

VALUATION APPROACHES AND
METHODOLOGIES FOR STRATUM
TITLE IN MALAYSIA

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ABSTRAK

Konsep pembangunan bawah tanah merupakan perkara baru yang telah diperkenalkan dalam Kanun Tanah Negara (Pindaan) 1990 (Akta A752/1990) yang diwartakan pada 22 Februari 1990. Sebelum pindaan ini, penggunaan tanah-tanah di bawah tanah oleh pemilik tanah tidak mempunyai apa-apa had dari segi penggunaan atau kedalaman. Pindaan tersebut memberi kuasa kepada Pihak Berkuasa Negeri mengeluarkan Hakmilik Stratum bagi tanah bawah tanah. Hakmilik Stratum boleh dipisahkan daripada hakmilik tanah yang dikeluarkan bagi tanah di permukaan paras bumi. Bagi pembangunan tanah bawah tanah dengan pelbagai utiliti, penilaian harta tanahnya melibatkan situasi yang agak berbeza. Penilaian pada biasanya melibatkan sejumlah hak yang dirujuk sebagai bayaran faedah mudah dan penggunaan tanah dan hak ke atas tanah dianggap berkait dengan penggunaan di atas permukaan tanah. Walau bagaimanapun, terdapat beberapa penggunaan bawah permukaan paras tanah yang memerlukan penilaian harta tanah. Objektif pertama penyelidikan ini adalah untuk mengkaji hak dan perundangan penggunaan tanah bawah tanah di Malaysia dan pembangunan tanah bawah tanah di negara-negara lain. Objektif kedua adalah untuk menganalisa pendekatan dan kaedah penilaian Hakmilik Stratum di dalam konteks negara Malaysia. Bagi mencapai objektif pertama, analisis kualitatif digunakan untuk mengenalpasti perbezaan Hakmilik Stratum di Malaysia dan negara lain dari segi amalan dan perundangan. Analisis kandungan dijalankan dengan menggunakan perisian Nvivo. Data primer dari temu bual pakar dianalisa dan diguna untuk membangunkan pendekatan dan kaedah penilaian bagi Hakmilik Stratum di Malaysia. Terdapat beberapa cadangan pendekatan penilaian bagi Hakmilik Stratum di dalam konteks negara Malaysia seperti Pendekatan Bayangan, Kaedah Nilai Baki, Kaedah Kos dan Kaedah Perbandingan. Kaedah Nilai Baki dengan pelanjutan dari Kaedah Aliran Terdiskaun dan Kaedah Perbandingan dengan percampuran lain-lain prinsip merupakan pendekatan yang lebih sesuai untuk menilai Hakmilik Stratum di Malaysia.

ABSTRACT

Underground concept is considerably new, which was introduced in National Land Code (Amendment) 1990 (Act A752/1990) and has been gazetted on 22nd February 1990. Prior to the above amendment, the use of underground land by the owner did not have any restrictions in terms of usage or depth. The amendment enables the state authorities to issue stratum title for underground land. Stratum Title can be separated from land titles issued for surface land. The appraisal of real estate with regard to underground development with many utilities involves some unusual circumstances. Ordinary appraisal is concerned with a total bundle of rights referred to as fee simple interests and it is generally assumed that the use of real property rights are related to the surface of the land. However, there are several below-surface uses of land that require a real estate appraisal. The first objective of this research is to examine underground land use rights and legislation in Malaysia and underground development in other countries. The second objective is to analyse the valuation approaches and methodologies of Stratum Title in the Malaysian context. In achieving the first objective, qualitative analysis was employed to identify the differences of Stratum Title in Malaysia and other countries in terms of practices and legislation. Content analysis was carried out by using of Nvivo software. The primary data of expert interviews were analysed and used to establish the valuation approaches and methodologies for Stratum Title in Malaysia. There are several suggestions of valuation approaches for Stratum Title in the context of Malaysia such as the Shadow Approach, Residual Method, Cost Method and Comparison Method. Residual Method by extension of the Discounted Cash Flow Method and finally Comparison Method with a mixture of other principles are considered more appropriate approaches to value the Stratum Title in Malaysia.

