THE MODUS OPERANDI OF ILLEGAL BREAKING AND ENTERING LANDED HOUSES IN PENANG

by

NARGES AHGHAR

Thesis submitted in fulfilment of the requirements

for the degree of

Doctor of Philosophy

MAY 2018

ACKNOWLEDGEMENT

There are many people that I would like to express my deepest gratitude for their support me along this way and made this dream reality. First and foremost, I wish to express my sincere appreciation and thanks to my kind supervisors Prof. Dr. Aldrin Abdullah for his valuable guidance, supports, motivation, patience and understanding the problems that happened to me throughout the completion of this work. My sincere thanks also go to Dr. Massomeh Hedayati Marzbali for your encouragement and guidance, supports, suggestions and comments to improve my research. I wish to extend special thanks to Dr. Mostafa Rasoolimanesh for the invaluable advice and guidance in regards to statistics and data analysis. I would also like to express my deep sense of appreciation to my beloved friends in USM Hanieh Varasteh Heidari (a dearest friend who always have supported me emotionally and have made my stay in Malaysia a pleasant and memorable one*)*. Next my heartfelt thanks and love go to all my lovely family members: my father, mother who show me the value of education and always encourage and support me in this way, my lovely sister and brother in low for their extreme encouragement and great support in my goal of completing this study. I would like to gratefully and sincerely acknowledge Universiti Sains Malaysia (USM) and School of Housing Building and Planning, academic staff, and other faculty members for providing me with all facilities and supports during my study. I would like to acknowledge the assistance of the Penang Police Department for providing me the crime statistics. Last but not least, I must acknowledge my dear Mehdi, Karen, Katy and friends thank you for always listening and believing in me.

TABLE OF CONTENTS

Acknowledgement…….....ii

Table of Content…….....iii

List of Table…….....viii

List of Figure…….....xii

List of Abbreviation…….....xiii

Abstrak…….....xiv

Abstract…….....xvi

CHAPTER ONE-INTRODUCTION..... 1

1.1 Introduction..... 1

1.2 Property Crime..... 4

1.3 Modus Operandi (MO)..... 9

1.4 Exterior Physical Characteristics of Houses 10

1.5 Security in Buildings..... 11

1.5.1 Secured by Design 12

1.6 Problems Statement 13

1.7 Research Objectives..... 16

1.8 Research Questions..... 17

1.9 Proposed Theoretical Framework 19

1.10 Significance of the Study 20

1.11 Scope and limitations of the Study 21

1.12 Organization of the Study 23

CHAPTER TWO- LITERATURE REVIEW..... 24

2.1 Introduction 24

2.2 Modus Operandi in House Breaking and Entering Studies 25

2.2.1 Breaking and Entering 31

2.2.3 Items Stolen 32

2.3 Crime Prevention Approaches 33

2.3.1 Crime Prevention through Environmental Design (CPTED) 34

2.3.2 Secured by Design (SBD) 34

2.4 Secured by Design (SBD) Status and Modus Operandi 36

2.5 Overview of the Most Effective Factors of House Breaking and Entering Prevention 38

2.5.1 Occupancy 41

2.5.2 Visibility or Surveillability 42

2.5.3 Vulnerability or Security 45

2.5.4 Lighting 48

2.5.5 Maintenance 49

2.5.6 House Material 50

2.5.7 Time 51

2.6 Limitations of Previous Studies 53

2.7 Conclusion 55

CHAPTER THREE -METHODOLOGY AND SECONDARY DATA ANALYSIS 56

3.1 Introduction 56

3.2 Research Design 56

3.3 Crime Mapping 59

3.4 The Study Area 60

3.5 Sampling 65

3.5.1 Sample size 67

3.6 Secondary Data Analysis 69

3.6.1 Data Preparation 70

3.6.2 Analysis and Findings 71

3.6.3 Limitation of Data 86

3.7 Theoretical Framework and Hypothetical Model 86

3.7.1 Relationship between House Physical Characteristics, Breaking and Entering, and Modus Operandi 87

3.8 Description of Instruments 94

3.8.1 House Physical Characteristic 94

3.8.2 Demographic Characteristics 97

3.8.3 Occupancy 98

3.8.4 Victimization 98

3.8.5 Breaking and Entering Modus Operandi 101

3.8.6 Security Measurement 103

3.9 Pilot Study 104

3.9.1 Examining Questionnaire content and Observation Checklist in the Pilot Survey 105

3.9.2 Validity and Reliability Tests 106

3.9.3 Results of the Pilot Test 108

3.10 Data Analysis Procedures 108

3.10.1 Partial Least Squares- Structural Equation Modeling 109

3.10.2 Assessment of Model Using PLS-SEM 110

3.10.3 Assessment of Measurement Model 110

3.10.4 Assessment of Structural Model 112

3.11 Conclusion 113

CHAPTER FOUR- ANALYSIS AND RESULTS 115

4.1 Introduction 115

4.2 Descriptive Analysis 116

4.3 Assessment of Model Using PLS-SEM 135

4.3.1 Assessment of Measurement Model 136

4.3.1(a) Assessment of Measurement Model – Model One 136

4.3.1(b) Assessment of Measurement Model – Model Two……146

4.3.2 Assessment of Structural Model 156

CHAPTER FIVE- DISCUSSION AND CONCLUSION 162

5.1 Introduction 162

5.2 Research Overview 162

5.3 Breaking and Entering House Modus Operandi 164

5.3.1 Time 166

5.3.2 Occupancy 166

5.3.3 House Material 167

5.3.4 Type of House 167

5.3.5 Security in buildings 168

5.3.6 Maintenance 169

5.3.7 Surveillance and visibility 170

5.3.8 Lighting 171

5.3.9 Yard 171

5.4 Factors Affecting House Breaking and Entering 172

5.5 Factors Affecting Modus Operandi 174

5.6 Theoretical Implication of the Study 176

5.7 Research Limitations and Further Research 178

5.8 Conclusion 179

REFERENCES 182

APPENDICES

LIST OF TABLES

			Page
Table	1.1	Number of Index Crime between 2002 and 2016 in Malaysia	4
Table	1.2	Number of Breaking and Entering in Malaysia between 2002 and 2016	7
Table	1.3	Statistics of Breaking and Entering Crime for Penang Island	9
Table	2.1	Table of Modus Operandi Variables and Measurement Items	27
Table	2.2	Classifications of Modus Operandi's Variables	28
Table	2.3	Modus Operandi's Variables and Measurement Items	29
Table	2.4	Behavioural Crime Scene Variables and Measurement Items	30
Table	2.5	Item Stolen Classifications	33
Table	2.6	Dwelling Characteristics Variables	40
Table	2.7	Variables and Measurement Items of Physical Characteristics of House	40
Table	3.1	The Characteristic of the Study Area	69
Table	3.2	Type of House Frequency	72
Table	3.3	Time of Breaking and Entering Frequency	72
Table	3.4	Point of Entry Frequency	73
Table	3.5	Exiting Place Frequency	73
Table	3.6	Entering Side Frequency	74
Table	3.7	Exiting Side Frequency	74
Table	3.8	Entry Method Frequency	75
Table	3.9	Exiting Method Frequency	75
Table	3.10	The Result of Chi-Square Tests between Entering Point and Time of Breaking and Entering	76
Table	3.11	The Result of Chi-Square Tests between Entering Side and Time of Breaking and Entering	77

