

**RELATIONSHIP BETWEEN THE PEDESTRIAN ACTIVITY AND
PHYSICAL ENVIRONMENT IN THE CASE OF TAMAN UNIVERSITY,
SKUDAI-MALAYSIA**

ELAHE ANJOMSHOAA

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To my beloved mother and father

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ABSTRACT

Presence of pedestrian activities in urban environments as an important Urban Design principle that plays a vital role in the human life entails many social, environmental and economic benefits. As many experts believe there is a growing interest in understanding the influence of attributes of the built environment on habitual pedestrian activity; however, this effort on encouragement of pedestrian to walk and do activities has been failed in some cases like Taman University - Malaysia. Hence, in such environments, liveliness of urban streets would be lost, and car dependency will be encouraged. In such situation, the study of pedestrian activities in physical environment seems to be crucial. Hence, this research aims to study the possible effect of physical environment on quality and quantity of pedestrian activity in urban streets. Back to the main problem specified in this study, which highlights the importance of pedestrian activities in urban streets, following method has been used: firstly, number of pedestrian activities including Necessary, Optional and Social activities data in selected cases are recorded by 'snapshot' method and secondly, physical properties of space, including land use, building and street elements are quantified in selected cases. Doing this research, the main outcome of this study would point out to the significant role of commercial land uses in encouraging pedestrian activities.

ABSTRAK

Perihal aktiviti-aktiviti pejalan kaki di persekitaran urban sebagai prinsip penting Rekaabentuk Urban yang memainkan peranan penting dalam kehidupan manusia melibatkan banyak faktor sosial, persekitaran dan kelebihan ekonomi. Ramai pakar percaya wujudnya tumbesaran tarikan dalam memahami pengaruh atribut pembangunan persekitaran dalam kebiasaan aktiviti pejalan kaki, bagaimanapun, usaha penggalakan ini terhadap pejalan kaki untuk berjalan dan melakukan aktiviti adalah gagal dalam beberapa kes seperti Taman Universiti-Malaysia. Oleh itu, dalam beberapa persekitaran, kehidupan jalan urban akan hilang dan kebergantungan kepada kereta akan tergalak. Dalam beberapa situasi, kajian terhadap aktiviti pejalan kaki dalam persekitaran fizikal kelihatannya kejam. Oleh itu, kajian ini fokus untuk kajian tentang kesan yang mungkin berlaku daripada persekitaran fizikal terhadap kualiti dan kuantiti pejalankaki di jalan urban. Kembali kepada masalah utama dalam kajian ini, yang menyerlahkan kepentingan aktiviti pejalan kaki di jalan urban, mengikut kaedah yang telah digunakan: pertama, data bilangan aktiviti pejalan kaki termasuk aktiviti yang perlu, aktiviti pilihan dan aktiviti sosial di dalam kes terpilih adalah direkod oleh kaedah 'snapshot' dan keduanya, keadaan fizikal ruang termasuk tanah yang digunakan, elemen bangunan dan jalan adalah mencukupi kuantitinya di kes terpilih. Melakukan kajian ini, hasil utamanya akan mengeluarkan peranan penting tanah komersial yang digunakan dalam menggalakan aktiviti pejalan kaki.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	ii
	ACKNOWLEDGEMENT	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENT	vii
	LIST OF TABLES	x
	LIST OF FIGURES	xii
1	INTRODUCTION	
	1.1 Problem Statement and Background	2
	1.2 Aim of Study	5
	1.3 Objectives	5
	1.4 Research Question	6
	1.5 Scope	6
	1.6 Significant of Study	7
	1.7 Organization of Chapters	7
2	PEDESTRIAN ACTIVITY IN VIBRANT PHYSICAL ENVIRONMENT	
	2.1 Pedestrian Friendly Street (Livable)	10
	2.2 Sense of place	11

