providing potential assessment between resident happiness and sustainable development in Putrajaya. However, they have rarely (if ever) been translated and assessed.

1.3 Research Questions

This study develop a community happiness index framework to measure residents satisfaction of sustainable development based on subjective well-being context in Putrajaya. In other words, the study develop an indicator-based framework to assess subjective well-bing of resident community based on sustainable development indicators in the city. Three research questions are addressed as follows:

1. What factors are important in public service delivery and influence quality of life in Putrajaya?
2. How can public service be delivered effectively and efficiently at the municipal level based on existing sustainable development in Putrajaya?
3. How to find public service citizens are satisfied with, factors that involve good service delivery, and perceived residents happiness in Putrajaya?

1.4 Research Objectives

The general objective of this study is to develop a community happiness index framework to measure residents satisfaction based on sustainable development indicators in Putrajaya city, from subjective well-being context.

1.4.1 Specific Objectives

The specific objectives of the study are as follows:

1. To identified environmental, social, economic and governance indicators which can be used to measure residents level of community happiness.
2. To develop a valid assessment framework of community happiness index based on the indicators identified.
3. To validate appropriateness of the framework to measure level of community happiness in Putrajaya

1.5 Putrajaya: Sustainability Issues and Quality of life

Putrajaya city is designed and developed as a leading model green city that is increasingly committed to quality of life, and initiatives towards carbon emission reduction from its urban activities (Azmi & Romle, 2015). There are lots of green open spaces and lake to capture airflow and create natural ventilation. Air and noise pollution from vehicular traffic flow and other human activities (e.g. Construction) that cause mental and physical health problems are counter-balanced with the provision of green open spaces with lush vegetation to prevent negative effect of toxic air particle and decrease pathogens (Shahidan et al., 2012). The city provides state of the art facilities that offered the inhabitants with any systematic lifestyle possible for good living. Putrajaya 2025 vision continues the city's aspiration and vision to address the city challenges and continues effort to be a well-managed, vibrant, liveable and successful Federal Government Administrative Centre that fulfils socio-economic, recreational and spiritual needs of the inhabitants, workers and visitors (Azmi & Romle, 2015; Putrajaya Corporation, 2011).

However, despite the emphasis on creating a good community with good values as the overall mission defined to exemplify Putrajaya to other Malaysian cities, little can be said about the overall community well-being or happiness of the inhabitants. As the population of the cities grows, the demand for basic services and infrastructure also increases. The overutilization of the existing infrastructural facilities due to greater demand has made the present living conditions in the cities poor and vulnerable (Ismail et al., 2008). In this context, it is imperative to evaluate the residents' perceptions on the level of dissatisfaction with the living conditions urban environment (Raduwan & Ismail, 2015). The quality of life is a subjective issue and that each respondent may have different views or perceptions concerning subject matter (Marans, 2015; Pacione, 2012). It is of theoretical interest to investigate the connection between the built environment and the satisfaction level of different urban areas (Mulligan et al., 2012).

Currently, the community lacks the social cohesion and sense of place the envisioned plan accorded the city (Azmi & Romle, 2015; Mulligan et al., 2012). Many of its inhabitant's civil servants live outside Putrajaya and commute to work, while others return to their communities on weekends (Ismail et al., 2008). (Azahan et al., 2009) in his study of the quality of life of urban dwellers in intermediate cities in Malaysia, find out that housing, family living and the social security have a significant contribution to the quality of life status. Putrajaya is a new planned city developed based on comprehensive land use policies and guidelines for utilities, infrastructure, housing, transportation system, public amenities, parks and gardens for modern living (Moser, 2010). Hence, it is expected to meet all the basic neighbourhood needs. However, the city is faced with urbanisation and sustainability problems which make it necessary for case study in this study context. The problems are as follows:

1. Despite Putrajaya is planned with residential land use type been the second largest with a total area of 2,888.8 acres (25.5%) (Yuen et al., 2006),there is housing problem. The residential land is divided into 14 precincts with 57,033 housing units at the Periphery, and 10,119 units within the Core area. A total

of 52% housing units allocated for Government servants and the remaining 48% or 32,000 units for private sector . However, the numbers of residential units in the core area are quite limited (Rani & Mardiah, 2012; Rani, 2014).