Table	3.12	The Result of Chi-Square Tests between Entry Method and Time of Breaking and Entering	78
Table	3.13	The Result of Chi-Square Tests between Exiting Point and Time of Breaking and Entering	79
Table	3.14	The Result of Chi-Square Tests between Exiting Side and Time of Breaking and Entering	79
Table	3.15	The Result of Chi-Square Tests between Exiting Method and Time of Breaking and Entering	80
Table	3.16	The Result of Chi-Square Tests between Entering Point and Type of House	81
Table	3.17	The Result of Chi-Square Tests between Entering Side and Type of House	81
Table	3.18	The Result of Chi-Square Tests between Entry Method and Type of House	82
Table	3.19	The Result of Chi-Square Tests between Exiting Point and Type of House	83
Table	3.20	The Result of Chi-Square Tests between Exiting Side and Type of House	84
Table	3.21	The Result of Chi-Square Tests between Exiting Method and Type of House	84
Table	3.22	List of Variables and Measurement Items Derived from Secondary Data Analysis	85
Table	3.23	Source of Items of Modus Operandi Variables	88
Table	3.24	House Physical Characteristic	95
Table	3.25	Demographic Variables and Their Criteria	97
Table	3.26	Occupancy Variable and Their Criteria	98

Table	3.27	Victimization and Their Criteria	100
Table	3.28	Breaking and Entering Modus Operandi and Their Criteria	102
Table	3.29	Security Measurement	104
Table	3.30	Reliability Analysis Results	108
Table	4.1	Demographic Breakdown of Respondents	118
Table	4.2	Crosstab by Unoccupied for Extended Period and Breaking and Entering	119
Table	4.3	Crosstab by Unoccupied in the Day Time and Breaking and Entering	120
Table	4.4	Crosstab by Unoccupied in the Night Time and Breaking and Entering	120
Table	4.5	Crosstab by Type of House and Breaking and Entering	121
Table	4.6	Crosstab by Material of the Wall and Breaking and Entering	121
Table	4.7	Crosstab by Height of the Perimeter Wall and Breaking and Entering	122
Table	4.8	Crosstab by Material of the Perimeter Wall and Breaking and Entering	122
Table	4.9	Crosstab by Material of the Window and Breaking and Entering	123
Table	4.10	Crosstab by Material of the Door and Breaking and Entering	124
Table	4.11	Crosstab by Material of the Roof and Breaking and Entering	126
Table	4.12	Crosstab by Security of Building and Breaking and Entering	127
Table	4.13	General Breaking and Entering Information Frequency	129
Table	4.14	Item Stolen Frequency	130
Table	4.15	Entering Point Frequency	131
Table	4.16	Entering Place Frequency	132
Table	4.17	Entering Method Frequency	133
Table	4.18	Exiting Point Frequency	134
Table	4.19	Exiting Place Frequency	134
Table	4.20	Method of Exiting Frequency	135

Table	4.21	Results of Assessment of Measurement Model (Model One)	141
Table	4.22	Results of Assessment of Measurement Model after Modification (Model One)	143
Table	4.23	Discriminant Validity	145
Table	4.24	Results of Assessment of Measurement Model (Model Two)	149
Table	4.25	Results of Assessment of Measurement Model after Modification (Model Two)	152
Table	4.26	Discriminant Validity	155
Table	4.27	The Results of Hypothesis Testing for Mode One	157
Table	4.28	The Results of Hypothesis Testing for Model Two	160

LIST OF FIGURES

		Page
Figure 1.1	United States Total Crime Index Rates between 2007 and 2016	2
Figure 1.2	United Kingdom Number of Total Crime between 2007 and 2016	3
Figure 1.3	Malaysia Number of Total Crime between 2002 and 2016	3
Figure 1.4	Modus Operandi and Breaking and Entering's Effective Factors	18
Figure 1.5	The Theoretical Framework	19
Figure 2.1	Number of Burglary between Night and Day in Malaysia between 2000 and 2007	53
Figure 3.1	Number of Penang Breaking and Entering Incidents During 2009-2010 According to Mukim	62
Figure 3.2	Map of the Study Area (Bayan Baru, Penang)	64
Figure 3.3	Hypothetical Model of the Study (Breaking and Entering)	95
Figure 3.4	Hypothetical Model of the Study (Modus Operandi)	96
Figure 5.1	Study Model on Relationships Between House Breaking and Entering and House Physical Factors Based of Empirical Data	173
Figure 5.2	Study Model on Relationships Between Modus Operandi Aspects and House Physical Factors Based of Empirical Data	175

LIST OF ABBREVIATION

MO	Modus Operandi
EN- MO	Entering Modus Operandi
EX- MO	Exiting Modus Operandi
SBD	Secure By Design
CPTED	Crime Prevention Through Environment Design
SPSS	Statistical Package for the Social Sciences
SEM	Structural Equation Modeling
PLS- SEM	Partial Least Squares- Structural Equation Modeling
X^2	Chi- square
df	Degrees of freedom
AVE	Average Variance Extracted
VIF	Variance Inflated Factor
CR	Composite Reliability
BCS	British Crime Survey
JPBD	Jabatan Perancangan Bandar Dan Desa
NKRA	National Key Result Areas
P- Wall	Perimeter Wall
CCTV	Closed- Circuit Television

