DEVELOPMENT OF SOCIAL DISCOUNT RATE FOR AFFORDABLE HOUSING PROJECT APPRAISAL IN MALAYSIA

CHUA AI JIUN

UNIVERSITI TEKNOLOGI MALAYSIA

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CHUA AI JIUN

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DEDICATION

This thesis is dedicated to my father, who taught me that the best kind of knowledge to have been that which is learned for its own sake. It is also dedicated to my mother, who taught me that even the largest task can be accomplished if it is done one step at a time.

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ABSTRACT

There are growing concerns on how public projects should be evaluated as they bring long-term economic, social and environmental impacts to the nation. As such, to assess the feasibility of public projects such as affordable housing, forest reserve, and community part, cost-benefit analysis is used by project appraisers. One of the inputs for costs and benefits analysis is the discount rate, which has been widely debated as it was felt that the traditional discount rate should be replaced with a social discount rate for assessing public projects. The justification is that the social discount rate is concerned with the welfare of society, whereas the traditional discount rate focuses on profitability. There are limited studies on social discount rates in Malaysia, and the appropriate social discount rate to be applied for public projects is unknown. The question arises as to what should be the social discount rate for affordable housing development projects in Malaysia. Therefore, the purpose of this study was to propose a social discount rate for affordable housing development projects in Malaysia, which has recently become the priority for the nation. This study used a mixed-method research design which consisted of five objectives. Firstly, was to propose a systematic framework to construct a social discount rate for Malaysia, secondly, to construct a social discount rate for Malaysia based on the proposed systematic framework, thirdly and fourthly, to investigate social discount rate for an affordable housing development project in Malaysia based on the opinions of the project appraisers and registered valuers, and finally, to compare and justify the constructed social discount rate and recommended social discount rates for affordable housing development project in Malaysia. To construct the social discount rate, Social Time Preference (STP) approach was selected after systematically reviewing all social discount rate approaches. Later, project appraisers and registered valuers answered a questionnaire survey to propose social discount rates for Malaysia. The collected data were analysed using descriptive analysis. To achieve the last objective, a focus group discussion was conducted among experts from both private and public sectors to discuss and agree on a social discount rate which is applicable for affordable housing development projects in Malaysia. The findings revealed that the social discount rate constructed based on the STP approach was 5.99%, and the recommended social discount rates from project appraisers was 6%, and the registered valuers was 6%. To conclude, a focus group was conducted among the experts and they agreed that 5.99% (lowest rate among the three rates) which was constructed by using the STP approach, was more appropriate to be applied for assessing affordable housing development projects in Malaysia. The justification given was that they agreed with the theory of social discount rate which states that the rate should be lower, as the current traditional discount rate used by project appraisers is high. The findings provide a reference point to the project appraisers from both private and public sectors in determining and applying social discount rates in the study and assessment of public project feasibility.