	2.2.1	Human Activity and sense of place	12
	2.2.2	Pedestrian-Friendly and Sense of Place	13
	2.2.3	Multifunctional and Sense of Place	13
	2.3	Social Interaction and Behavior	14
	2.4	Pedestrian Activity	15
	2.5	Social Ecologic Model of Pedestrian Activity	17
	2.6	Attraction Theory	19
	2.7	General Overview of Activities and Physical Environment	20
	2.8	Effective Elements of Physical Environment on Walking Behavior	22
	2.8.1	Land use	24
	2.8.2	Building Element	25
	2.8.3	Public Realm and Street Elements	26
	2.9	Summary	27
3		RESEARCH METHOD AND CASE STUDY	
	3.1	Historical Background	29
	3.1.1	Why Jalan Kebudayaan 6 and 16?	31
	3.2	Research Method	32
	3.2.1	Observation Method (quantifying pedestrian activities)	32
	3.2.2	Quantitative Method for Counting Physical Properties of Selected Streets	40
	3.3	Summery	40
4		ANALYSIS AND DISCUSSION	
	4.1	Observation Data	42
	4.1.1	Observation Data of Jalan Kebudayaan 6	42
	4.1.2	Observation Data of Jalan Kebudayaan 16	46
	4.2	Physical Properties of Space	49
	4.2.1	Land use Elements	49
	4.2.2	Building elements	52
	4.2.3	Street Elements	53
	4.3	Result	56

4.4	Pedestrian Activity and Building Element	57
4.4.1	Pedestrian Activities and Building Elements in Jalan Kebudayaan 6	57
4.4.2	Pedestrian activities and building elements in Jalan Kebudayaan 16	59
4.5	Pedestrian activities and street elements	60
4.5.1	Pedestrian activities and street elements in Jalan Kebudayaan 6	60
4.5.2	Pedestrian Activities and Street Elements in Jalan Kebudayaan 16	61
4.6	Pedestrian Activity and Land use	62
4.6.1	Pedestrian Activity and Land use in Jalan Kebudayaan 6	62
4.6.2	Pedestrian Activity and Land use in Jalan Kebudayaan 16	63
4.7	Preliminary discussion	64
4.7.1	Jalan Kebudayaan 6	65
4.7.1.1	Primary Result	73
4.7.2	Jalan Kebudayaan 16	74
4.7.2.1	A Primary Results	79
4.8	Discussion	80
4.9	Summary	85
5	RECOMMENDATIN AND CONCLUSION	
5.1	Recommendation	87
5.1.1	Land use Element	87
5.1.2	Street Elements	89
5.1.3	Building Elements	91
5.2	Conclusions	94
	REFRENCE	95

LIST OF TABLES

TABLE NO.	TITLE	PAGE
2.1	Illustrates the elements of physical environment which influences and generate pedestrian activities:	23
4.1	Pedestrian activity from 10AM to 22 in Jalan Kebudayaan 6	43
4.2	Observation data in Jalan Kebudayaan 6 per 2 hours	45
4.3	Pedestrian activity from 10AM to 22 in Jalan Kebudayaan 16	47
4.4	Observation data in Jalan Kebudayaan 16 per 2 hours	48
4.5	Numbers of public and private openings to the street in Jalan Kebudayaan 6 and 16	52
4.6	The number of street elements per gates in Jalan Kebudayaan 6 and 16	55
4.7	Summary of physical properties of space in study cases	56
4.8	Quantitative data of pedestrian activity and physical properties of space in Jalan Kebudayaan 6	67
4.9	Quantitative data of pedestrian activity and physical properties of space in Jalan Kebudayaan 16	75
4.10	R ² values of correlation between pedestrian activities and physical properties of space, in two selected cases of Jalan Kebudayaan 6	81

4.11	The gates which pedestrian activities are not following commercial land use elements	82
4.12	Total pedestrian activity per 100 meter in Jalan Kebudayaan 6 and 16	84
5.1	Attractiveness and unattractiveness of ground floor frontage of building	91