MODUS OPERANDI TENTANG HARAM PENCEROBOHAN DAN PECAH MASUK RUMAH BERTANAH DI PULAU PINANG

ABSTRAK

Kajian ini mengkaji kesan ciri-ciri fizikal daripada rumah bertanah terhadap pecah masuk rumah dan modus operandinya di bahagian pulau, Pulau Pinang. Sebagai tambahan bagi kajian terdahulu, pangkalan data pecah masuk rumah di negeri Pulau Pinang yang tersimpan di Jabatan Polis bagi tahun 2009 digunakan bagi menunjukkan item yang menjelaskan modus operandi dan mengenal pasti faktor fizikal luaran yang efektif. Dapatan kajian kuantitatif ini adalah berdasarkan respon yang diperoleh daripada kajian terhadap 300 isi rumah di kawasan jenayah pecah masuk rumah yang tinggi di bahagian pulau, Pulau Pinang. Soal selidik dan pemerhatian digunakan untuk memperoleh data bagi mengkaji faktor efektif, termasuk jenis rumah, bahan binaan, sekuriti, keadaan penglihatan (visibility), pengawasan (surveillance), pencahayaan, penyelenggaraan, penghunian (occupancy), masa dan kawasan modus operandi dan pecah masuk rumah. Kajian ini menggunakan kaedah pensampelan sistemik berstrata untuk memilih sampel dalam kalangan tiga jenis rumah bertanah, iaitu rumah teres –tengah, rumah teres –hujung, dan rumah teres berkembar. Kajian juga mengaplikasikan analisis deskriptif melalui penggunaan SPSS, dan penilaian model ukuran melalui penggunaan Warp PLS bagi analisis statistik. Sehingga kini, tidak banyak penyelidikan yang dijalankan tentang semua ciri fizikal rumah dari aspek kadar pecah masuk rumah dan modus operandi. Justeru, kajian ini merupakan kajian pertama yang mengkaji kesan daripada kesemua faktor yang menyumbang terhadap pecah masuk rumah dan modus operandinya. Sesetengah item yang dikatakan amat efektif dalam kajian terdahulu, didapati tidak begitu efektif apabila dibandingkan dengan faktor lain yang dikaji dalam kajian ini. Selanjutnya, kesan daripada keadaan penglihatan (visibility) dan pengawasan (surveillance) sebagai faktor fizikal rumah yang penting, buat kali pertamanya juga dikaji secara berasingan bagi pecah masuk rumah dan modus operandi. Penyelidikan kuantitatif mendapati model akhir (final model) adalah praktikal dan keputusan

menunjukkan bahawa kebolehpercayaan (reliability) dan kesahihan binaannya boleh diterima dalam model pengukuran untuk mengkaji faktor yang efektif terhadap pecah masuk rumah dan modus operandi yang berkaitan dengan ciri-ciri fizikal rumah.

THE MODUS OPERANDI OF ILLEGAL BREAKING AND ENTERING LANDED HOUSES IN PENANG

ABSTRACT

This study examines the effect of the physical characteristics of landed house on breaking and entering and modus operandi of breaking and entering on Penang Island. In addition to previous research studies, the recorded burglary databases of Penang State by the Department of Police in 2009 was used to indicate items that explain modus operandi and identify effective exterior physical factors of houses on burglary and modus operandi of breaking and entering. Findings of this quantitative study are based on the responses obtained from a survey of 300 households in a high burglary crime area in Penang Island. Questionnaires and observations were used to acquire data to examine the effective factors that include type of house, material of building, security, visibility, surveillance, lighting, maintenance, occupancy, time and area of yard on modus operandi and burglary. The study used a stratified systematic sampling method in order to select samples among three types of landed houses, consisting of mid-terraced, end-terraced and detached. The study employed descriptive analysis by using SPSS and an assessment of measurement model by using Warp PLS for statistical analysis. Because to date scant research has explicitly explored the interplay of all physical characteristics of houses simultaneously on burglary rate and modus operandi; this study investigated the effect of all these factors collectively on burglary and modus operandi of burglary for the first time. Results revealed some items that were found to be highly effective by previous studies were found to be less effective compared to other factors examined in the present study. Furthermore, the effect of visibility and surveillance of the house as an important physical factor of a house was examined separately regarding susceptibility to burglary and related modus operandi for the first time. Quantitative research found the final model to be practical and the results revealed acceptable reliability and construct validity in the measurement model for investigating effective factors on burglary and modus operandi regarding the house physical characteristics.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Crime is an unlawful act punishable by a state or other authority. It is an act harmful not only to some individual but also to a community, society or the state. Crime has always been a focus of public interest and is classified by two main groups overall: index crime and non-index crime (Zimring, 2011). Non-index crime includes: negligent manslaughter, non-aggravated assault, forgery and counterfeiting, fraud, embezzlement, stolen property, vandalism, weapons, prostitution and common law vice, sex offenses, narcotic laws, gambling, offenses against family and children, driving under the influence, liquor laws, and disorderly conduct (Zimring, 2011). Malaysia as a member of the international police community uses the phrase 'Index Crime' to quantify crime. Index crime is defined as crimes that are reported with sufficient regularity and with sufficient significance to be meaningful as an index to the crime situation. The Royal Malaysia Police Force divides this index crime into two categories, violent crime and property crime. Violent crime generally includes crimes of violence that are sufficiently regular and significant in occurrence. These include murder, attempted murder, gang robbery with firearm, gang robbery without firearm, robbery with firearm, robbery without firearm, rape and lastly voluntarily causing hurt. Property Crime includes those offences involving the loss of property during which there is no use of violence by the perpetrators. They include housebreaking and theft by day, housebreaking and theft by night, theft of lorries and van, theft of motor car, theft of motorcycles and scooters, theft of bicycles and lastly other forms of theft (ACP Amar Singh Sidhu, 2005).

In the last two decades, the perception of how crime should be reduced and who should be responsible for this task has largely changed because it is considered to be a risk to be calculated and avoided (Garland, 1996). However, there are different types of crimes with diverse reasons, such as the economy, political, cultural and social conditions (Timothy Crowe, 2000). Crime motivation due to money increases the rate of crime in most nations. For these reasons, an examination of crime statistics in various countries in diverse years shows that the crime trends are different. For instance, Figures 1.1 & 1.2 illustrates the rate of crime in the USA and UK declined significantly.

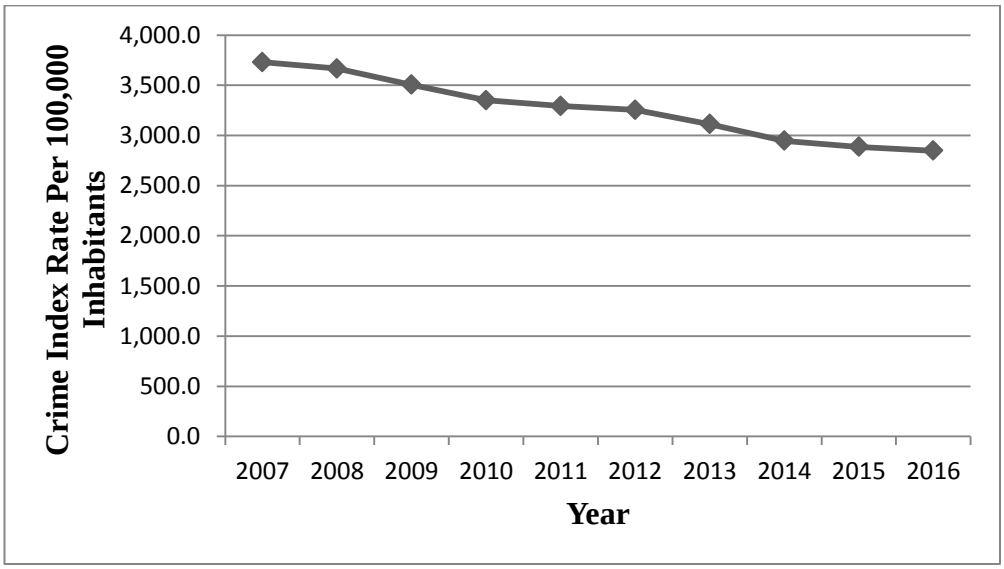

Figure 1.1. United States Total Crime Index Rates between 2007 and 2016

Source: The FBI Federal Bureau of Investigation (2017)