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LIST OF ABBREVIATION

ASP	-	Assessment Standard Practices
DCF	-	Discounted Cash Flow
DTSS		Deep Tunnel Sewerage System
ESC	-	Economic Strategies Committee
FIRREA	-	Federal Institutions Reform, Recovery, and Enforcement Act
GDC	-	Gross Development Cost
GDV	-	Gross Development Value
HKPSG	-	Hong Kong Planning Standards and Guidelines
JKPTG	-	Jabatan Ketua Pengarah Tanah dan Galian
JUPEM	-	Jabatan Ukur dan Pemetaan Malaysia
KLCC	-	Kuala Lumpur Convention Centre
KTN	-	Kanun Tanah Negara
LRT	-	Light Rail Transits
LTA	-	Land Transport Authority
MTR	-	Mass Transit Railway
MVS	-	Malaysian Valuation Standard
NIMBY	-	"Not In My Backyard"
NLC	-	National Land Code
R&D	-	Research and Development
SMART Tunnel	-	Storm Water Management And Road Tunnel

- STAR - Sistem Transit Aliran Ringan
- UMPTF - Underground Master Planning Task Force
- UNESCO - United Nations Educational, Scientific and Cultural Organization
- WHO - World Health Organization

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CHAPTER 1

INTRODUCTION

1.1 Background

Underground concept is considerably new, as it was introduced in the National Land Code (Amendment) 1990 (Act A752/1990) and has been gazetted on 22nd February 1990. A new section “Part Five (A)” entitled “Disposal of Underground Land” has been established regarding the disposal of underground land and other related areas. Prior to the above amendment, the use of underground land by the owner did not have any restrictions in terms of usage or depth. The owner can use it up to any preferred depth or height.

This can be seen in the case of the development of shop lots at Dataran Merdeka since 1990, followed by the Petronas Twin Towers (1995). Similar to this are the construction of light rail transits such as LRT/ STAR (1996) and PUTRA (1998) and the ‘*Storm water Management and Road Tunnel*’-(*SMART Tunnel* (2003) which has a portion of its route built underground. There are forms of development of underground land in this country where the owner can use the depth per their preference.

In relation to the expansion of this development, some technical problems arise concerning building structures and the safety of the occupants (Ghazali et al., 2000). To overcome this problem, the National Land Code (NLC), the primary land law in Peninsular Malaysia has been amended in 1990 to enable State Authority to issue Stratum Title for underground land. This Stratum Title can be issued separately from the land title issued for the surface land. This is explained by provision of Part 5(A) under Section 92A to 92G in relation to underground land disposal. Section 92G (1) indicates that underground land can be used for any purpose and not necessarily related to any legitimate use for the surface land unless approval is granted from the State Authorities.

Prior to the amendments above, the land owner may use his land at reasonable depth as in the provision under Section 44(1)(a) NLC, namely *"the exclusive use and enjoyment of so much of the land below the surface, as is reasonably necessary to the lawful use and enjoyment of the land."*

Based on the above statement, in Malaysia, land is divided into surface land, underground land and stratum land. This underground land is supposed to be owned by the surface landowner but the legal question is how far deep they own. The landowner does not know the actual depth that they own. With the amended Section 92A-L, can be concluded that the next layer of land is state land and the State Authority can now alienate the land for the issuance of the Stratum Title.

For valuation purposes, valuation is based on the title of the property, which is done by valuing the land and building, or the land physically or various types of property such as residential, commercial and industrial property. In other words, we call it landed property. Whereas stratum is a solid aspect underground land with a determined depth below the earth. The use of underground land is usually for buildings, infrastructure, e.g. utility networks, subterranean dwellings, mineral extraction and alike.

In relation to this underground development with many utilities, the appraisal of real estate at times involves some unusual circumstances, particularly relating to underground land uses. Ordinary appraisal problems involve the total bundle of rights which are referred to as fee simple interests. The use and enjoyment of real property rights is usually thought of as pertaining to the surface of the land. But there are a number of below-surface uses of land that the real estate appraiser may be called upon to value (Derbes, 1967). As such, it is important, and not to mention interesting, to explore the issue of Stratum Title land resources in Malaysia by examining the valuation issues and most suitable valuation approaches and methodologies for Stratum Title.

1.2 Problem Statement

Based on the above disputes, there are queries that arise that need to be figured out and studied pertaining to the valuation practice in Malaysia. Currently, feedback from Land Office and Valuation and Property Services Department (2015) suggest that there has been no valuation of Stratum Land done in Malaysia.

