

Evaluation of Walkability and Satisfaction in Sustainable Urban Neighborhood,
Precinct 9 in Putrajaya

Saleh Kaji Esfahani

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Specially dedicated to my beloved father, mother

Brother and friends

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ABSTRAK

Setelah bangunan pejabat kerajaan Wilayah Persekutuan di Putrajaya siap dibina, kesemua kakitangan kerajaan telah ditempatkan di pejabat berkenaan yang sebelum ini berpusat di Kuala Lumpur. Hasil perancangan yang teliti, kakitangan kerajaan yang bertugas di kawasan tersebut akan disediakan rumah kerajaan yang mampu menampung kakitangan kerajaan sedia ada dan pengambilan kakitangan yang baru. Kawasan Persint 9 di Putrajaya merupakan pusat pentadbiran persekutuan yang baru dan penting. Kawasan pejabat baru ini disediakan kemudahan rumah berbentuk pangsapuri dan teres untuk menampung kakitangan kerajaan dan ini selari dengan apa yang telah dirancang kerajaan iaitu untuk membina konsep taman bandar yang berbentuk 'livework'. Konsep ini dapat mewujudkan satu identiti yang unik dalam masyarakat Malaysia di alaf baru. Kakitangan kerajaan akan dapat merasai inisiatif yang disediakan oleh pihak kerajaan, di mana rumah-rumah kerajaan yang sedia ada akan dikaji untuk membentuk satu model baru yang bercirikan penginapan kelas tinggi. Putrajaya adalah Pusat pentadbiran Kerajaan Persekutuan Malaysia yang baru. Terletak strategik dalam kawasan Koridor Raya Multimedia (MSC). Bandar ini dianggap sebagai 'Bandar Taman Pintar' yang pertama di Malaysia. Ia merupakan sebuah bandar dan model yang dijadikan sebagai nadi negara dan menjadi tempat yang menarik untuk didiami dan bekerja. Putrajaya menjanjikan gaya hidup yang selesa dan berkualiti untuk penduduk. Dengan kehijauan yang subur, kawasan kediaman disokong oleh pusat-pusat komersial dan kemudahan awam yang bersepadu tema taman bandar yang menjadi persekitaran kerja hidup yang ideal.

ABSTRACT

With the stages completion of the office buildings at the Government Office Precincts, staff have been relocating themselves from the previous office complex in Kuala Lumpur to Putrajaya and tend to let themselves as fulltime Putrajaya residents. Thus, with the careful planning of having sufficient housing units to cater the influx Government staff, Precinct 9 is among the few pioneer sections of Putrajaya's new Malaysia Federal Government Administrative Center to reside such an important administrators of the nations. Specially designed high rise apartment and link houses been formulated together the need of the Government staff with the millennium concept of garden city's 'livework'. The completion of the terrace double storey garden houses with the nation's first fenceless housing concept create a unique identity to this new millennium planned community. The study will just simply to study the impact of the designed houses that can be as a model where we think that the initiative of the Malaysian Federal Government in creating the new concept of borderless housing with such a high class accommodation just to cater their Government servants.. Putrajaya is the new administrative Center of the Federal Government of Malaysia. Located strategically within the Multimedia Super Corridor (MSC), Putrajaya considered Malaysia's first Intelligent Garden City. It is a model city and as the heart of the nation and become an attractive place to live and work. Putrajaya promises comfortable and quality lifestyles for its residents. With lush greenery, residential area are supported by commercial centres and public amenities that integrated the garden city theme which become an ideal 'live-work' environment. Refer to Figure 1 for location.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In 21st centuries, one of the most significant problem of environmental challenge of humanity is excessive use of non-renewable resources and fuel consumption (Flannery, 2005; Gore, 2006). This is amazing where more than half of this energy and fuel consumption is related to urban and cities and became unsustainable due to waste and pollution and massive used energy because of concentration of function, activity and particular place and the need of people for convenient access to them (Rogers 1997). This catastrophic was based on early urban development as the stage of modernism and enormous urban growth. Fortunately, the global concern about this pollution changes the direction of urban development and sustainability became one of the most majority approaches for every urban growth form macro to micro level. One of the most updated and quality approach in sustainable development is New Urbanism and become be the most important movement in urban planning and architecture in this century. In 1993 the Congress for the New Urbanism (CNU) was founded by a group of architects dedicated to “creating buildings, neighbourhoods, and regions that provide a high quality of life for all residents, while protecting the natural environment”. The New Urbanism is a reaction about urban sprawl and the new approach for urban development which is

aim to for reduce car usage by improving walkable environment. (Duany et al., 2000; Farr, 2008; Flint, 2006).