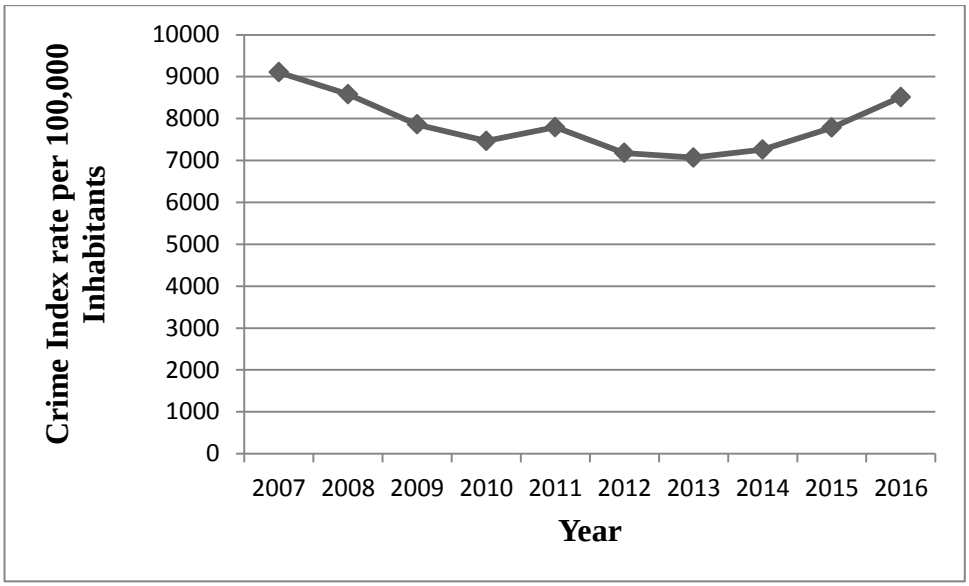

Figure 1.2. United Kingdom Number of Total Crime between 2007 and 2016

Source: UK Criminal Justice (2017)

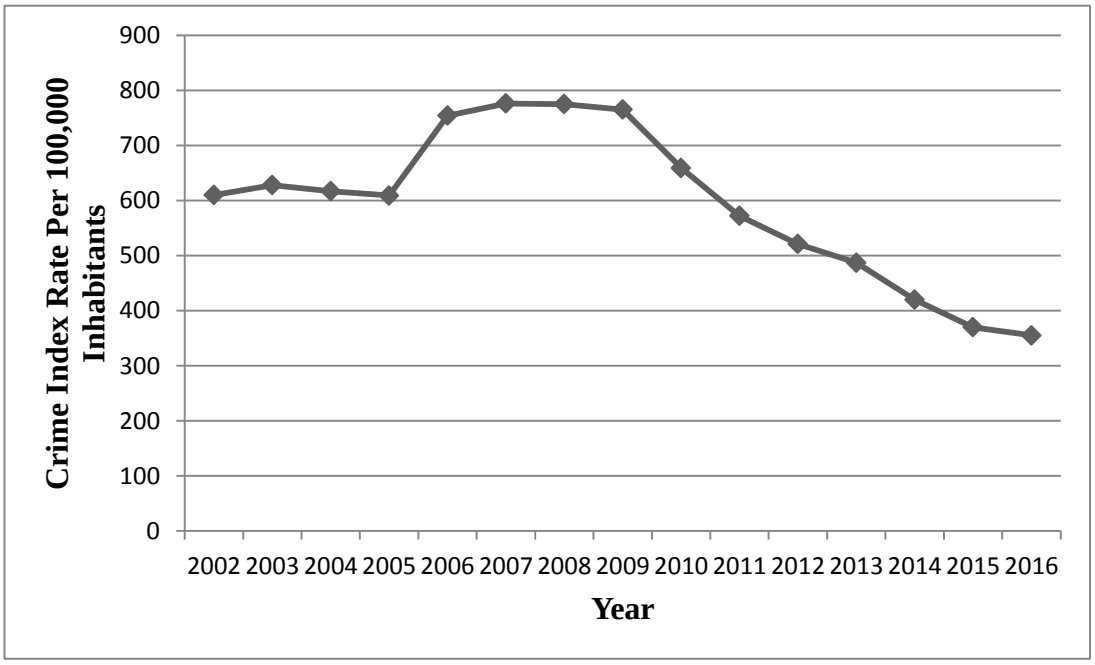

Figure 1.3. Malaysia Number of Total Crime between 2002 and 2016

Source: Royal Malaysian Police (2017)

According to the statistics of crime index in Malaysia, the crime index showed a rapid increase in crime rate during recent decades (Mohit and Hannan, 2010). Table 1.1 illustrates that crime rate between 2000 and 2009 has been rapidly increased but it has been surprisingly decreased between 2010 and 2014. However crime rate in Malaysia is expected to increase in the following years. As it is shown in the table 1.1 crime rate is not experiencing the rapid decrease any more. Malaysia has been subjected to accelerated urbanisation, particularly during the last two decades as its rate is projected to be 75% by the year 2020 (JPBD, 2006). It is often associated with increasing crimes in cities (Mohit & Hannan, 2012).

Table 1.1. Number of Index Crime between 2002 and 2016 in Malaysia

Year	Number of Crime Index
2002	149,042
2003	156,315
2004	156,455
2005	157,459
2006	198,622
2007	209,559
2008	211645
2009	212678
2010	186162
2011	166295
2012	153669
2013	147062
2014	128544
2015	115545
2016	112354

1.2 Property Crime

In Malaysia, crime is recorded either as property or violent crime, and property crime includes crime against property, while violent crime refers to crime

perpetrated against persons. About 90% of crimes in Malaysia are property crimes whose occurrences are mainly in the housing areas (Sidhu, 2005; Sundramoorthy, 2008). Breaking and entering is one of the most common property crimes, which is committed when someone enters a building as a trespasser and commits or intends to commit theft, criminal damage, rape or wounding. According to Malaysia Penal code, 2015, theft has been defined in the code 378 as 'whoever, intending to take dishonestly any movable property out of the possession of any person without that person's consent, moves that property in order to such taking.' Code 442, indicates 'whoever commits criminal trespass by entering into or remaining in any building, tent or vessel used as a human dwelling or any building used as a place for worship, or as a place for the custody of property, is said to commit "house-trespass".' Furthermore, code 445 explains 'a person is said to commit "house-breaking", who commits house-trespass if he effects his entrance into the house or any part of it in any of the six ways hereinafter described; or if, being in the house or any part of it for the purpose of committing an offence, or having committed an offence therein, he quits the house or any part of it in any of such six ways:

i. If he enters or quits through a passage made by himself, or by any abettor of the house-trespass, in order to the committing of the house-trespass.

ii. If he enters or quits through any passage not intended by any person, other than himself or an abettor of the offence, for human entrance; or through any passage to which he has obtained access by scaling or climbing over any wall or building.

iii. If he enters or quits through any passage which he or any abettor of house-trespass has opened, in order to the committing of the house-trespass, by any means by which that passage was not intended by the occupier of the house to

be opened.

iv. If he enters or quits by opening any lock in order to the committing of the house-trespass, or in order to the quitting of the house after a house-trespass.

v. If he effects his entrance or departure by using criminal force or committing an assault, or by threatening any person with assault.

vi. If he enters or quits by any passage which he knows to have been fastened against such entrance or departure, and to have been unfastened by himself or by an abettor of the house-trespass.'

