# UNIVERSITI TEKNOLOGI MARA

# FINANCIAL COSTS OF URBAN SPRAWL: A CASE STUDY OF HOUSING DEVELOPMENT IN PENANG STATE

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Thesis submitted in fulfillment

of the requirements for the degree of

**Doctoral of Philosophy**

**Faculty of Architecture, Planning and Surveying**

**February  2017**

# ABSTRACT

Penang State experienced rapid urban development for the past three decades. Urban sprawl is a global phenomenon and is characterised by increase in population growth in urban areas, migration, change in built-up areas and spatial form. Urban sprawl creates economic, social and environmental costs such as environmental degradation due to more intensive land and car use as well as economic challenges brought about by increased distance to jobs, goods and service markets. Infrastructure costs seem to increase in new sprawling development than compact development. It becoming more difficult to pay for the additional costs incurred by urban sprawl. The purpose of this study is to examine the development of urban sprawl and to quantify financial costs. This paper adopts a case study approach. Mathematical and statistical analysis are applied on actual, adjusted, additional and hypothetical data. The descriptive statistics include central tendency applications, cross tabulation analysis and inferential statistics analysis which include the General linear Model (GLM). The results indicate that all the five districts in Penang State are sprawling. The results cross tabulation analysis revealed that development in city center is costly due to high land cost. The estimation techniques (GLM) are analysis of variance-one- way ANOVA, Pos Hoc analysis and T- Test. The results indicate that there is significant cost variations on Penang Island as compared to Seberang Perai. The most significant infrastructure cost is sewerage costs. Housing development farther from city center is cheaper. The additional infrastructure costs are significant to location of housing projects. It is hope that the study can contribute valuable information to the enhancement of sustainable urban development in Penang State.

# ACKNOWLEDGEMENT

First and foremost, all praises, adorations and glorifications are due to ALLAH, the Most Exalted and may His boundless blessings continue to shower on our Prophet (S.A.W). All praises and thanks be to Allah (S.W.T), who has guided us to this, never could we have found guidance, were it not that ALLAH had guided us!(Q7:43)

Words cannot express my gratitude and appreciation towards my supervisors, Professor .Sr. Dr. Haji Abdul Hadi bin Haji Nawawi and Associate. Prof. Dr. Jamallunlaili bin Abdullah for their patience, supervision and advice I received from them in the course of this thesis. May the sky be your limits in all your future endeavors and may *jannatul-firdaus* be your abode in the hereafter.

My special thanks to Professor Dr, Dasimahbinti Omar, Associate Professor Dr. Kausarbinti Haji Ali and Professor Dr. Chris Eves for their constructive comments.

Also I would like to heartily thank my husband Haji.MohdYusoff Omar for his everlasting support, prayers and provisions in finishing my thesis. To my children Mohd Sofie and wife Suhana, NorAzlillie and husband Syed Aizat, son Razieman and daughter Nor Diana Bakti who are my inspiration to complete this thesis. Last but not least, to my sister Hasienah and husband Dr. Syahrom; my brother Abdul Rashid and wife Zuraini for their prayers and support and lastly to all my colleagues from Universiti Utara Malaysia and UniversitiTeknologi MARA, thank you for the support.

Finally, this thesis is dedicated to the loving memory of my dear late mother                                        and late father Haji Osman Tajuddin for the vision and determination to educate me.

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# CHAPTER ONE
## INTRODUCTION

## 1.1    RESEARCH BACKGROUND

Urban sprawl is a type of urban growth with physical and spatial characteristics as well as social, economic processes and causes. The main characteristic is low density development which extends beyond the peripherals. The context where sprawl exists is different. For example, in developed countries such as the United States, it is characterised by increasing growth in suburbanisation, while in Europe by high population growth and economic activities. In developing countries such as India, one of the causes of sprawl is poor planning management of urban areas. Global assessment of urban sprawl reveals major differences in terms of physical and social and economic outcomes across the regions (Cobbinah, 2014). In Malaysia, the urban areas are expanding rapidly and there are evidence of the existence of the phenomenon of urban sprawl in the three largest Metropolitan cities of Malaysia that is Kuala Lumpur, George Town and Johor Baru (Jamalunlaili, 2012).

The theory that explains why the most developed nations such as the United States, Germany and Europe are the most urbanised nations is the theory of income elasticity of demand. It states that the greatest percentage of increase in population income would be spent for secondary and tertiary sector products. These include manufacturing, construction and services sector products. The location of these sectors tends to be in urban areas, unlike that of the primary sectors such as agriculture, mining and fisheries which are in the rural areas. Due to this locality, the urban population would reap most monetary as compared to the rural population. This trend is expected to continue and may widen the urban-rural income disparity due to continued growth in the nation and global economy (Jamalunlaili,2012).

Muhammad Mohsin (2014), Reid & Ewing (2008) and Berry & Plaut (1976) identified that the term sprawl starts with urban growth which follows a pattern of urban transition. The first phase is of fastest growth in the core of the city. The second phase is