There are a number of different methods of valuing property, each with its own advantages and disadvantages. The method used will vary based on whether the property in concern is being built, bought or sold. It is to be noted that despite widespread misperception, valuations of a property can vary significantly depending on the method used.

There are many methods of valuation and the most popular methods to value surface land, land and building are Comparison Method, Investment Method, Residual Method, Cost Method, Profit Method and The Reinstatement Method. Unfortunately only a few of these methods can be used for the valuation of

underground land, and according to previous research and from economic literature, there are several ways to find the value of underground land, the most common method being by comparison. Brownell (1958) favoured the observation of actual markets to estimate the monetary burden of an underground development (in this case, a pipeline) on the overall land value. Besides Brownell's work, Johnson (1967), Rhodes (1974) and Partaker (1982) also attempted to calculate the burden of different imposed underground land uses. They then estimated the compensation to be received by the land owner. Page and Rabinowitz (1993), Simons and Sementelli (1997), Dotzour (1997) and Jackson (2001) centre their work on valuing the effects of underground pollution on land prices. On a different methodological line, the hedonic pricing (Rosen, 1974) or regression analysis approach has also been applied, looking at land prices of plots with different underground uses, potential uses or qualities. Guntermann (1995) and Jackson (2001) are two examples of hedonic price applications to underground land related to pollution (proximity to landfills, and contaminated sites, respectively).

According to Godard (2004), the valuation of underground space use strongly correlates to community valuation of disadvantages of aerial structures in terms of environmental degradation. Unfortunately, the advantages of underground structures pertaining to the protection of the environment cannot be easily assessed in monetary terms. Furthermore, underground structures generally cost more than construction in open air. Hence, when compared to open air constructions, underground structures are in some ways "penalized" when compared to on space land constructions. In long term use, underground constructions can prove more economic, e.g. with regard energy savings. In addition, underground structures can prove to be more economic in the long term, with respect to energy savings. In some circumstances, the surface land can be used for other purposes thanks to underground structures. In such cases, the value of the surface land should also be taken into account. As a result, when making a decision between an aerial solution and an underground alternative, the many advantages of underground structures should be considered, especially those related to the impact on the environment.

In Malaysia, according to National Land Code, in the National Land Code (Amendment) Act 1990 (Act A752/1990) and gazette on 22 February 1990, a new section “Part Five (A)” entitled “Disposal Of Underground Land” has been established in which underground land can be disposed and it has a distance below the land surface, as prescribed by the Local Authority [section 92B/ section 92E] or according to rules made by the Minister [section 92]. However, the use of underground land is limited because it is restricted by the terms that it can only be used to the extent that is “reasonably necessary to lawful use and enjoyment of the land.” There is no specific measurement of the depth that can be used by the owner or stakeholder.

With this provision, land that has been disposed of in the “two dimensional” context is calculated using the three dimensional measurement of area. This takes into account the length, width and depth that is calculated in volume size. Overall, land values will increase because there will be more options for landowners to develop their land. This view is validated with the statement of Mr. Donald Woodard who has spent 20 years as an urban planner in the public sector. His view is that underground spaces provide a new third dimension for land use and density. Mr Woodard reviewed the history of commercial underground development because of widespread of limestone mines, and Kansas City has, in fact, pioneered commercial use of underground space. (Richard G.L. et al 1998:33).

Assessment Standard Practices (ASP, 2007) define property as “the physical land and any item that was built and erected on the land. It is a building that can be seen and touched either above or underground”. Therefore, valuation covers the land and building either above the land or underground (if there is development and Stratum Title). So theoretically, property valuation includes underground land.

For valuation purposes, valuation is based on the title of the property, which is done by valuing the land and building, or the land physically or various types of property, otherwise called as landed property. In addition to this landed property,

there is also strata property. Each of these has its own uniqueness and market especially for residential and commercial property. In this case, land is referring to the land surface; while stratum is a solid aspect underground land with a determined depth below the earth. It is generally used for buildings, infrastructure, e.g. utility networks, subterranean dwellings, mineral extraction and alike (ASP, 2007). Based on assessment practices in valuing surface, a “two dimensional” calculation in measuring land area is used, by taking into account length and width. However, in the case of stratum, it is measured using “three dimensional” calculation that takes into account length, width and depth in calculating volume. The question in this case is however, how to value surface land that has a Stratum Title or how to value the Stratum Title itself?