The total of breaking and entering recorded by Royal Malaysia Police (2017) consists of 18760 occurrences between January and September in the year of 2016. Table 1.2 also illustrates the overall day and night of breaking and entering in Malaysia, demonstrating an increase between 2002 and 2011. It shows a decrease after 2010. Therefore, after 2015 table indicates slightly decrease.

In the case of Penang, between 1999 and 2000, it was also found that 90% of the recorded cases were against properties, while violent crimes only accounted for 10% (Index Crime Statistics, 2000). As indicated in Table 1.3, from 2002 to 2016, mostly there was increase in breaking and entering in Penang and the overall recorded "breaking and entering and theft" in Penang increased 4% from 2014 to 2015.

Table 1.2. Number of Breaking and Entering in Malaysia between 2002 and 2016

Year	Breaking & Entering
2002	25265
2003	25789
2004	24904
2005	24465
2006	28872
2007	33590
2008	35588
2009	38570
2010	35052
2011	30200
2012	24939
2013	23317
2014	20582
2015	19286
2016	18760

Source: Royal Malaysia Police (2017)

The public concern generated from such an event often demands more resources being directed towards crime prevention. If the quality of life experienced by the individual and community is affected by crime, then crime itself can be viewed as a social problem. However, often crime and violence are not experienced directly by either the individual or in the community itself. Instead, via information obtained from the media, friends and/or police, the individual and the community begin to view crime as a threat (Garofalo,1992). They perceive a risk of actually

being a victim of crime. This threat, whether real or perceived, promotes a fear of crime and this fear generates changes in the individual's lifestyle and in the community at large. Fear of crime then becomes a social problem, and can be recognised as an issue which contributes to a change in lifestyle for instance a limiting of activities, mobility and contact with strangers. Fear of crime produces changes in the lifestyle of the individual and the functioning of the community. Fear of crime generates feelings of anxiety, general mistrust, alienation and suspicion. At a social level, it can lead to a break down of social cohesion, the curtailment of normal activities and unwillingness to help others (Drapkin and Viano, 1974).

Night home break-ins register the highest number of occurrences compared to other forms of property crime (PDRM, 2008), which could be influenced by environmental factors, specifically night time conditions that accord a sense of ease to criminals to act against their intended targets (Birkbeck and Lafree, 1993). The crime of breaking and entering is the focus of this study, which is recognised to be one of the most occurring property crimes in Malaysia, particularly in Penang.

Table 1.3. Statistics of Breaking and Entering Crime for Penang Island

Year	Breaking & Entering
2002	1940
2003	2255
2004	1788
2005	1060
2006	1477
2007	1832
2008	2487
2009	2765
2010	2096
2011	1676
2012	1127
2013	994
2014	1126
2015	1150
2016	917

Source: Royal Malaysia Police (2017)

1.3 Modus Operandi (MO)

Information about actions taken by an offender during the commission of a crime, such as how a crime occurs, what happened at the crime scenes, and where the crimes took place are popularly regarded as the offender's *modus operandi* (MO) (Bennell & Canter, 2002). Generally, MO areas that are needed to be covered in a property crimes analysis consists of:

i. Method of entry and entry point (EN-MO),

ii. Action inside,

iii. Items Stolen,

iv. Method of exit and exit point (EX-MO)

Modus operandi, (Latin: “operating method”,) abbreviation Mo, in criminology is the distinct pattern or manner of working that comes to be associated with a particular criminal. Criminologists have observed that, whatever his specialty burglary, auto theft, or embezzling the professional criminal is very likely to adhere to his particular way of operating. If, for example, a burglar begins his career by entering houses from the roof, he will, in all probability, continue this method for as long as he is able to work. Some burglars become so attached to their modus operandi that they burglarize the same places or people again and again.

Based on the Merriam-webster (2018) definition Modus Operandi is a Latin word meaning ‘method of operation’ which is a distinct pattern that indicates or suggests the work of a single criminal in more than one crime. This phrase is used by police to describe a criminal's characteristic way of committing a crime.

Collins Dictionary of Law (2006) also defines Modus Operandi as a criminal investigation term for "way of operating," used by law enforcement authorities to describe the particular manner in which a crime is committed. This may prove the accused has a pattern of repeating the same criminal acts using the same method.

In the present study, *modus operandi* is examined in two main categories, including entering *modus operandi* (EN-MO) and exiting *modus operandi* (EX-MO), which is further explained in the next chapter.

1.4 Exterior Physical Characteristics of Houses

The physical factors of houses are being considered to be an integral part of strategies in preventing opportunities for crime to occur (Foster et al., 2010; Gardiner, 1978; Hedayati et al., 2011b, 2012a; Newman, 1972; Poyner, 1983; Poyner

& Webb, 1991). This significant role of physical factors in houses emphasise on the fact that properties should be designed with minimum access and limited permeability as a means of reducing opportunities for crime (Brantingham and Brantingham, 1975, 1993a, 2000; Bevis and Nutter, 1977; Brantingham *et al.*, 1977; Brown and Altman, 1983; Newlands, 1983; Greenberg and Rohe, 1984; Beavon, 1984; Taylor and Gottfredson, 1987; Cromwell and Olson, 1991; Poyner and Webb, 1991; Rengert and Wasilchick, 2000; Wiles and Costello, 2000).

Some houses are difficult to be kept secured due to their characteristics; therefore, they are at a higher risk of victimising than others. Some houses may be at higher risk because they are physically soft targets for having easily forced doors, windows, etc. (Marsh, 1985). Landed houses, including detached, semi-detached and terraced houses are considered to be one of the house types that have a high risk of breaking and entering based on their nature and particular architectural design. For instance, in a study by Choi et al. (2000), they compared the crime-incident factors of detached housing areas and apartment areas, which revealed a much lower breaking and entering rate in apartment areas than in detached housing areas, which was also supported by a study by Budd (1999) on British cities, in which the breaking and entering rate in that study showed very low rates among apartments (7.3%), compared with those among houses (45%). This suggests that house breaking and entering rate is very closely related to the characteristics of buildings, such as the security of openings, existence of patrols, and visibility.

1.5 Security in Buildings

Marsh (1985) defined security in buildings as the means and equipment to stop unauthorised entry onto land or into buildings, whether with the intention of

committing a further felony or not. Certain items, such as fences and barriers, as well as door-locking and window-locking systems and security glazing materials fall into this category. Special equipment devised to protect valuables or money inside the building from a thief is also included.