2. Putrajaya is conceptualised to provide a contemporary and sustainable transportation system through its long and short term efforts (Putrajaya Corporation, 2011). However, the city is faced with transport problem because the urban rail system has not yet been implemented. This delay has led to increasing dependence on private vehicles thus, causing traffic congestion and lack of parking space for most government offices in the core area of Putrajaya (Rani, 2014).
3. Also, the existing public transport system in the city lacks the quality and availability, and it takes longer travelling times (Mustapa & Bekhet, 2015). Putrajaya is a new administrative Federal Capital of Malaysia set to achieve 70% share of all travels by public transport in the city area. However, the current modal split between the public transport and private transport is 15: 85 (Borhan et al., 2014).
4. Based on the inception reports, 344.27 hectares of land is reserved for the provision of public services and facilities for Putrajaya residents (Putrajaya Corporation, 2011). These public services and facilities include healthcare, education, religious, safety and security and others. However, the current services and facilities in the city are inadequate and not appropriately distributed (Rani, 2014). For instance, there are provision for five public clinics (healthcare). However, only one presently exist in Precinct 9, the most populated residential area (Rani & Mardiah, 2012).
5. Also, the rising rates of the dengue disease were recognised as a major public health issue in Putrajaya (Mulligan et al., 2012).
6. Additionally, Omar (2006) study residents quality of life in Putrajaya. The purpose was to find information related to community life in Putrajaya which was specifically planned to deliver good quality of life for the inhabitants. Based on the study outcome, he observed that "there are several planning and implementation issues that need to be reviewed to achieve the planning goals and objectives for better quality of life in Putrajaya". He recommended further research on integration of quality of life dimensions into overall Putrajaya development and other new developments (Omar, 2005).

The aforementioned problems motivated the need to adopt Putrajaya city as an ideal case study in this study context to measure the resident perceived satisfaction based on an evaluation of existing sustainable development services in the city.

1.6 Significance of the Research

An urban environment is a multi-dimensional, diverse, dynamic, complex and evolving, as the essential features for human health and well-being (Corvalan et al., 2005). Understanding community well-being helps decision makers gauge prosperity and progress and can shade light on where sustainable interventions can be made to improve well-being (Gallup-Healthways, 2015). The significance of this study is discussed below based on policy implications.

1.6.1 Practical Significance

The community happiness index framework model may contribute practically by providing fundamental information and guidelines on community happiness to aid local and national policymakers, urban planners, and governance in translating broad goal into actions for urban sustainability and national development (Alberti, 1996).

For urban development, the framework will help local decision makers understand development process and performance of sustainable intervention. The framework would help planners understand the effects on the sustainability of alternative policies and actions, and also help to establish priorities and exclusive proposals to promote sustainability. The framework would help to facilitate effectiveness in assessing the existing developmental policies through proper data analysis and interpretation of results for the purpose systematic monitoring of urban environmental change and assessing current subjective well-being or happiness signal by urban sustainability. Also, framework help to assess current environmental, economic, social and governance trends that reflect sustainability shifts to determine in response the most critical obstacles to sustainability.

At municipal level, the integrated sustainability concept will enhance quality of decision-making and planning. For example, to determine the performance of interventions targeted at improving the quality of life and happiness through practical policy recommendations translated into local planning scheme. The index score will provide general information about the sustainability of urban area, and enable comparison and ranking of performance among communities.

At the societal level, the framework may potentially act as an educational medium to encourage learning process, and increases participation in decision-making among community stakeholders. In this way, it would help the development of new knowledge to stimulate needed changes in the community. Also, communities ranking higher on CH-index value might use it to help showcase the desirability and potential of the residents, businesses, and governments in that urban area. This by implication may help to influence competitive advantage required for the cities to attract the best people, resources, and services which influence potential development opportunities (Donald, 2001). To the government, the framework could serve as a guide for planning and policy system to promote sustainable development and national happiness in Malaysia. Also, the framework model could serve as a reference to develop community happiness index for other communities in the states of Malaysia than the Putrajaya focused in this research.

1.6.2 Theoretical Significance

The study also contributes theoretically to the body of literature by extending the knowledge gap on the link between sustainable development and community happiness in Malaysia in particular Putrajaya. The lacks of relevant local dataset give the restraints thecapacity of the local government to effectively link indicator

instruments with planning and policy-making (Cox et al., 2010). Thus, the study contributes to the advancement of subjective well-being research and initiatives to change development assessment to a satisfactory measure of subjective well-being in Malaysia.