ABSTRAK

Terdapat keprihatinan yang semakin meningkat tentang bagaimana projek awam perlu dinilai kerana ia membawa kesan ekonomi, sosial dan persekitaran jangka panjang kepada negara. Oleh itu, untuk menilai kebolehlaksanaan projek awam seperti perumahan mampu milik, hutan simpan, dan bahagian masyarakat, analisis kos-manfaat digunakan oleh penilai projek. Salah satu input dalam pengiraan analisis kos-manfaat adalah kadar diskaun yang telah diperdebatkan secara meluas kerana dirasakan bahawa kadar diskaun tradisional harus diganti dengan kadar diskaun sosial untuk menilai projek awam. Kemunasabahannya adalah kadar diskaun sosial mementingkan kesejahteraan masyarakat, manakala kadar diskaun tradisional lebih menumpukan pada keuntungan. Kajian yang terhad tentang kadar diskaun sosial di Malaysia, dan kadar diskaun sosial yang sesuai untuk menilai projek awam belum diterokai. Persoalan yang timbul ialah apakah kadar diskaun sosial yang sepatutnya untuk projek pembangunan rumah mampu milik di Malaysia. Oleh itu tujuan kajian ini adalah untuk mencadangkan kadar diskaun sosial bagi projek pembangunan perumahan mampu milik di Malaysia yang baru-baru ini menjadi keutamaan negara. Kajian ini mengunakan reka bentuk kajian kaedah hibrid untuk mencapai lima objektif. Pertama adalah untuk mencadangkan kerangka sistematik untuk membangun kadar diskaun sosial untuk Malaysia, kedua untuk membangun kadar diskaun sosial untuk Malaysia berdasarkan kerangka sistematik yang dicadangkan, ketiga dan keempat untuk mengkaji kadar diskaun sosial untuk projek pembangunan perumahan mampu milik di Malaysia berdasarkan pendapat penilai projek dan penilai pendaftar dan akhirnya untuk membandingkan dan mewajarkan kadar diskaun sosial yang dibina dan kadar diskaun sosial yang dicadangkan untuk projek pembangunan perumahan mampu milik di Malaysia. Untuk membina kadar diskaun sosial, kaedah Pilihan Masa Social (STP) telah dipilih selepas mengkaji secara sistematik semua pendekatan kadar diskaun sosial. Kemudian penilai projek dan penilai berdaftar menjawab soal selidik untuk mencadangkan kadar diskaun sosial untuk Malaysia. Data yang dikumpul dianalisis menggunakan analisis deskriptif. Untuk mencapai objektif yang terakhir, perbincangan kumpulan fokus telah dijalankan di kalangan pakar dari sektor swasta dan awam untuk membincangkan dan menyeragamkam kadar diskaun sosial yang sesuai digunakan dalam projek pembangunan perumahan mampu milik di Malaysia. Hasil kajian menunjukan bahawa kadar diskaun sosial yang dibina berdasarkan pendekatan STP adalah 5.99%, kadar diskaun sosial yang disarankan daripada penilai projek adalah 6% dan penilai berdaftar ialah 6%. Kesimpulannya, pakar yang menghadiri kumpulan fokus bersetuju bahawa 5.99% (kadar terendah antara tiga kadar) yang dibina berdasarkan pendekatan STP lebih sesuai untuk digunakan dalam menilai projek pembangunan perumahan mampu milik di Malaysia. Justifikasi yang diberikan ialah mereka bersetuju dengan teori kadar diskaun sosial yang menyatakan bahawa kadar itu harus lebih rendah, kerana kadar diskaun tradisional yang digunakan oleh penilai projek adalah tinggi. Penemuan kajian ini boleh menjadi rujukan kepada penilai projek di sektor awam dan swasta dalam menentukan dan menerapkan kadar diskaun sosial dalam kajian dan penilaian kebolehlaksanaan projek awam.

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LIST OF ABBREVIATIONS

CBA	-	Cost-Benefit Analysis
NPV	-	Net Present Value
BCR	-	Benefit-Cost Ratio
IRR	-	Internal Rate of Return
SDR	-	Social Discount Rate
PV	-	Present Value
DCF	-	Discounted Cash Flow
STP	-	Social Time Preference
SOC	-	Social Opportunity Cost
SPC	-	Shadow Price of Capital
APT	-	Arbitrage Pricing Theory
CAPM	-	Capital Asset Pricing Model
DBKL	-	Dewan Bandaraya Kuala Lumpur
JPN	-	Jabatan Perumahan Negard
JPPH	-	Jabatan Penilaian dan Perkhidmatan Harta

LIST OF SYMBOLS

δ	-	Utility Discount Rate
s	-	Social Discount Rate
μ	-	Elasticity of Marginal Utility of Consumption
p	-	Pure Time Preference Rate
g	-	Growth Rate of Per-Capita Real Consumption
L	-	Rate of Change in Life Chance
i	-	Rate of Return on Private Capital
s	-	Fraction of Return from Reinvested
f	-	Fraction of Annual Depreciation in the Capital Stock
STPR	-	Social Rate of Time Preference
w	-	Pre-tax Gross Rate of Return on Private Capital
δ	-	Depreciation Rate
s	-	Gross Saving Rate

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Public project plays a vital role in national development. A public project is often defined as a project that brings both social and economic benefits to a country (Gasik, 2016). Hence, concerns about how public projects are evaluated have been dramatically increased as the public projects bring both positive and negative impacts towards economic, social and environment for the nation in long-term. To assess public projects, previous researchers have suggested to adopt cost-benefit analysis to assess major infrastructure and social investment related to development projects (Qayum, 1976; Secretariat, 2007; Shively and Galopin, 2013; Kazlauskiene, 2015), for example, hydro-dam, solar farm, central community park, and affordable housing. In cost-benefit analysis, a significant input to calculate the costs and benefits of such public projects is discount rate. The major criticism from the literature suggested that traditional discount rate is inappropriate to be applied in assessing public project for it involves public benefits. Thus, previous researchers suggested to apply a specific rate, known as social discount rate instead of traditional discount rate because social discount rate is a rate that is used to discount the future value to present value by placing greater consideration public benefits (Harou, 1985; Price, 1988). This rate is commonly lower than the traditional discount rate because it was applied for long-term public projects that bring benefits to society by considering factors such as social preference, opportunity cost, etc. However, traditional discount rate is still being used to assess projects with public benefits.

