Strategies For Affordable Housing Delivery

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A B S T R A C T

Currently Malaysia has a housing shortage of 12 million but towards the year 2020, this would require a minimum annual supply of 2 million homes. But, even if the current rate of supply is double for the next 40 years, the population remains the same [at 30 million] and there is no migration to the cities, there is high possibility that housing crises will remain for a long time. Despite the government concerted efforts to provide adequate housing by way of subsidizing construction and providing incentives to developers, the housing supply and distribution gaps are growing and there is surge in costs of affordable housing. However, there is often the need for causal link between the cost factors through quantifying and measuring their impact on housing costs. Therefore, the need arise to develop housing delivery index in an effort to improve housing delivery. This paper reports a study that develop quantitative index for affordable housing economics to enable suitable and accuracy of decision making process. This is achieved by measuring the factors that predicting the costs of affordable housing. The study involves survey questionnaire involving developers, contractors and a consultant. The study found that finance, developer's profit margin and compliance costs were the major costs contributing to affordable housing delivery. The research will be useful to the policy makers, developers, manufacturers, suppliers and buildings users.

INTRODUCTION

This paper reports part of ongoing research involving the development of models for affordable housing delivery. Shelter is a necessity. The provision of adequate housing is concern of government globally. The commitments of government towards providing affordable housing to all Malaysian are impressive. The provision of affordable and livable social housing is very critical particularly as the government is committed to encourage greater home ownership among the 'bottom 40% households'. By 2020, over 70% of Malaysians are expected to reside in the urban areas. The Greater Kuala Lumpur alone is expected to accommodate additional one million residents by 2020 (National Transformation Programme, 2010). Housing requirements are expected to remarkably increase due to the rapidly growth in population, increase in foreigners (expatriate, students and tourists), migration, changing economic status of the

citizens, change in tastes, and dilapidation of the existing stock. This will affect the low – medium, medium cost and high cost. While the requirements for housing need for the poor and low cost will remain, but emphasis will be shifted to vibrant house that is commensurate with the country status. To carter to the housing government has embarked on the provision of affordable housing. The concept affordable housing emerges in the 20th century after World War II. Affordable housing means different things to different people. However, the basic principle of affordable housing is the same as it is considered if the occupants or owner will not spend more than 30% of their income for the rent or mortgage payment (Sidawi, 2008; Queensland government-Department of housing, 2004). The aim of affordable housing is to provide the low and middle income groups homes that are adequate in all respects. Though, 'affordable housing" has many meanings and interpretation but is largely same. But one common basic trend that is common to all the

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different definitions is that it is a measure of the affordability of homes to the lower and the middle income earners. The primary factor that is used to determine the affordability of home is the disposable income of the household. To interpret, affordable housing is the housing that is priced below the median income of the society. In Malaysia the medium monthly salary is RM3, 626 (Department of Statistics, 2012). Based on this common standard, that is widely accepted, affordable housing should cost less or equivalent to 3X annual median income. On this basis, homes in Malaysia are one of the most expensive in the world. In the efforts to influence affordable housing economies, this study employed the Analytical Hierarchy Process (AHP), techniques to prioritise affordable housing cost. Providing affordable housing in Malaysia is high consideration, however, there are criteria that contribute to the cost of housing. A problem thereby arises on which variable is the most important and which requires less consideration. Authors often used the normal rating system based on measures of centers in making decisions of the cost distribution. But the results from the traditional methods are faced with criticisms due to inherent problems. The AHP is chosen because it can elicit the biasness of respondents in data as compared to the normal raring stating and can achieve higher consistency (Cheng

and Li, 2001). AHP is simple and adaptable to handling difficult real-life problems.

Literature Review:

Population in Malaysia are greatly increasing, in year 2010, the population is only 28.59 million, while in year 2015, the population increase to 30.44 million (Department of Statistics, 2015). Malaysia aims to be a fully developed country by the year 2020. The estimated population in year 2020 is 32.4 million, comprising 16.6 million male and 15.8 million female (Department of Statistics, 2015). While there high housing deficits, towards the 2020 and beyond more people will require homes. The residential unit in year 2013 is 4,725,109 units (NAPIC, 2014). A major interpretation on the above statistics is there are 6 people per house. This is considered high for typical house in Malaysia with 2 to 3 bedrooms. The housing prices have increased by a record margin. For instant, in year 2009 to 2014, the prices have increased by 12.3% annually all over the country (Khairie, 2013). Malaysia houses price on average cost much more than 3x annual median income, show in Table 1. In median income terms, Malaysia houses are more expensive than house in Ireland and even Singapore. (Khazanah Research Institute, 2014).