The principle of new urbanism, in brief, include high density, mixed use neighborhoods; convenient public transit, bicycles paths and pedestrian-friendly street networks; strategically placed open spaces; and architecture designed to foster social interaction characterized by the revival of ‘traditionalist’ architecture and design principles to promote “compact, mixed-use, walkable, and reasonably self-contained communities” (Grant, 2006, p. 3). Consequently the pedestrian friendly environment can enhance the walkability (Joongsub & Kaplan, 2004; Lund, 2003).

Sustainability in urban design and planning has so many aspects in different levels; Livable Neighborhood (LA) is a Western Australian interpretation of New Urbanism, it is aim to replace the old conventional neighborhood that is pedestrian friendly and walkable instead of car dependence, fuel consumer sprawl neighbourhood.(R. Falconeretal, 2010)

Walking is the most energy efficient mode of travel. It can be encouraged by an interconnected street network that provides pedestrians with a choice of routes at intersections to enable access to neighbourhood facilities via a safe and attractive environment. Guiding principles of the Livable Neighbourhoods design code (Source: Jones, 2003; Western Australian Planning Commission, 2004)

People walk and use bicycle more for transportation in high walkability than low-walkability neighbourhoods, as indicated by multiple reviews (Gebel, Bauman, & Petticrew, 2007; Heath et al., 2006; Transportation Research Board and Institute of Medicine, 2005). There is a need to confirm whether more walkable neighbourhoods are associated with higher total physical activity, particularly using objective measures of environment and activity (Frank, Andresen, & Schmid, 2004), because total physical activity should be most closely related to health benefits. A few studies indicate adults living in high-walkability neighbourhoods or regions are less likely to be overweight or obese than those living in low walkability areas (Papas et al., 2007).

It is anticipated that LNs will facilitate use of active modes of transport (e.g. walking and cycling), be well-linked to existing public transport services and feature higher relative densities and increased lot diversity, with development focused around activity centers and public transport nodes (Western Australian Planning Commission, 2004). Broader neighbourhood design and planning attributes (e.g., street connectivity, residential density and retail destinations) demonstrate positive associations with utilitarian walking (Frank et al., 2005; Owen et al., 2007; Lund, 2003; McCormack et al., 2008; Saelens et al., 2003);

Recently, objectively measured neighbourhood walkability (i.e. residential density, street connectivity and land use mix) has received much attention in research and has been identified as an important physical environmental correlate of PA. When investigating this walkability score in detail, only residential density was negatively related to neighbourhood satisfaction. For street connectivity and land use mix, no associations were found. (Van D, D, 2010)

There is close relationship between physical environment attribution and sense of satisfaction (Guite et al., 2006; Leslie and Cerin, 2008; Parkes et al., 2002). Based on results, the sense of satisfaction have been influence by ,aesthetics, more traffic safety, less crime, less noise, better access to green spaces, better walking infrastructures and more land use mix, but the conversely the walk able neighbourhood is related with poorer aesthetics, less traffic safety and more crime. The results showed that adults living in a higher walkable neighbourhood were less satisfied with their neighbourhood (Leslie et al., 2007).

The previous study shows high walk able neighbourhood conversely effect the level of satisfaction so on the people living in high walkable neighbourhood has lower level of satisfaction from their living environment, on the other hand, the neighbourhood with low level of walkability get the better rate in citizen's satisfaction. The causes of this are pursued in terms of a gap between, the aim of this study, between the planners perceive about future development and the peoples attribution to get the satisfaction from their living environment. The aim of this study will be to how to choose the high walkability neighbourhood which neighbourhood type, as density approach (high rise, midrise, linked, detach) that has good level of

walkability, and simultaneously can get the balance in citizen's satisfaction. It means that the same investigation that done in US and Group and had suggested to repeat in outside of Europe (Delfien VanDyck,2011)

1.2 Problem Statement

Walkable neighbourhood with sustainable urban growth and supply better living condition for citizens is respecting their right for good environmental living condition.

1.3 Aim and Objective

In this study we aimed to explore the association between sense of satisfy (as our outcome variable) and walking behavior and neighborhood characteristics hypothesized to influence walking. This study is unique because it includes a range of environmental perceptions to gauge factors that might both facilitate (e.g., presence of interesting sites) or hinder (e.g., perceptions of traffic, crime) walkability and its impact on sense of satisfy, and make balance between satisfaction and walkability.

- To identify the characteristic or principle of livable cities and sustainable development
- To explore major public housing typology and then evaluate these neighbourhoods as walkability environment and

- To understand that adults feel perception about living in high walkable neighbourhood
- To draw evaluation of citizen satisfaction in different neighbourhood typology; as urban density attribution;
- To investigate the relation between satisfactions and walkability of neighbourhood precinct.