1.2 Background of Study

Public projects basically are implemented at local, micro-regional, national and international level, include infrastructural facilities, environmental protection, energy efficiency, healthcare, education expenditures, affordable housing, etc. (Palinko and Szabo, 2012). It played a significant role to a country and it also an indispensable input to develop the economy of a country. However, developing country often face difficulty in the limitation of resources and infrastructure for development purpose (Debla-Norris, et al., 2012). Due to the scarce resources, the distribution of resource for public project investment become a vital procedure. To make highest and best use for the limited resource, public project assessment is a key process before implementing the public project because a qualified assessment system can help decision makers to select project with positive net social benefits; to identify the uncertainty impact of project; as well as to define the potential value of new project (Hahn and Dudley, 2007). One of the suggested economic assessment techniques is cost-benefit analysis (CBA).

According to Rambaud and Torrecillas (2006), cost-benefit analysis (CBA) is a major tool that is commonly used for public project evaluation. The primary reason to use cost-benefit analysis to assess public project is to forecast the future scenarios of a public project (Hõjer et. al., 2008). Besides that, cost-benefit analysis also a tool to select the best project when scare resources (Guerriero and Pacelli, 2020). Several developed countries have encouraged their project appraisers to use this analysis when assessing public projects, for example, European Union (EU) required their project appraisers to apply cost-benefit analysis to calculate the important budget consumption (European Commission, 2001). The United States (US) offered a guideline in Circular A-94 to project appraisers and highlighted that cost-benefit analysis is important to be used to analyse projects and policies that will bring benefit to the public. In the United Kingdom (UK), government announced a legislative requirement to project appraisers that there is a need to use cost-benefit analysis to find out the significance of proposed policies, policy reforms and public projects. (Pearce et al., 2006)

There are two types of cost-benefit analysis (CBA), which are social cost-benefit analysis and private cost-benefit analysis. Both cost-benefit analyses are used to compare of total cost and benefit that occurred during the entire projects. The difference between them is their purpose of calculation. Social cost-benefit analysis is often used for public project to compare total social costs and benefits that are not encompassed by the regular market mechanisms, including infrastructure, location, health impact, income effect (Cui and Sun, 2019; Kossava and Sheluntsova, 2016; Yu and Lo, 2005; McKim and Kathula, 1999; Field, 1997). These social costs and benefits are related with environmental and social welfare incurred during the whole project. The rationale behind applying social cost-benefit analysis for public project assessment is because this analysis concerns social benefits rather than business revenue. Examples of public projects that need to apply social cost-benefit analysis in the assessment include forest reserve, hydro dam and affordable housing. However, private cost-benefit analysis is often used to compare the total cost and benefit that occurred during the whole project. The purpose of using private cost-benefit analysis for business analysis is to measure all the consequences that might be occurred at difference time of project, as well as to compare with the alternative projects (Diakoulaki and Karangelis, 2007 and Hagen, et al., 2012). The rationale behind applying this private cost-benefit analysis is business profitability.

During the calculation of cost-benefit analysis (CBA), it is necessary to know when is the occurring of costs and benefits throughout the project in order to convert the future costs and benefits into net present value (NPV). This concept is better known as discounting. Discounting is a basis for cost-benefit analysis, which known as a standard calculation to evaluate the proposed public project and basically, it is a concept that is usually defined as a basic inter-temporal choice (Kazlauskiene, 2015), for example, $1 received today is worth more than $1 to be received in future due to the reason of time value of money. In other words, future dollar is worth less than the same dollar that is received today. Thus, future value needs to be discounted to reflect the current value.

There are several purposes to discount future cost and benefit of the projects. First is to determine the value of the project, which refers to the result of net present

value (NPV). If the result of discounting is shown positive NPV, it means that this project is encouraged to be implemented and vice versa. The second purpose is to compare the value of those projects under same objectives but with different timeframes (Young, 2002).

Under cost-benefit analysis (CBA), there are several measurements that can be used as discounting purpose, which are net present value (NPV), benefit-cost ratio (BCR) and internal rate of return (IRR). Further explanations on each measurement are summarized in Table 1.1.

Table 1.1 Measurement of cost-benefit analysis (CBA)

CBA Measurements	**Definition/Explanation**	**Formula**
Net Present Value (NPV)	• The current value of all project net benefits • Net benefits are simply the sum of benefits minus costs. • The sum is discounted at the discount rate. • NPV greater than zero means it appears to be a good candidate for implementation.	NPV = $\sum_{t=1}^{T} \frac{(Bt-Ct)}{(1+r)t}$
Benefit-cost ratio (BCR)	• It is calculated as the NPV of benefits divided by the NPV of costs. • The project is good to accept if the result of BCR is greater than one.	BCR = $\frac{\sum_{i=1}^{r} \frac{Bt}{(1+r)t}}{\sum_{i=1}^{r} \frac{Ct}{(1+r)t}}$
Internal rate of return (IRR)	• IRR is the discount rate for which the present value of total benefits equals the present value of total costs. • The value of IRR should be higher than discount rate for a project to be accepted	PV (Benefits) - PV (Costs) = 0.