Referring to Low (1996) in Singapore, The Land Title (Strata) Act provides for the subdivision of land into strata, apartment, shop, office, and car park units. The airspace or subterranean space is defined in a surveyed plan showing the full dimensions including the height. A convenient term for such airspace or subterranean is “as-built”. For such, “as-built” airspace or subterranean space, the valuation is normally done by the comparison method. For subterranean space not governed by the Land Title (Strata) Act, the approach is the residual method of valuation. In arriving at the value, the factors for consideration include the permissible type of development, the extent of development and the depth and height of the subterranean space. In valuation of subterranean space, it is also necessary to consider the development cost. According C. Yao (2011), in order to use the underground space of the subway station more effectively, the problems of the right and the cost estimation of the underground space in the market transactions must be discussed.

Underground developments in Malaysia are not new. As noted by Ghazali et al., (2000), underground development began in Malaysia about twenty six years ago, with the establishment of shop lots below Merdeka Square, Petronas Twin Tower and other constructions below ground level such as parking lots and other underground developments. The establishments of shop lots below the Merdeka

Square (1990), the completion of Petronas Twin Towers (KLCC) (1995) and the Light Rail Transit (LRT), and more recently, the Mass Rapid Transit (MRT) are examples of comprehensive development of underground land in Malaysia. This shows that Malaysia has already undergone significant underground development but until today, there have been no Stratum Titles issued yet.

Based on the above disputes, there are queries that arise that need to be figured out and studied according to our valuation practice in Malaysia. Objectively, this study is to address the use of underground land and how it applies to Malaysia, which has Stratum Titles. It is different from other countries, as different countries have different obligations. In Japan, consideration is given in the Japanese Diet to public ownership of the underground at depths further than 50 meters below the ground surface (Sterling, 1993). So, in Malaysia, there should be a differenced legal right and obligation practiced for the usage of underground land.

This research investigated the legislation issues related with Stratum Title, to examine the differences that exist between Stratum Title in Malaysia and underground development in other countries. This will lead to analyzing the valuation issues and assessing possible valuation approaches and methodologies that could be applied in the Malaysian context.

1.3 Research Questions

The research aim is to examine the current policy and legislation related to Stratum Title which will lead to analyses the valuation approaches and methodologies for Stratum Title in Malaysia. In line with this study, six (6) key research questions will be addressed:

Table 1.1 : Research Objectives and Questions

Questions		Objectives
Q1.	What is Stratum Title?	To examine the underground legislation development in Malaysia and other countries
Q2.	What are the legislation and policies about underground land?	
Q3.	How is Stratum Title determined?	
Q4.	How is the valuation of Stratum Title implemented?	To analyses valuation approaches and methodologies of Stratum Title in the Malaysian context.
Q5	What are the factors that will affect the valuation of Stratum Title?	
Q6.	What are the possible valuation approaches and methodologies to value Stratum Title?	

1.4 Research Objective

In order to achieve the research aim, the following objectives are formulated:

- (a) To examine the underground legislation development in Malaysia and other countries.
- (b) To analyze the valuation issues that relate to underground or Stratum Title and to determine the possible valuation approaches and methodologies that could be applied in the Malaysian context.

1.5 Research Limitations/ Scope

This study focuses on building and land that are required for the usage of the underground land in Malaysia. It also focuses on high population in a rapid development area, namely Kuala Lumpur.

Kuala Lumpur is the capital city of Malaysia and has experienced vast and rapid development throughout the years. In addition, there are many skyscrapers and buildings equipped with modern and latest technology, making it the most vibrant and developed area in Malaysia. Ghazali et al.,(2000) said that Kuala Lumpur has the potential to develop and required high use of underground land because of buildings and roads on the surface and mass public transport system above and under the ground.

In order to identify differences among underground land in Malaysia and other countries, this study refers to countries that use underground land for the same purpose or different purposes as compared to Malaysia. The countries that were included as a reference are Singapore, United Kingdom, Sweden, Victoria, Hong Kong, China, Japan and other mentioned countries.

1.6 Research Framework

The framework of this research is depicted in Figure 1.2. The Figure shows that the data was collected from primary and secondary sources in the fieldwork. The data was analyzed with descriptive analysis by using Content analysis and Nvivo software to answer the research questions.