LIST OF FIGURES

TABLE NO.	TITLE	PAGE
2.1	A social ecologic model of influences on pedestrian	18
3.1	The location of Malaysia in the world, Johor Bahru in the Malaysia and Taman University in the Johor Bahru	30
3.2	The location of Jalan Kebudayaan 6 and Jalan Kebudayaan 16 in Taman University	31
3.3	Sample Observation area of gate A17 & A18 in Jalan Kebudayaan 6	33
3.4	Zoning map	36
3.5	Picture of gates A1to A29 (Jalan Kebudayaan 6)	37
3.6	Picture of gates A1to A29 (Jalan Kebudayaan 16)	38
4.1	Gate observation map of Jalan Kebudayaan 6	42
4.2	Gate observation map of Jalan Kebudayaad 16	46
4.3 .a	Gate observation map of Jalan Kebudayaad 16	50
4.3b	Building use area: Jalan Kebudayaan 6 & JalanKebudayaan 16, Ground Floor	50
4.3.c	Building use: JalanKebudayaan 6 & JalanKebudayaan 16, First Floor	51
4.3.d	Building use area: Jalan Kebudayaan 6 & JalanKebudayaan 16, First Floor	51
4.4	Correlations between pedestrian activities and building elements in Jalan Kebudayaan 6	58

4.5	Correlations between pedestrian activities and building elements in Jalan Kebudayaan 16	59
4.6	Correlations between pedestrian activities and street elements in Jalan Kebudayaan 6	60-61
4.7	Correlations between pedestrian activities and street elements in Jalan Kebudayaan 16	61-62
4.8	Correlations between pedestrian activities and land use in Jalan Kebudayaan 6	63
4.9	correlations between pedestrian activities and land use in Jalan Kebudayaan 16	63-64
4.10,a,b,c	Average of pedestrian activity in per 2 hours with building element, street element and land use in Jalan Kebudayaan 6	65-66
4.11,a	The patterns of pedestrian activity, building elements, land use, and street elements between gates A1 to A5	68
4.11,b	The patterns of pedestrian activity, building elements, land use, and street elements between gates A6 to A10.	69
4.11,c	The patterns of pedestrian activity, building elements, land use, and street elements between gates A10 to A11	70
4.11,d	The patterns of pedestrian activity, building elements, land use, and street elements between gates A15 to A20	71
4.11,e	The patterns of pedestrian activity, building elements, land use, and street elements between gates A20 to A25	72
4.11,f	The patterns of pedestrian activity, building elements, land use, and street elements between gates A25 to A29	72
4.12,a,b,c	Average of pedestrian activity in per 2 hours with building element, street element and land use in Jalan Kebudayaan 16	74-75
4.13,a	The patterns of pedestrian activity, building elements, land use, and street elements between gates B1 to B5	76
4.13,b	The patterns of pedestrian activity, building elements, land use, and street elements between gates B5 to B10	77
4.13,c	The patterns of pedestrian activity, building elements,	78

	land use, and street elements between gates B10 to B15	
4.13,d	The patterns of pedestrian activity, building elements, land use, and street elements between gates B15 to B20	78
4.13,e	The patterns of pedestrian activity, building elements, land use, and street elements between gates B20 to B24	79
4.14	The correlation pedestrian activity with commercial land use without restaurant gate.	83
5.1	Detailing the public space a key word list	93

CHAPTER 1

INTRODUCTION

Presence of pedestrian activities in urban environments as an important Urban Design principle that plays a vital role in the human life entails many social, environmental and economical benefits. Physical properties of space increasingly are promoted as a key element in reclaiming impersonal modern urban environments for pedestrians (Shay et al., December 2003). While pedestrian activities have emerged as a prominent feature of the ideal new urban form, the literature in this field does not provide unambiguous guidance. Rather, much of the literature is concerned with comparing definitions and listing features hypothesized to contribute to an environment that supports walking. Currently, there is neither one precise way to describe supportive environments for pedestrian activities, nor a well-defined set of correlates of pedestrian behavior (Shay et al., December 2003). Walking is different from walkability in that walking refers to a form of physical activity while Walkability is used to describe physical environment in which walking take place. When studying pedestrian environment, the portion of the built environment often referred to the place that is created by the streets, streetscape, and buildings present in neighborhood (Glanz, May, 2011).