Source: Shively and Galopin (2013)

These three measurements could be applied concurrently to avoid bias for the result of discounting. Among them, NPV is the most common measurement that applied is for discounting purpose by economists, project appraisers and researchers. One of the critical inputs in the calculation of NPV is the discount rate. The selection of an appropriate discount rate is important for it will cause bias if the applied discount rate is inappropriate. As asserted by Boardman, et. al. (2006), selection of an

appropriate discount rate is important for calculation of NPV for it plays important role in the calculation process.

Discount rate is a rate that is used to discount future values to the present values (European Commission, 2008). Garcia-Gusano, et. al. (2016) asserted that discount rate can be classified into two common types: private discount rate (also known as traditional discount rate) and social discount rate. Private discount rate could be applied if the project assessment concerns individual profitability, whereas social discount rate is used to assess the future value that focusses on social benefit.

1.3 Problem Statement

Public project assessment is a significant process prior to project approval. The main purpose of developing public project is to supply social benefit to society, such as affordable housing, forest reserve, community park, etc. Social benefit usually always known as non-profit profile, and thus, public sector often wants to allocate the scarce resources effectively to fulfil the highest and best use purpose among the public projects. In order to select the best project among others, an assessment of economic efficiency is needed to assess the net contribution of a project for the society (Infrastructure, 1994). To assess the feasibility of public project, standard assessment methods to assess the individual profit's private project are not applicable to assess the non-profitable public project. The most recommended method for public project assessment is cost-benefit analysis (Brzozowska, 2007) which applicable to assess these projects, including infrastructure, environmental, health facilities, etc. One of the significant inputs for cost-benefit analysis is discount rate. There are two types of discount rates that could be used in cost-benefit analysis, which are traditional discount rate and social discount rate. Both discount rates applicable to use for discounting but their uses are different. Therefore, it is necessary to identify the purposive of project before proceed to evaluation part.

Traditional discount rate (also known as private discount rate), which is a rate that determined by referring to market rate of return (Belfiori, 2017). It is more

appropriate to evaluate for private investment project than public project because it focuses more on market value of individual's profit or revenue (Kossava and Sheluntsova, 2016). In term of assessing social project, social discount rate is more appropriate to be applied for discounting purpose. The justification is social discount rate not purely can find for market value, anyhow, it also can find the economic value as well as the externalities of the project, which is more presentable to use for public project assessment (Guerriero and Pacelli, 2020). From this, it can be said that traditional discount rate is inappropriate to apply for public project assessment and it should be replaced by social discount rate because public project got societal and it should be assessed based on social dimensions to find out the economic value and externalities of public project. In view of this argument, social discount rate is a rate that can be used to discount future value to present value by considering society benefit and it also can be used to find out the economic value and externalities of public project.

Furthermore, as mentioned earlier, traditional discount rate is determined by referring to market rate of return. According to Zizlavsky (2014), market rate of return often in higher rate, where the range of market rate of return in 10 to 15 percent. The purpose of setting market rate of return in higher rate is because higher rate can make the benefits that accrue early. However, according to Lind (1990), higher rate may cause several disadvantages if apply higher rate for public project assessment, for example, a greater discrimination treatment to future generations, and reduce the capital inherited by future generations. From this, it can be said that lower rate is more preferable to use for public project assessment. The justification is public project always needs longer time to generate the benefits to society. If applying higher rate, it could lower down the present value of the analysis. Lower present value will make the project looks unfavourable, and subsequently will being rejected by decision maker (Chapman, 2013 and Gurluk, 2016). Thus, lower rate is more preferable for public project assessment and it should be replaced by social discount rate because social discount rate often in lower rate (Millner and Heal, 2018). There is an example to show the variable of present value result by input two different discount rates for social discounting purpose. The formula that would be used for demonstration is based on the formula of net present value (see Equation 1.1).