1.5.1 Secured by Design

Secured by Design contains the concept of the effect of the design of a building on its liability to security risk. Crime rate correlates specifically with building height and type, such as a double-loaded corridor, and an elevator tower correlates strongly with crime rate (Newman, 1973 as cited in Marsh, 1985). Secured by Design is the official UK Police flagship initiative supporting the principles of 'designing out crime', which was launched initially in 1989 by the Association of Chief Police Officers, and then re-launched in 1999 across the country (Pascoe & Topping, 1997). This will be further explained in Chapter Two.

Secured by Design focuses on the crime prevention of homes and commercial premises and promotes the use of security standards for a wide range of applications and products (Cromwell et al., 1991). It deals with concepts of reducing the vulnerability of people, as well as property to crime by removing opportunities that may be unintentionally provided by the surrounding environment (Armitage, 2000). The principles were proven to achieve a reduction of crime risk by up to 60%, by combining minimum standards of physical security and well-tested principles of natural surveillance and defensible space (Armitage, 2006). SBD is primarily an initiative to encourage those involved in the housing industry to adopt crime prevention measures to assist in reducing the opportunity for crime, creating a safer and more secure environment (Marsh, 1985).

1.6 Problems Statement

Crime has always been considered to be a source of concern to huge sections of the population and recently, this concern was deeply entrenched and profoundly expressed. Millions of people's lives are being affected each year by crime problems as one of the most important social issues. According to the Malaysian crime statistics, housebreaking and theft is one of the most frequent crime types in Malaysia, and the trend is similar in the state of Penang (Royal Malaysia Police, 2010). Furthermore, the amount of loss by housebreaking and theft far exceeded other property crimes (Abdullah, 2006).

Understanding and documenting details of the method of operation is a crucial first step to the development of a criminal profile by criminal analysts. An offender's *modus operandi,* including actions taken by an offender during the perpetration of a crime has been the subject of limited empirical study (Bennell& Canter, 2002), particularly in the case of Malaysia; however, the significance of *modus operandi* information is being increasingly recognised in respect of breaking and entering investigation (Merry, 2000) and the development of preventive strategies (Budd, 2001; Oatley & Ewart, 2002).

Without denying that social variables are influential on *modus operandi's* aspects, there is a need to more closely examine the relationship between physical characteristics of houses and *modus operandi*. This is due to the fact that the design of the physical environment plays an important role in fostering or preventing opportunities for crime to occur (Foster et al., 2010; Gardiner, 1978; Hedayati et al., 2011b, 2012a; Newman, 1972; Poyner, 1983; Poyner & Webb, 1991).

When considering a complex urban environment, risk heterogeneity implies that some houses are at higher risk than others, and that this difference in risk persists

throughout time (Short et al., 2009). Some houses may be at higher risk because they are physically soft targets (e.g., easily forced doors or windows) or because the routine activities of inhabitants leave them much less secure than other homes. By contrast, event dependence suggests that some aspect of a burglar's previous experience increases their preference to return. For example, a house breaking and entering may discover an abundance of items that could be targeted in a subsequent breaking and entering, which is considered to be one of the most important issues in being victims of house breaking and entering in Malaysia's case, because landed houses (detached, semi-detached and terraced house) suffer from weaknesses in all three levels of defence, including perimeter barriers, building exteriors and interior controls (Healy, 1983) are too difficult to be kept secure. For instance, a short perimeter wall as one of a building exterior's weaknesses will result in increasing the risk of house breaking and entering.

One of the most important reasons for being victimised in landed houses in Malaysia is due to their lifestyle by keeping windows open during the daytime and night time because of the hot weather; therefore, the inside of the house can be easily seen, thus thieves may simply prefer to return to a location where they know that their entry methods are guaranteed to work (Farrell et al. 1995). Moreover, most of the landed houses' yards in Malaysia are full of goods that are potentially valuable to a thief as well as ones that are readily disposable.

Erecting suitable security fencing around landed houses due to their size, even if only of sufficient quality to keep out an opportunist thief is quite high; therefore, people spend as little as possible on houses' security equipment, while evidence suggests that if crime prevention strategies are applied at the early stage of each development, it would be cheaper than employing them at later stages or after

being a victim of breaking and entering (Hedayati et al., 2011a; Schneider & Kitchen, 2002).

Despite a large volume of work on the topic in developed nations, place-based crime prevention ideas particularly remain largely untested in a Malaysian context. The literature reviewed reveals that there was extensive empirical research that examined a significant correlation between some physical factors of houses, such as doors and windows in regards to crime incidents. Nevertheless, scant research to date has explicitly explored the interplay of all physical characteristics of houses simultaneously on breaking and entering rate and *modus operandi* aspects. Therefore, one of the main objectives of the current study is to address this issue in a Malaysian context. The present study, contributes to the existing body of research on the topic in relation to Penang, Malaysia. It additionally attempts to provide new insights to this matter, particularly in relation to the most influential physical factors affecting *modus operandi* (MO) in residential areas.

Furthermore, this study investigates the house breaking rate among landed houses in Penang. However, it is evident that one of the most important tools for gaining information about the house breaking and entering rate in every country is a police database, which is not always reliable because in some countries, some victims do not report to the police due to various reasons. Identifying as many crimes in a crime series as possible is considered to be a crucial issue, because the more information is gained, it is more likely to develop enough information in order to solve a crime series as well as predicting future incidents based on statistical techniques.

Concisely this study is willing to examine the relationship between landed house types and physical characteristics of house on breaking and entering, identify

the relationship between occupancy and residential breaking and entering rate, investigate the most influential physical factors affecting *modus operandi* (MO) in residential area and the relationship between time and *modus operandi*.

Although a lot of money was allocated to reduce crime, it is still considered to be society's main social concern, because Brantingham and Brantingham (1998) stated that most planning proceeds with little knowledge of crime patterns, crime attractors, crime generators, the importance of edges, paths and nodes, or the site-specific solutions that facilitate or even encourage crime; therefore, this extensive research helps policy makers understand what strategies might be effective in the context of Malaysia, as well as the reasons why they are effective. Effective control strategies would pinpoint these pivotal sites, using past crimes as indicators of future ones, breaking the feedback loops and thus surgically halting the further spread of crime (Farrell et al., 2007).

1.7 Research Objectives

In order to figure out the research problem series of research objectives are presented throughout the case study depicting *modus operandi* of landed house in Penang. This research intends to achieve the following objectives:

1. To examine the relationship between landed house type and house breaking and entering.
2. To examine the effects of physical characteristics of exterior of landed house on breaking and entering.
3. To identify the relationship between occupancy and landed house breaking and entering rate.

4. To examine the most influential physical factors which affect *modus operandi* (MO) in residential areas.
5. To investigate the relationship between time and *modus operandi*.

1.8 Research Questions

Based on an extensive literature review and study's research objectives, 5 questions have been developed which will be addressed throughout this study:

1. Is there any relationship between landed house type and house breaking and entering?
2. Is there any effect of physical characteristics of exterior of landed house on breaking and entering?
3. Is there any relationship between occupancy and landed house breaking and entering rate?
4. What are the most influential physical factors which affect *modus operandi* (MO) in residential area?
5. Is there any relationship between time and *modus operandi*?