Table 1: Housing Prices as a Multiple of Annual Median Income

Country	Multiple
Malaysia	5.5x
Singapore	5.1x
US	3.5x
UK	4.7x
Ireland	2.8x
Hong Kong	14.9x

(Source: Khazanah Research Institute, 2014)

Malaysia mean monthly household income in 2012 was RM 5,000, but median household income was only RM 3,626 (Department of Statistic, 2013). See Table 2 for household's income in Malaysia

2012. In medium income term, affordable house are housing that cost around 3 times of 12 months medium income, which is [3 x 12 x RM3, 626 = RM130, 536] RM130, 536 per house.

Table 2: Household's Income in Malaysia 2012

Households Income (RM)	Percentage (%)
< RM999	5%
RM 1,000 - RM 1,999	17.6%
RM 2,000 - RM 2,999	15.9%
RM 3,000 - RM 3,999	16.7%
RM 4,000 - RM 4,999	11.1%
RM 5,000 - RM 5,999	7.8%
RM 6,000 - RM 6,999	6.0%
RM 7,000 - RM 7,999	4.5%
RM 8,000 - RM 9,999	5.7%
> RM 10,000	9.7%

(Source: Department of Statistic, 2013)

From table 2, it is obvious there are about 60% household that cannot afford to own a house, because their salary is below the median income. However, the government attempt to address housing shortages in various ways. For instance, the My First Home Loan Scheme was introduced. According to this

scheme, household who earn less than RM 5,000 per month or below, are eligible to apply for a 100% bank loan for a house instead of paying the 10% down payment (Shukry, 2013). However, the scheme is inconsistent and requires the eligible ones to pay RM 2,000 for a house with an RM 400,000 price tag

(Shukry, 2013). The house prices are rising exponentially and it will become more difficult for the middle and lower income class of Malaysian to afford a home in the future. There is a 40% difference between the demand for affordable housing and its supply in the country at the moment (Khairie, 2013). 80% Malaysians earn less than RM 6,900 per month and cannot afford houses priced at higher than RM 300,000 (Khairie, 2013).There is only 31.7% of the total number of housing units constructed in the year 2012 had a price tag below RM 250,000 (NAPIC, 2013). Those in middle group class are finding it very difficult to own a unit of house, thereby increasing the need for affordable housing.

Method of Data Collection:

The objective of this study is achieved through the Analytic Hierarchy Process (AHP). The AHP was due to Thomas Saaty in the 1970 because of the scarcity and resources allocations. It is powerful tools for prioritising criteria and making information decisions on the selections of alternatives. The Analytic Hierarchy Process (AHP) is due to Saaty (1980). The technique is suitable to different types of criteria, i.e. qualitative, quantitative and intuitive criteria comprehensively. The AHP technique is based on three principles: hierarchical structuring, weighting, logical consistency. It uses the pairwise comparison method to rank order alternatives of a problem that are formulated and solved in hierarchical structure. It decomposes complex problems into small sizes for meaningful comparison by taking into the shortcomings in human thinking. The AHP model deals with prioritising of decision making by reducing complex decisions to a series of pairwise comparisons and synthesizing the results. The consistency test embedded in the AHP allows it to adequately correct the lack of transitivity in the choices that respondents made (Olanrewaju and AbdulLateef, 2015). The consistency ratio, CR has set by Saaty (1994) has the acceptable metrics:

1. The CR value is 0.05 for a 3 by 3 matrix;
2. 0.08 for a 4 by 4 matrix,
3. For larger matrices. 10

The AHP serves two major purposes, namely to prioritise criteria and facilitate selection between various alternatives. However, for the purpose of this study, the techniques it selected to prioritise criteria contributing to the economies of affordable housing. The survey was based on conveniences sampling. In this method respondents were selected based on availabilities, accessibilities and experiences. The questionnaire was designed in accordance with the AHP requirements, the Saaty's preference scale, see Table 3. However, the questionnaire involves both closed ended and open ended questions, as to carter for information on the respondents' profiles. All altogether 5 respondents were involved. The respondents involve 2 developers, 2 contractors and one consultant. In this study, the five determinants for housing economics were selected based on pilot survey and literature review. In Figure 1 are the major determinants and their associated sub-criteria. In other words, the AHP technique was used to calculate the relative weights of these criteria and sub criteria. The criteria and sub-criteria were selected to meet the AHP requirements (Cheng and Li, 2001):

1. The element at level are related to the elements adjacent to it
2. There is not relationship between the elements of different groups at the same level.