$$\text{NPV} = \sum_{t=1}^{T} \frac{(Bt-Ct)}{(1+r)t} \quad (1.1)$$

where B_t is sum of benefit, C_t is sum of cost, r is discount rate and t is number of years. Let demonstrate that the present value of a project yields a stream of benefit (B_t) and costs (C_t) in years t = 0, 1, …, T. There are two different discount rates that input in this calculation as a demonstration to show the variety of present value. Assumed that the demonstration of calculation present value is to evaluate the affordable housing development project. The sum of benefit of affordable housing assumed that is RM400,000 and the sum of cost is RM200,000. The project years (t) for resident purpose assumed for 20 years. Regarding the discount rate, as Zizlavsky (2014) said that, the range of traditional discount rate is in between of 10% to 15%. Thus, the traditional discount rate for this demonstration was in 10%. While, for social discount rate, the rate was referring to the study that done by Zhuang, et al. (2007) for Malaysia, which is 7.8%. A summary of table to demonstrate the variety of present value as shown in Table 1.1. Based on the Table 1.2, it can be seen that applying lower discount rate could generate higher present value. This result is aligned with EPA (2010), where they highlighted that applying low social discount rate also can raise the present value of project's economic benefits. The project should be chosen if the present value is higher among others (Guerriero and Pacelli, 2020). Therefore, it can be concluded that lower rate, which is more favourable result for decision maker to accept the public project. Thus, social discount rate is more appropriate to apply for public project assessment.

Table 1.2 A demonstration on present value of public project assessment by input two different types of discount rates

	Scenario 1 (Traditional discount rate)	**Scenario 2 (Social discount rate)**
Sum of benefit (B_t)	RM400,000	RM400,000
Sum of cost (C_t)	RM200,000	RM200,000
Number of project years (t)	20	20
Discount rate (r)	10%	7.8%
Present value of net benefit	RM29,728	RM44,530

(For illustration purpose)

Nevertheless, the study of social discount rate for Malaysia is somehow limited, and the appropriate social discount rate to be applied for public project is unknown. This limitation has been highlighted by Akbulut and Secilmis (2019). They claimed that social discount rate is important for both developed and developing countries. However, literature revealed that the number of developed countries that have been constructed and adopted social discount rate for public project assessment purpose is higher than developing countries, including Malaysia. This shows that the application of social discount rate in public project assessment is still not common for developing countries. Table 1.3 summarized both developed and developing countries that have constructed social discount rate for public project assessment purpose.

Table 1.3 Summary of developed and developing countries that have constructed social discount rate for public project assessment purpose

Name of Developed Country	Social Discount Rate	Source	Name of Developing Countries	Social Discount Rate	Source
Germany	3%	Hepburn (2006)	India	5.2%	Kula (2004)
France	4%	Zhuang et al., (2007)	Turkey	5.06%	Haliciogle and Karatas (2011)
Italy	5%	Zhuang et al., (2007)	Russia	11.5%	Sheluntosova (2009)
United Kingdom	3.5%	Zhuang et al., (2007)	Mexico	10.4	Coppola et al., (2014)
USA	3.5	Moore et al., (2013)			
Australia	4.2%	Evans and Sezer (2004)			
Japan	5.0%	Evans and Sezer (2004)			
Lithuania	4.3%	Kazlauskiene and Stundziene (2016)			

Sources: Compilation from literature

Recently, affordable housing development projects have become a main concern in Malaysia, as developers are reluctant to become involved in such projects. However, it is important to ensure the medium income group can benefit from affordable housing development projects, as the purpose of having affordable housing is that government projects are built or subsidized by government for the medium income group nations, to solve their housing issues (Shuid, 2016). Due to this reason, government compulsory developers to build affordable housing in their development housing plan. From this, it can be seen that affordable housing is one of the priority projects for government that build for social benefit rather than individual's profit. During the development of an affordable housing development project, one of the processes before approving the project is to conduct a feasibility study (Tan, 1996). One of the analyses under feasibility study is valuation analysis, which needs to apply cost-benefit analysis to discount the future costs and benefits that might be occurred

throughout the affordable housing development project (Halil et al, 2016). By discounting the future costs and benefits, one of the critical inputs is discount rate, which directly affects the result of analysis.

An interesting observation on valuation market practice in Malaysia that has been noticed by the researcher is the absence of a framework to construct discount rate for the project assessment, which has been further verified through a discussion with the valuers. The researcher has observed that under the circumstances of limited method in determining discount rate, the project assessor tends to refer and adopt the historical project's discount rate in their analysis. This may result in the application of inappropriate discount rate to their project as different projects have different considering factors for project assessment (Palinko and Szabo, 2012).