The concern of well-being in the city has become progressively important discourse in Putrajaya and therefore, deserves a study (Calvin, 2010; Hamsa et al., 2015; Omar, 2006). The study is significant because it provides an inclusive framework called Community Happiness index which integrates subjective well-being and sustainability in measuring residents satisfaction of sustainable services and communtyHappiness. Also, the study helps to build consensus among other studies concerning the quality of life and well-being issues in Putrajaya City.

1.7 Definition of Terms

1.7.1 Theoretical definitions

Community happiness. "Satisfaction with the local place of residence taking into account the social and physical environment, and the services and facilities" (Forjaz et al, 2011).

Indicator. "A statistical measure of relevant phenomena that picture current conditions or changes in order to set goals, strategies and solutions" (Heink & Kowarik, 2010).

Domain-based framework. "Framework comprises of sustainability dimensions and identifies indicators for each" (Maclaren, 1996).

Subjective Wellbeing (SWB). "Measure by individual's self-reports in response to appropriate questioning (such as how satisfied they are with their lives)" (Diener et al., 2009).

1.7.2 Operational definitions

Community happiness index. For this study, community happiness is defined as the extent of individual's subjective satisfaction based on their experience of social, economic, environmental and urban governance interventions in their place of living.

Community happiness measure. For this study, community happiness measure is a subjective community well-being with the individual level of satisfaction regarding various aspects of the city.

Sustainable services: For this study, sustainable services referred to public services and facilities delivered to fulfil community well-being.

Community happiness, **well-being**, or **subjective well-being**. For this study, Community happiness, well-being, or subjective well-being will be interchangeably used.

1.8 Scope of the Resaerch and Limitations

The study developing framework to measure resident perceived satisfaction of well-being and level of community happiness based on sustainability services was conducted in Malaysia Federal Territory of Putrajaya. The city is preferred among other towns because of it unique conceptualisation and development as a planned modern city with experience of rapid growth. This study is to determine perceived residents satisfaction of sustainable services and level of community happiness in the city. Thus, sustainability indicators employed in developing the framework model for the study was based on subjective well-being context. Academic expert was engaged in creating indicators. The psychometric validation and application of the framework model are limited to resident community in Putrajaya the case study area. Thus, the interpretability and explanatory strength of the framework model depend on the data availability and quality from the field.

The main limitation of this study was the lack of reliable information on the study area during the indicator selection. Even though the expert opinion provides the key indicators, data was still a major issue due to the unavailability and variance of information on quality of life in the study area. At the Delphi survey stage of the study, a comprehensive list of reviewed indicators was presented to the experts; however, indicators were selected based on the availability of data. Also, the size and nature of the sample, because the study only selects a portion of the whole population in the study area. Financial and time constraints are also another limitations. With financial support and time, the researcher would have had manage the household survey to avoid survey bias by including ethnic variation and income category in the happiness measure in the city, and also could have cover wider range of case studies.

1.9 Organisation of the Thesis

This thesis is organised and structured into five chapters as follows:

Chapter One covers the introductory aspects of the study. This chapter give details of the study background and statement of problem, research questions and research objectives. The chapter also provide information on the research scope and limitations, as well as the definition of key findings.

Chapter Two focuses on the theoretical review of the related studies drawn from related academic literature. It gives the essential discussion on theoretical background on the core aspect of this study: Happiness or subjective well-being and urban sustainability. Each section thoroughly discussed and how the subject is related to this studies. The researcher also critically review previous studies related to community well-being and sustainable urban development.

Chapter Three, present discussion on the detail of the methodology used in this study. It provides thorough discussion on the research design, data collection, surveys, and pilot study. Also, it provides clear discussion on data analysis procedures to enable the replication of this study in another further study.

Chapter Four give account of the research findings and analyses. This include the descriptive analysis of the Delphi study to select indicators and determine weightings of the variables. The chapter also provides the psychometric evaluation of the framework model relationships (significance testing) to see if the relationship predict the theoretical construct (community happiness) developed. Also, the main theme of the study residents assessment, i.e. perceptions and satisfaction sustainable services based on the composite indicators were analysed, and community happiness level determine.

Chapter Five discusses the implications of the research findings based on research objectives. This chapter also provides policy implications of the study based on the key findings, limitations of this research and conclusion.

1.10 Chapter Summary

This chapter has introduced the research background, research problem and provide research questions. It also provided the research objectives, research scope, significance, and outlined the thesis structure. The subsequent chapter gives detail review of the salient literature related to the study context.

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