1.1 Problem Statement and Background

The public health literature also supports the development of integrated communities and pre-automobile design concepts, since these urban built environments have been found to be positively associated with moderate pedestrian activity (Handy et al., 2002), (Saelens et al., 2003), (Brownson et al., 2001), (King et al., 2003) and (Troped et al., 2003).

Over the past century pedestrian access has declined steadily in most cities. With some exceptions, such as underground metro systems, each advance in transportation technology—from horse-drawn streetcar, to electric streetcar, on grade and elevated railways, automobile and superhighway, airplane and airport—has degraded the pedestrian environment. High-speed traffic broke up the fine-grained pedestrian network and imposed barriers to free movement on foot. In ignoring the pedestrian experience, the street lost its intimate scale and transparency, and became a mere service road, devoid of public life (Forsyth and Southworth, February 2008).

In 1996, with the release of the first report by the U.S. Surgeon General on activity and health, moderate activity was placed firmly on the U.S. public health agenda. Moderate Activity and Health recommended moderate exercise five or more days per week or vigorous exercise three or more times per week, suggesting that Americans can be active simply by incorporating moderate activities like walking, cycling or yard-work into their daily routines. Within this context, urban planners and policy makers have recognized their potential role in shaping the urban built environment as one variable that might facilitate increased moderate activity among the American population (Vojnovic et al., 2006).

Nevertheless (Giles-Corti and Donovan, 2003) found that in Perth, Western Australia only a minority of people (17%) achieve sufficient walking levels. Lack of

pedestrian activity is implicated in the four major chronic diseases: cardiovascular disease (CVD); cancer; diabetes; and chronic obstructive pulmonary disease (COPD) (Vojnovic et al., 2006). Health benefits of pedestrian activity are significant and include lower mortality rates by reducing the risk of premature death from coronary heart disease, hypertension, colon cancer, and diabetes mellitus (USDHHS, 1996) and (USDHHS, 2000a).

But what are the pedestrian activities? Pedestrians do not only walk. People in streets also perform considerable quantity of static activities, such as sitting, standing, talking, and eating and so forth (Gehl, 1986), (Whyte, 1980), (Hillier and Hanson, 1984) and Living streets, (2001). Throughout the day, more often than walking, people in streets sit or stand and talk, smoke cigarettes, wait, distribute leaflets, sell, or simply 'watch other people' (Whyte 1980, p. 273). In this research pedestrian activities include: Necessary activities:

- walking activities
- Optional activities: sitting and standing activities
- Social activities: activities which are resulting social communications and interactions

Due to similarities with main problem identified in this study which is about lack of pedestrian activities in physically designed environment, Taman University - Malaysia has chosen as the case of this study. With all effort has been done in order to create a friendly environment for pedestrians, seemingly pedestrian tend to use their private cars rather than walking to their destinations.

While we focus on the relationship between the urban built environment and pedestrian activities, it is important to recognize that most analysts agree that culture is a variable that is even more important than the physical environment in

encouraging non-motorized travel (Vojnovic, 1999), (DOT, 1994) and (Rapoport, 1977).

As argued by Amos Rapoport, “activity in any given setting is primarily culturally based in that it is the result of unwritten rules, customs, traditions, habits, and prevailing lifestyle and definition of activities appropriate to that setting” (Rapoport, 1987). Designing pedestrian-inviting environment and streetscapes will have little impact on encouraging non-motorized travel and activity if walking and cycling is considered undesirable or inappropriate by culture (Vojnovic et al., 2006).