Furthermore, affordable housing development project fulfils the definition of public project, which is built to provide social benefit and economic development. Thus, it recommended to use social cost-benefit analysis for assessment purpose (A Simons and H Karam, 2008). One of the significant inputs for cost-benefit analysis is discount rate. As mentioned above, traditional discount rate should be replaced by social discount rate. The justification is affordable housing development project assessment need to take into consideration into three aspects for sustainable development purpose, including economy, social and environment. Traditional discount rate is inappropriate to use for assessment purpose because it might portray a picture that the development of affordable housing does not bring benefit in term of economically and ignore the social and environment part. This may cause lacking of sustainable development for affordable housing project if insist to apply traditional discount rate for affordable housing development project (Jamaluddin et al., 2017). To solve this issue, social discount rate is more appropriate to use for assessment purpose because it could able to capture a better picture that the development of affordable housing brings benefit to the society.

Besides that, Chapman (2013) also highlighted that lower discount rate is preferable for affordable housing development project assessment because social project needs to serve for longer-term period. As mentioned above, applying lower

discount rate could generate higher present value for public project assessment. Lower discount rate usually is referring to social discount rate. Thus, the social discount rate is more appropriate to apply for affordable housing development project to generate favorable present value result, so that decision maker could accept and implement the project. However, the appropriate social discount rate that to be applied for affordable housing development project assessment was unknown.

In view of that, this research aims to fill up the research gap by proposing a systematic framework to guide the project appraisers and registered valuers in constructing social discount rate for assessing affordable housing development project. Besides that, this research also aims to develop a social discount rate based on the proposed systematic framework since the appropriate social discount rate for affordable housing development project assessment is unknown. Furthermore, throughout this research, it can help to understand the awareness and acceptance among the project appraisers and registered valuers in applying social discount rate in project's feasibility study.

1.4 Research Questions

The aim for this research is to construct and propose a social discount rate for Malaysia, notably in assessing the feasibility of affordable housing development project. Based on the above statements, this study aimed to examine the following five main questions: -

1. What is the systematic framework to construct social discount rate for Malaysia?
2. What would be the social discount rate for Malaysia based on the proposed systematic framework?
3. What is the recommended social discount rate for affordable housing development project in Malaysia by project appraisers?

4. What is the recommended social discount rate for affordable housing development project in Malaysia by registered valuers?

5. How to compare and justify between constructed social discount rate and recommended social discount rates for affordable housing development project in Malaysia?

1.5 Research Objectives

This study embarks on the following objectives to answer the above research questions.

1. To propose a systematic framework to construct social discount rate for Malaysia.

2. To construct social discount rate for Malaysia based on the proposed systematic framework

3. To investigate social discount rate for affordable housing development project in Malaysia by project appraisers.

4. To investigate social discount rate for affordable housing development project in Malaysia by registered valuers

5. To compare and justify the constructed social discount rate and recommended social discount rates for affordable housing development project in Malaysia.

For a new development project, notably in public sector, project assessment is a necessary process prior to the project, usually completed by cost-benefit analysis that requires the input of discount rate. There are two types of discount rate: traditional discount rate and social discount rate. Due to the weakness of traditional discount rate, social discount rate has emerged to replace the traditional discount rate. Thus, the main

goal of this research is to construct and propose one, that is applicable in affordable housing development project. Prior to constructing a social discount rate, there is a need to develop and propose a systematic framework of construction social discount rate for public project, in which the framework will guide them to form a better social discount rate (Objective One). Based on the proposed framework, a social discount rate will be constructed (Objective Two). The third and fourth objectives are intended to verify the constructed social discount rate as per objective two, for this purpose, a questionnaire survey to both project appraisers and registered valuers is conducted. The purpose of questionnaire survey distribution to both project appraisers and registered valuers is to investigate the recommended social discount rate for affordable housing development project. After collecting the recommendation social discount rates from both project appraisers and registered valuers, a focus group discussion will be conducted for the opinions among the experts to compare and justify the three different social discount rates, which are constructed social discount rate and recommended social discount rates, to come out a mutual understanding that social discount rate is an appropriate rate in assessing affordable housing development project.

1.6 Scope of Study

This research involves the experts from both public and private sectors, which are project appraisers and registered valuers for questionnaire survey and focus group. For the questionnaire survey, the target respondents from public sectors would be the project appraisers from National Housing Department, Ministry of Housing and Local Government at Putrajaya. On the other hand, the target respondents of questionnaire survey for private sector would be from all states of Malaysia. However, for focus group discussion, the experts from both private and public sectors consists of the representatives from private valuation firm, National Housing Department, Ministry of Federal Territories, Malaysia Valuation and Property Services Department and Kuala Lumpur City Hall. The reason behind choosing these experts for this research is because they are at the front line in valuation field and they are the ones who are practicing professionals in valuation and feasibility study of public project assessment.

Thus, they have the capability to verify the proposed social discount rate for affordable housing development project assessment. Meanwhile, it also can increase the awareness among project appraisers and registered valuers toward social discount rate, so that they will apply this rate in their affordable housing development project assessment in future.