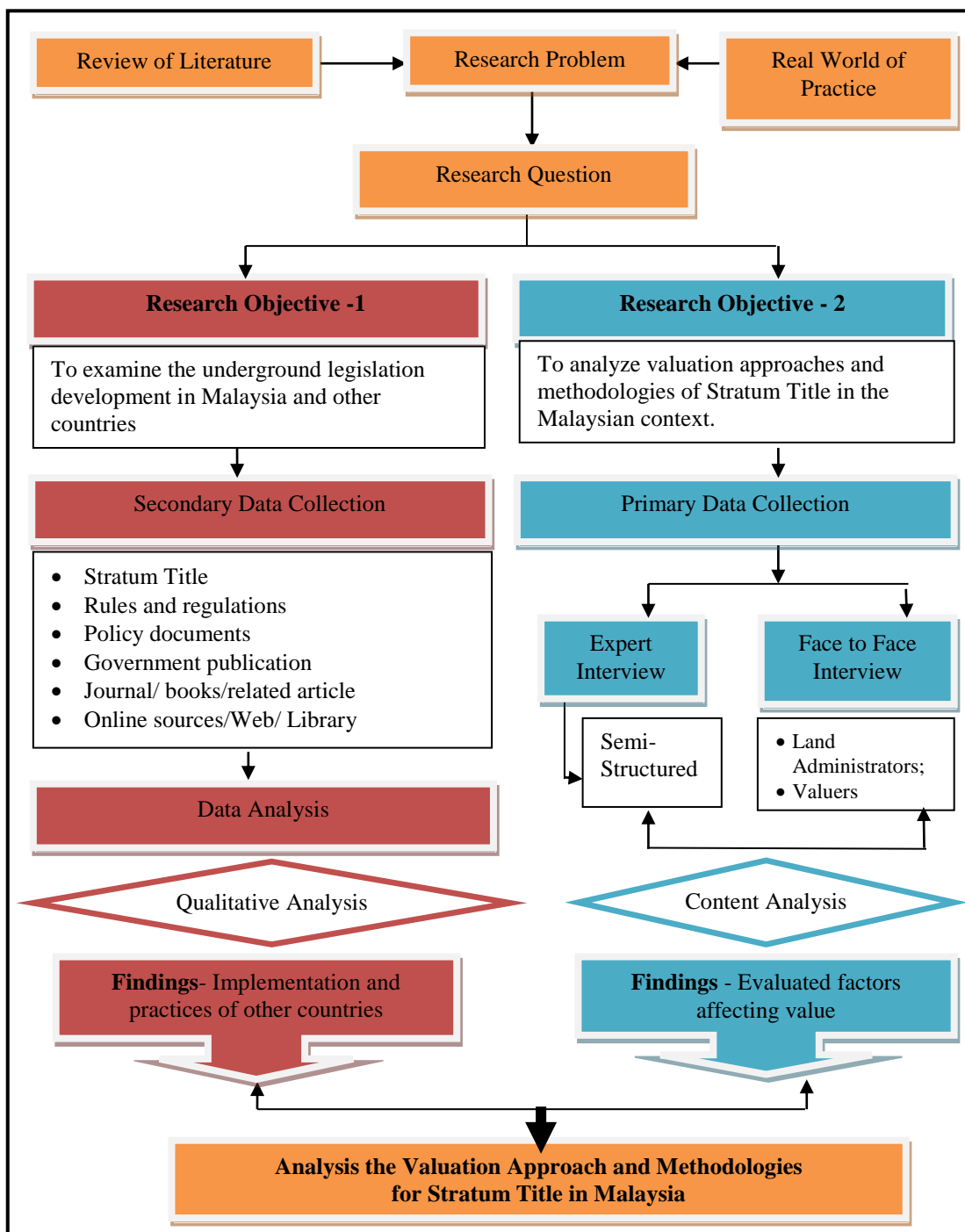


Figure 1.1 Research Framework

1.7 Significance of the Research

The development and operation of commercial and retail property sectors on a stratum basis in Malaysia is not as common or advanced as other countries. To date, stratum development in Malaysia has been restricted to infrastructure such as roads and railways etc.

With an increasing demand for retail and commercial property in Malaysian cities such as Kuala Lumpur and Johor Bahru, the development of stratum land will allow commercial development without increasing urban sprawl.