1.4 Research question

Based on previous study and literature review these five major question is propose to guide or structure the formulation and methodology of this study:

- What role can livable neighborhoods have in shaping large-scale sustainable urban development?
- Which of residential typology (as density approach) has more walkability statics and better pedestrian friendly environment?
- Which of neighborhood typology (as density approach), has create more satisfied from their neighborhood condition?
- Is adult feel less satisfaction in high walkable neighborhood (high density) in South East Asia?
- Who to draw balance between satisfaction and walkability in neighborhood design?

1.5 Methodology

This research attempts to understand the previous study that have been done about walkability and satisfaction. Although this research may adopt pervious methodology there is a plan to go further and investigate different neighborhood typology with level of satisfaction and walkability and explore that which type has the balance between these two and can get the most beneficial level in both side.

Qualitative studies are well suited for research that delves in-depth into the complexities and processes; research on little –known phenomena; research that cannot be done experimental for practical reasons; and research for witch relevant variable have yet to be identified (Marshall and Rossman, 1995) . This research on urban design for neighborhood walkability and sustainability fits the above description and should therefore utilize the quantitative inquiry method.

Researches show that the social level of neighborhood citizen ,from low income neighborhood into high income, is not outcome into the level of walkability. (*J.F. Sallis et al.*).So the case studies is not dependable on citizen economic aspect and can be chosen from different level of income to have more flexible and accurate results

Consequently it is obvious that there is no precise correct or incorrect answer for what is walkable neighborhood and how the density could relate to it to have more livable and sustainable neighborhood. Based on questionnaire I want to measure the peoples attribution about walking in their neighborhood and other basica principles that may have affect of affect into this walkablity, it means that there is balance between peoples convenient on satisfaction, density and walkablity. Then there will be analytical approach to evaluat and sort this factors by AHP structure approach evaluation will be made between these factors and investigate the neighborhood that has best walkablity aspects but with a good satisfaction of safety and density as whole the neighborhood walakblity, sense of satisfaction and density will be proposed as best neighborhood typology for further neighborhood development or revitalization.

A number of people from overall households were recruited from the particular study area. To capture variability in neighborhood urban form, participants were recruited across five ranges of residential density (0–2, 2–4, 4–6, 6–8, 8+ dwellings per residential acre). The current study is based on a sub-sample of participants recruited to fill out an additional survey (1/4 overall citizen) to capture physical activity, neighborhood perception, and social interaction.

This sub-sample of participants were selected to maximize variation across density, age, and income (recruited from above 6 and below 4 dwellings per residential acre, between the age of 20–70, and with an income < \$45,000 or >\$54,999 per year). To reduce the potential for clustering, one member was selected from each household, and respondents were selected across the entire region and not geographically concentrated. The sub-sample for this study had a similar demographic profile to the larger sample in terms of gender, age distribution and proportion of respondents.

Objective measures of neighborhood form were also computed. Univariate and multivariate models (General Linear Models (GLM)) were used to examine the association between sense of satisfaction (SofC) and aspects of the built environment, physical activity, and neighborhood perceptions. In multivariate models the impact on SofC was examined with progressive adjustment for demographics characteristics followed by walking behavior, neighborhood design features, neighborhood perceptions and time spent traveling in walking.

1.6 Significance of Study

This research project contains five chapters, beginning with this chapter that introduces the background issues and the need to design neighbourhood design in relation to urban sustainability, the research goals, objectives, and questions that frame

this research; and outline the quantitative research strategy and methodology that are applied in this research. Chapter two review the sustainable development concept and principle, determines fundamental principle of sustainable development, and focus on the characteristic and macro structure of sustainable cities to set the framework for subsequent discussions of the sustainable of the sustainable neighbourhood development. Chapter Three revisits the historical role and significance of the neighbourhoods development, relates that the sustainable imperatives, draw a link between neighbourhood development and liveability, and establish the characteristic and principle for the sustainable and liveable neighbourhood. Building on the theoretical framework set by its preceding two chapters, Chapter Four explorer and determine micro-structure for the more sustainable and livable neighbourhood development. Finally Chapter Five concludes on the feasibility of designing better neighbourhood development that are more sustainable and livable, and recommended possible future research direction in the topic.

The path model showed that overall neighbourhood satisfaction was associated directly with the physical measure of building density and indirectly with the physical measure of vegetation rate through perception and evaluation of them. The perceptions and evaluations of the attributes related to one another.(Neighbourhood Satisfaction)

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