1.7 Significance of the Study

The research makes significant contributions to important areas:

1.7.1 Professional Practices for Government Project Appraisers

This research provides valuable systematic framework for project appraisers regarding how to construct social discount rate for assessing public project. Such framework is easier and systematic, which will lead project appraisers to construct social discount rate more efficiently and effectively. As mentioned in the literature, every type of project has its own social discount rate (Burgess and Zerbe, 2013). Thus, this systematic framework could be used as a reference for project appraisers to construct social discount rate for different type of projects, such as affordable housing, forest reserve, community park, education policy, healthcare policy etc. Further, this systematic framework also helps the process of construction to become more transparent, which can improve the quality of public project assessment in Malaysia. This is supported by literature, where Kossova and Sheluntcova (2016) stressed that it is significant to develop systematic framework because it helps the construction of social discount rate to become more transparent.

This research also proposes a social discount rate to assess affordable housing project in Malaysia. Such social discount rate can replace the traditional discount rate and make the quality of assessment become more accurate. Last but not least, this research helps to increase the awareness among project appraisers toward social discount rate and to apply in their public project assessment.

1.7.2 Professional Practices for Registered Valuers

This research also contributes to registered valuers, especially those involved in feasibility study of public project assessment. Such framework can guide registered valuers to construct social discount rate and adopt the rate in their feasibility study of public project assessment, including affordable housing. This research also can increase the awareness among registered valuers towards social discount rate to make the quality of assessment to become more accurate.

1.7.3 Professional Practices for Academicians

This research is somewhat limited in Malaysia. Such limitation of research causes the lack of awareness among government project appraisers and registered valuers towards social discount rate. Therefore, the research contributes new theoretical and practical insight on how to construct a social discount rate for public project assessment for academicians. This could then help to increase the study of social discount rate for Malaysia.

1.8 Research Methodology

This section summarized the research methodology for this study, which is carried out in five stages, namely:

(a) Literature review

(b) Construction of social discount rate

(c) Questionnaire survey for project appraisers

(d) Questionnaire survey for registered valuers

(e) Focus group discussion

Figure 1.1 shows a diagram of research methodology overview. A brief explanation of research methodology is explained after Figure 1.1.