This valuable state resource is currently under-developed in Malaysia and for its full potential to be realised, suitable valuation approaches, guidelines and methodologies need to be assessed and developed.

This academic study provides the initial research and background required to fully understand the issues of Stratum Title and Valuation Approaches for this type of property and also enhance the knowledge and ability of other parties as follows:

1.7.1 Government And Policy Makers

For Government and Policy Makers, information regarding Stratum Title will enable them to strengthen current policy, acts and other statutory related to this issue.

1.7.2 Property Managers, Developers and Valuers

From this research, they can make an impressive and interesting development plan. They can apply this knowledge to develop properties, determine the factors affecting the stratum interest, and as a reference on Valuation Approaches for this type of property. This may also help to expand the property development industry in Malaysia by using Stratum Title in their developments. Valuers will also be able to handle relevant valuation cases on par with valuers in countries with proper guidelines.

1.7.3 Society

Society could be well educated and informed about Stratum Title. In the case that they encounter a problem pertaining to this issue, they can refer to this research and hopefully find the solution to resolve their dispute and misunderstanding.

1.7.4 Investors

Investors who are from inside or outside of Malaysia can also take this research as their reference to acquire detailed knowledge about Stratum Title, making it easier for them to invest in property developments in Malaysia as they will have a better understanding about it.

1.7.5 University Students

For university students, especially recent graduates and students studying Estate Management, Land Surveying or any land field, this research serves as an opportunity to know more about Stratum Title and Valuation Approaches of this property type, that can be applied for their academic research or assessment. Other than that, students from other courses such as Building Survey, Architecture, Engineering, Quantity Surveying and others related to land can also benefit from learning about Stratum Title.

1.7.6 University Lecturers

For University Lecturers, they can obtain information regarding to Stratum Title and its importance, and subsequently apply it in their lectures.

1.8 Chapter Arrangement

1.8.1 Chapter 1: Introduction

This chapter explained details about this research, specifically the implementation of Stratum Title in Malaysia. For example, this chapter explained the problem statement, objectives of this research, the limitation and scope, research

importance and finally research methodology. It also outlines the chapter arrangement for every chapter in this research.

1.8.2 Chapter 2: Literature Review

This chapter explains important definitions regarding to the topic. This chapter focuses on various literature reviews such as articles and journals related to legal rights and obligation practiced for the usage of underground land, as well as literature about stratum, underground land development, land use rights and regulatory and policy. The literature review also helps to determine the factors affecting the stratum interest and to discuss valuation approaches of Stratum Titles used in other countries.

1.8.3 Chapter 3: Research Methodology

This section outlines the process to answer the research questions formulated in Chapter 1. Moreover, the data collection can be gathered first hand or from readily available resources. There are two types of data which are primary and secondary. Data can be quantitative (as generated through semi-structured questions) or qualitative (as generated from the broad answers to specific questions in interview to the professional expert on Stratum survey, or from responses to open-ended questions in a questionnaire, or through observation, or from readily accessible information gathered from various sources).

In this study, there are five steps, which are proposal phase; literature review; data collection (including collection of primary data and secondary data); data analysis and finding; and thesis writing).

1.8.4 Chapter 4: Data Analysis and Finding

In this chapter, the results are collected and discussed to achieve the research objectives of this study. The chapter gives adequate thought to the data analysis procedures and the associated software available related to the purpose of study. There are numerous data analysis techniques that can be used to analyze the data.

To answer the first objective of this study, which is to describe underground land use right and legislation in Malaysia and underground development in other countries, the researcher will use qualitative analysis and the Triangular Model to know the differences of Stratum Title in Malaysia and other countries in terms of practices and legislation.

By using Nvivo software, contents analysis was employed to analyze primary data through face to face interview and expert interview. It helps in gathering and exploring the node for each question and code at emerging themes related to the research objectives. This will answer the second objective, which is to develop and assess the valuation approaches and methodologies for Stratum Title in Malaysia.

1.8.5 Chapter 5: Conclusion and Recommendation

The purpose of this chapter is to summarize the findings of this study. This chapter aims to discuss the two research objectives as outlined in Chapter One; to examine the current policy and legislation related to Stratum Title, and to assess the valuation approaches and methodologies for stratum title in Malaysia.

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