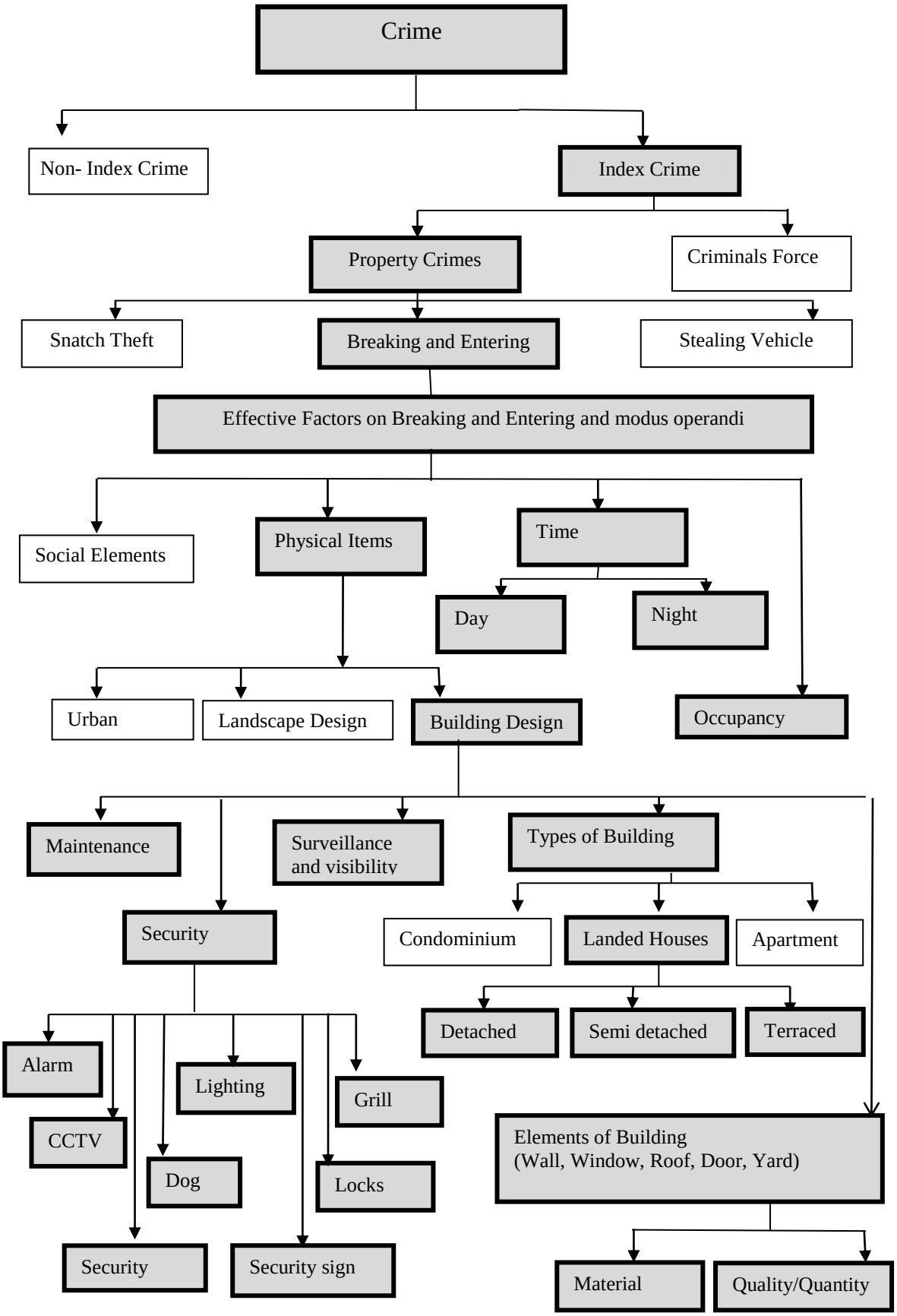

Figure 1.4. Modus Operandi and Breaking and Entering's Effective Factors

1.9 Proposed Theoretical Framework

The theoretical framework of this study (Figure 1.5) was developed after an extensive review of literature based on previous studies regarding understanding the *modus operandi* of breaking and entering houses. This study was based upon the theoretical framework and attempted to cover all aspects of *modus operandi* dimensions, which includes entering modus operandi, exiting modus operandi, and items stolen. This study considers the efficacy of house characteristics, occupancy, and the time of breaking and entering on *modus operandi*. Moreover, an extensive review of previous studies was done in respect of identifying effective house physical factors and house occupancy in relation to breaking and entering incidents. After a review of current approaches to complex *modus operandi,* the theoretical model was summarised and its components were presented, which is further discussed in Chapter Three.

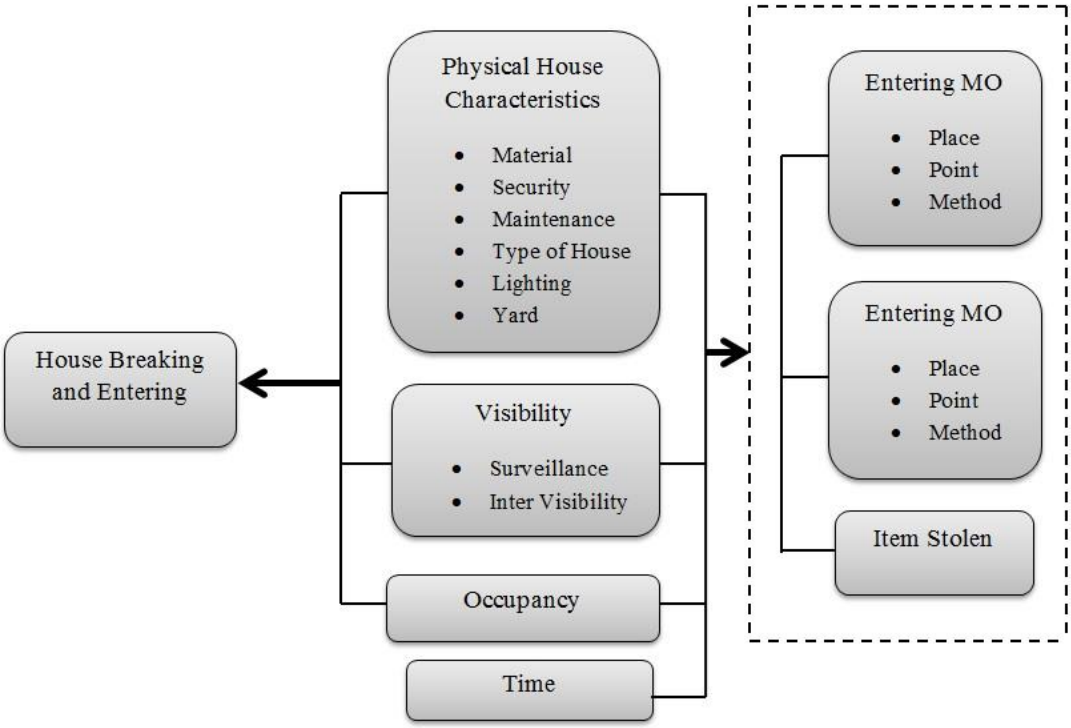

Figure 1.5. The Theoretical Framework

1.10 Significance of the Study

Diverse factors may influence the rate change of breaking and entering, such as the age composition of population, standard of living, demographic and economic structure of the area, societal problems, urbanisation and urban design, building design and the elements of the building, urban and landscape. (Harries, 1974) changing any of these factors can influence the rate of breaking and entering.