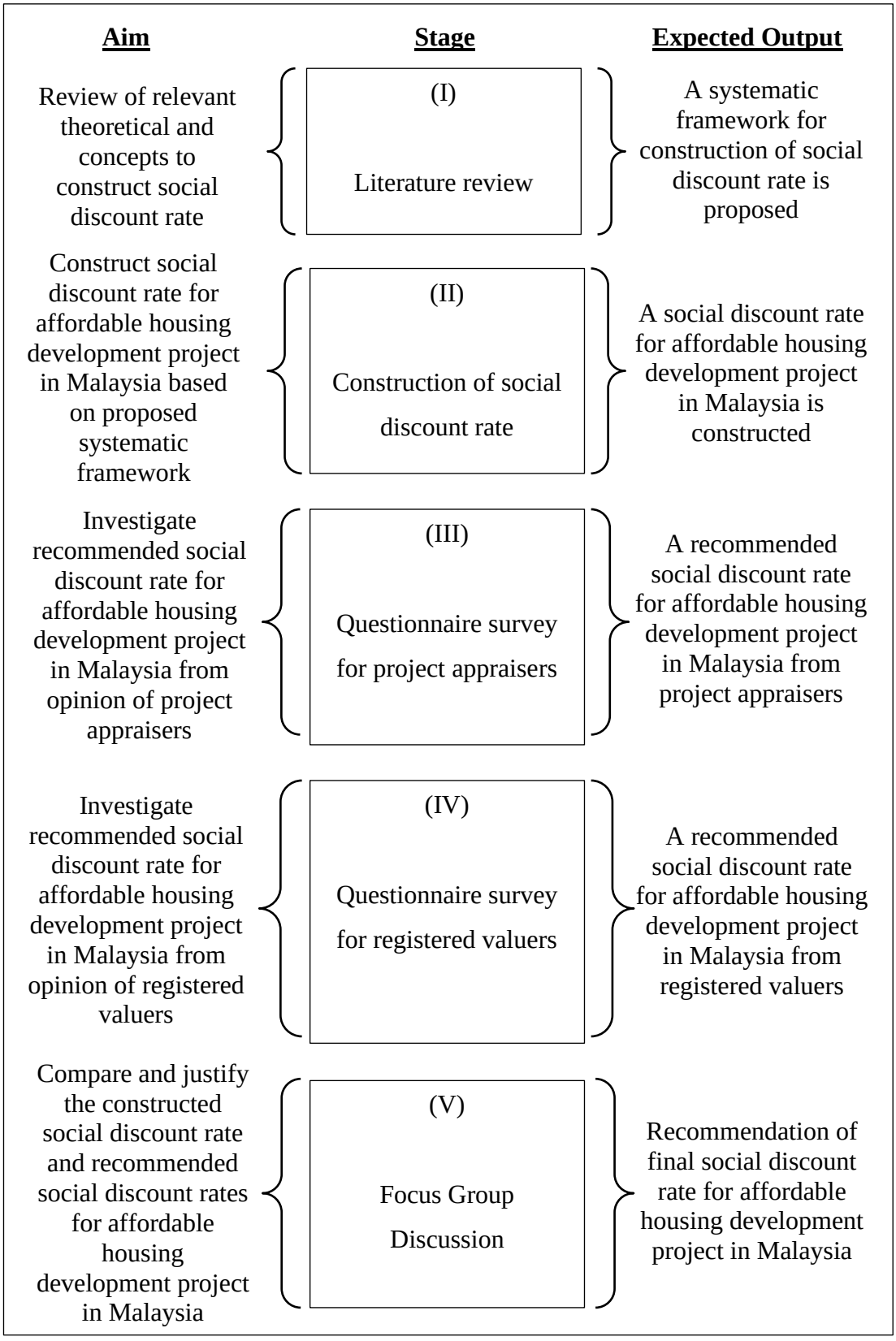

Figure 1.1 An overview of research methodology

1.8.1 Literature Review

A comprehensive literature review is done to examine the definition of social discount rate. All the relevant theories, concepts and determination approaches of social discount rate was reviewed. From this, a systematic framework to construct social discount rate was proposed as a guideline to construct social discount rate.

1.8.2 Construction of Social Discount Rate

In Stage II, researcher constructed a social discount rate based on the proposed systematic framework. During the construction of social discount rate, an approach to construct social discount rate was selected. The source of construction social discount rate was identified through secondary data. From this, a social discount rate for affordable housing development project assessment in Malaysia was constructed.

1.8.3 Questionnaire Survey for Project Appraisers

After constructing social discount rate, the next stage is to carry out a questionnaire survey for project appraisers. In this stage, affordable housing development project was employed as the case study for this research. In this questionnaire survey, the recommendation of social discount rate for affordable housing development project assessment was collected. The key outcome of this stage is to gather recommendation social discount rate for affordable housing development project assessment from project appraisers.

1.8.4 Questionnaire Survey for Registered Valuers

This key outcome of this stage is similar with the previous stage, which is to gather recommendation of social discount rate for affordable housing development

project assessment from registered valuers. The questionnaire survey with project appraisers and registered valuers were carried out simultaneously.

1.8.5 Focus Group Discussion

This is the last stage of this research. A verification of applying social discount rate for affordable housing project assessment was done among the experts during focus group discussion. Also, the proposed social discount rate and the recommendation of social discount rate from project appraisers and registered valuers was compared during focus group discussion. The key output of this stage is to produce a mutually agreed social discount rate to apply in affordable housing development project assessment.

1.9 Chapter Outline

There are seven chapters in this study.

Chapter One presented the introduction of the study. It is comprised of introduction, background of study, problem statement, research questions, research objectives, scope of study, contribution of the study, overview of research methodology and chapter outline.

Chapter Two discussed about the theoretical part. The chapter began with laying out the importance of public project assessment, and then followed by the concept and rationale of cost-benefit analysis, social discount rate, and social discount rate approaches.

Chapter Three detailed the methodology used for this study. All the detailed research procedures for each objective were presented in this chapter and a detailed research methodology framework is included.

Chapter Four presented the process on how to construct a social discount rate. This chapter has proposed a systematic framework on how to construct a social discount rate followed by social discount rate construction.

Chapter Five revealed and discussed findings from questionnaire survey with both project appraisers and registered valuers. This chapter analysed the findings and then, recommended social discount rates suggested from both private and public sectors for the achievement of the third and fourth objectives, respectively.

Chapter Six analysed the results of focus group discussions conducted to achieve the last objective in this study. The focus group discussion included the experts from private and public sectors, including representatives from private valuation firm, National Housing Department, Ministry of Federal Territories, Malaysia Valuation and Property Services Department and Kuala Lumpur City Hall. Their discussion and justification on constructed social discount rate and recommended social discount rates will be reported in this chapter. By end of this chapter, a social discount rate that is mutually agreed by the experts was presented.

Lastly, Chapter Seven as the final chapter draws upon the findings for the thesis and stated on how each objective has been achieved. It consisted of the conclusion and recommendation of this study, as well as the limitation of the study.

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