Recently physical environment is pointed to land use, street properties such as furniture and connectivity and building properties such as density (Vojnovic et al., 2006). Studies show that reliance on inappropriate land-use practice increases distances between destinations and trip lengths, and encourages automobile use (Handy, 1996), (Handy and Niemeier, 1997), (Saelens et al., 2003) and (Vojnovic, 2000a). Even if the density and the residential/commercial land use mix is the same in these environments, the lower connectivity in the suburbs will increase distances and discourage walking. Two variables that affect both distance and density and consequently non-motorized travel are lot and building width. Building widths have increased substantially during the 20th century (Vojnovic et al., 2006, p.6).

For decades urban designers have advocated more walkable cities but without much success in most locations. Finally, with new health research, governmental incentives and new regulations, as well as increased activism by pedestrians, the situation has begun to change.

The case for better design and planning of the pedestrian environment is strong. Pedestrian activity is the foundation for the sustainable city. Like bicycling,

walking is a 'green' mode of transport that not only reduces congestion, but also has low environmental impact, conserving energy without air and noise pollution.

1.2 Aim of Study

This study aims to explore the effect of physical properties of environment on quality and quantity of pedestrian activities in order to create a livable and healthy environment.

1.3 Objectives

The following would be the main objective of this study:

- To specify the main physical properties of environment which affect pedestrian activities
- To determine the attributes of physical environment (i.e. land use, density and street connectivity, street proportions, etc.) toward physical activity
- To identify the main reason of lack of pedestrian activities in the case of Taman University

1.4 Research Question

Following the main problem identified in this study which emphasis on the possible casual effect between physical environment and pedestrian activities main questions are set up as following:

- Which properties of physical environment leads to pedestrian inactivity in the case of Taman University?
- How physical environment can lead to encouragement of pedestrian activities?
- How a balanced pedestrian environment can be recommended in terms of pedestrian activities and physical environments?

1.5 Scope

In this study, the physical attributes of pedestrian activities as one of the key principles of urban design are discussed, and the role of physical properties of environment in presence of pedestrian activities with reference to Taman University is studied. In addition, the role of properties which lead to physical inactivity would be presented.

1.6 Significant of Study

Recently, there is a growing interest in understanding the influence of attributes of the built environment on habitual pedestrian activity (Humpel et al., 2004), (Killingsworth, 2003), (Frank and Engelke, 2001) and (Sallis et al., 1998): however, this effort on encouragement of pedestrian to walk and do activities has been failed in some cases like Taman University. Lack of pedestrian activity in urban environment might lead to the four major chronic diseases: cardiovascular disease (CVD); cancer; diabetes; and chronic obstructive pulmonary disease (COPD) (Vojnovic et al., 2006, p.2). Also, liveliness of urban environment would be lost and car dependency will be encouraged. In such situation the study of pedestrian activities in physical environment seems to be crucial. Hence, this research studies the possible effect of physical environment on quality and quantity of pedestrian activity in urban streets.

1.7 Organization of Chapters

Following chapters will discuss literature review, methodology, discussion and conclusion.

In Chapter 2, literature review on principles and fundamentals of pedestrian environment will be discussed extensively. Different theories on substantial features and characteristics of streets with reference to its pedestrian activities would be offered. Barriers and mutual effects of environment on pedestrian inactivity are also being reviewed to some extent.

Chapter 3 is the methodology. The research method has been used in order to examine the casual effect between pedestrian activities and physical environment are explained.

Finally, Chapter 4 will be organized in two parts. First, the Taman University evaluation is done which is considered as the case study of this project. Historical background and morphology of Taman University with regard to the importance of pedestrian activities and our evaluation on this matter would be presented as well.

Second, we will discuss the findings on pedestrian activity features and physical activity attributes of Taman University resulted in chapter3 based on the framework offered in chapter 2.

In chapter 5, we will provide some recommendations and tips regarding to pedestrian activities in Taman University based on the resulted framework and discussions. The conclusion will be then followed.

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