Fong and Lai (2012) stated that the state of Penang is considered to be one of the six crime hotspots in Malaysia; therefore, the present study focuses on the *modus operandi* of breaking and entering landed houses in Penang, Malaysia with an emphasis on the effects of physical house characteristics, time, occupancy, visibility and surveillance on house breaking and entering rate and *modus operandi* due to the fact that the design of the physical environment is considered to be an integral part of strategies in preventing opportunities for crime to occur (Foster et al., 2010; Gardiner, 1978; Hedayati et al., 2011b, 2012a; Newman, 1972; Poyner, 1983; Poyner & Webb, 1991).

Although a lot of research was done on breaking and entering and *modus operandi* in developed nations, few studies to date were done in order to test these kind of crime prevention ideas in a Malaysian context. Furthermore, most of the studies considered effective factors separately. They did not examine and compare the effect of them together and identify which one plays more roles to increase or decrease breaking and entering rate. Since the statistics show that the crime rate in Malaysia is increasing, it is necessary to study on this issue; however, little is known about it. Moreover, it is also worth mentioning that there is extensive empirical research that examines a significant correlation between some physical factors of houses, such as doors and windows as well as crime incidents; nevertheless, little

research to date explored the relationships of all physical characteristics of houses simultaneously on breaking and entering rate and *modus operandi* aspects. Therefore, the present study makes the first attempt to identify the most influential physical factors affecting house breaking and entering rate and *modus operandi* (MO) in residential areas in a Malaysian context. Such an extensive research helps policy makers to better understand what strategies might be effective in the context of Malaysia due to the fact that the indicators of future ones identify effective crime preventing strategies.

The proposed hypothetical framework was based on multidimensional measures of construct using structural equation modelling (SEM), which would imply more reliability in measuring the subject matter.

1.11 Scope and limitations of the Study

According to the 2009 commercial and residential breaking and entering statistic that was recorded by the police department of Penang, there are two breaking and entering hotspot areas in Penang Island, and the first area is Mukim Tanjung Bungah, while the second one is Bandar Bayan Baru. The most burglaries in Tanjung Bungah occurred in commercial buildings; therefore, the second area was chosen. The present study focuses on landed houses in Bandar Bayan Baru, which includes detached, semi-detached and terraced houses.

The responders of this study were those who were staying for at least one year in the house, because the base of data in this study was on considering the experience of breaking and entering in one year. Moreover, a member of the household who was 18 years old or above should answer the questionnaire, preferably being the head of household or his/her spouse. The samples were chosen

by the systematic sampling method in three groups of kinds of landed houses. The first group was detached house, the second group was semi-detached and end-terraced house, and the third group was mid-terraced house.

Although the current study makes a valuable contribution to the existing body of knowledge, there were a number of limitations in relation to the data collection's design that should be considered for further study findings. Firstly, the scope of study is on landed houses in the sample frame, while other types of houses (condominiums and apartments) existed in the area. Further research would benefit from a comprehensive study containing all houses' types. Such a survey will contribute in providing valuable insights into underlying subject matter.

Secondly, recorded data by police lacks a lot of information in some cases causing a lot of missing data. For instance, building materials were not mentioned in the database as well as type of house. In addition, the researcher was not allowed to record the exact addresses of burgled houses; therefore, the 2009 Penang breaking and entering mapping data is approximate.

Moreover, the researcher found that most of the residents were not willing to cooperate. Some of the respondents were scared of giving information and they intended to give wrong information, while some of them did not even open the door to participate in this research; therefore, this limitation could have affected the accuracy of the findings of the present study.

Finally, since house breaking and entering usually occurs when the target house is unoccupied, the exact time of incident of breakings were impossible and consequently, the data regarding the time of breaking and entering may affect the precision of the findings.

1.12 Organization of the Study

Chapter one presents a background and overview of the study. The research objectives and research questions and expected research contributions are also presented in this chapter.

Chapter two reviews the literature pertaining to this research. This chapter also mentions the previous studies related to crime, house breaking and entering and *modus operandi*. It also figures out the limitations of previous studies through having an accurate literature review.

Chapter three will outline the research methodology that this study will adopt to conduct this study. The process of data collection and sampling are discussed. Descriptive statistics and analysis of the secondary data also are represented in this chapter in order to explore the key variables of the present study. Pilot study, developing the questionnaire, content validity of the questionnaire, the preparation of data, and form of analysis is discussed as well. Moreover this chapter presents the theoretical framework of the study and the hypothetical model that examines the relationship among the constructs in the study. Each construct in this model has been chosen based on an extensive literature review and is discussed in this chapter.

Chapter four reports the statistical analysis of the survey data and interprets the data analysis results carried out in the present study for the purpose of developing a valuable understanding of the *modus operandi* of breaking and entering landed houses in Penang.

Chapter five presents discussions of research findings in greater detail. This chapter later discusses the research findings in the relationship to the literature review and concludes findings. It also presents the theoretical and practical implications resulting from the findings of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

According to Malaysian crime statistics, 'housebreaking and theft' is one of the most frequent types of crime in Malaysia. Furthermore, the same trend is observed in the state of Penang (Royal Malaysian Police, 2010). According to Utusan Malaysia's (2008) statistics, there is a dramatic increase of house burglaries within the last ten years in Malaysia, for instance there was an increase of 4,727 from 28,872 in 2006 to 33,599 in 2007 making the police predict an increase of house crimes in upcoming years. This increase in proportion of crimes in Malaysia housing could be the result of increasing the number of legal and illegal foreign workers as well as increasing the number of residents (Ismail, Shafiei, Said & Omran, 2011). The government and the police are concerned about this issue by trying to find practical solutions to face this problem. However, cooperation from the public to prevent house crimes is needed. For instance, it was revealed that building designs had a major part to play on the incidence of crime (Crowe, 2000). Therefore, in this chapter the effect of physical characteristics of houses on breaking and entering and *modus operandi* are discussed through reviewing the relevant literature in this research area. The discussion begins with a definition of the *modus operandi* and followed with a further revision of its classifications in the relevant studies, which will be followed by a description of physical crime prevention approaches, including Crime Prevention Through Environmental Design (CPTED) and Secured By Design (SBD). The next section focuses on reviewing previous studies on house breaking and entering investigations in order to identify the most effective factors of breaking and entering