AHP is a decision making model that aids in making informed decision in complex world. It is a involves three basics parts process which includes identifying and organizing decision objectives, criteria, constraints and alternatives into a hierarchy; evaluating pairwise comparisons between the elements at each level of the hierarchy; and the synthesis using the solutions algorithm of the results of the pairwise comparisons over all the levels. This study is only concerns with developing a weightage to cost criteria. In other words, the design objective is to evaluate the costs distribution for the housing cost and five major criteria identify. Each of five criteria has four or five sub-criteria.
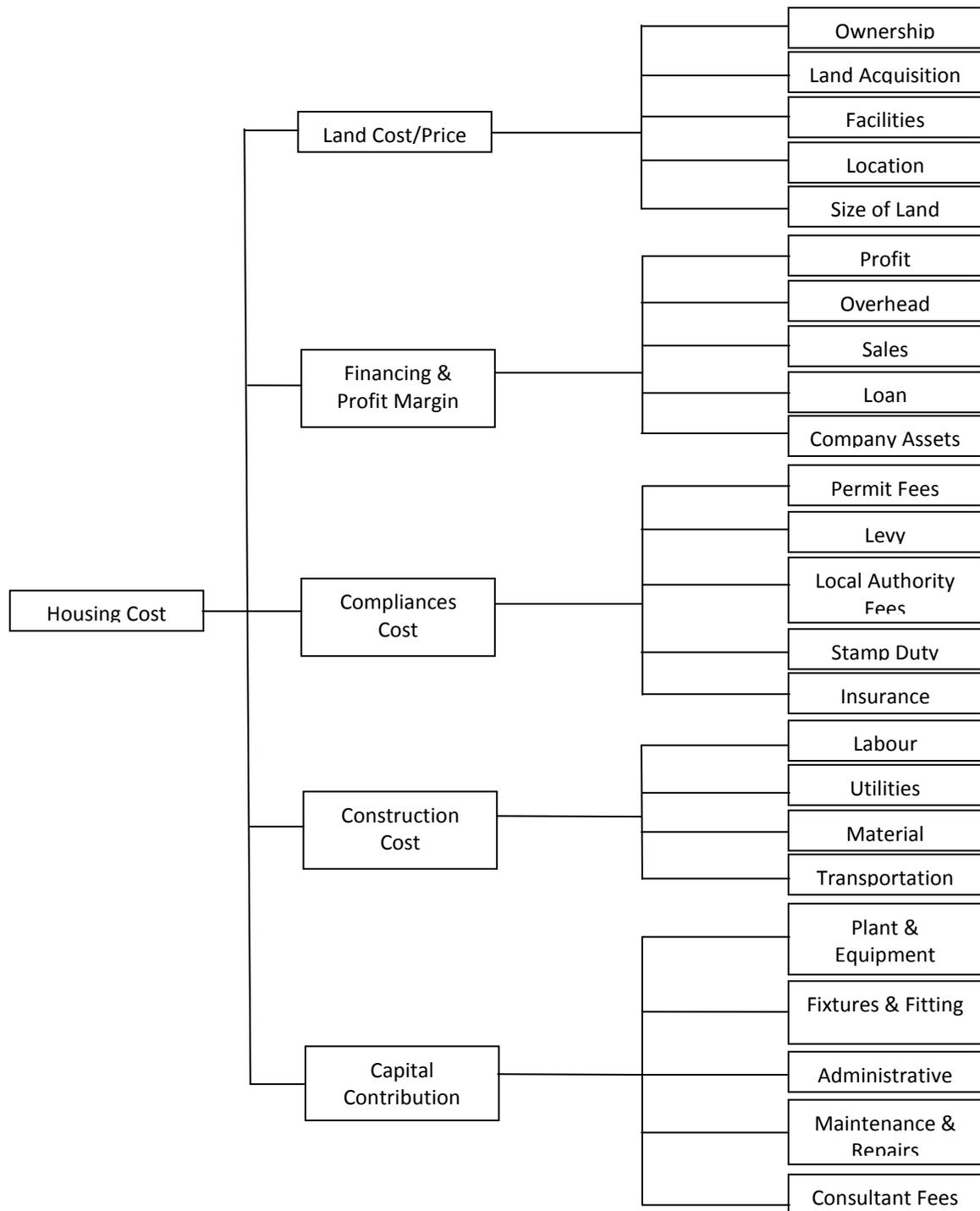
Table 3: Scale of Relative Importance

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Weak importance of one over another	Experience and judgment strongly favor one activity over another
5	Essential or strong importance	Experience and judgment strongly favor one activity over another
7	Demonstrated importance	An activity is strongly favored and its dominance demonstrated in practice
9	Absolute importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate values between the two adjacent judgments	
Reciprocals of above nonzero	If activity i has one of the above nonzero numbers assigned to it when compared with activity j, then j has the reciprocal value when compared with i	

(Source: Saaty, 1980)

Fig. 1: The AHP model for the Study

Findings And Discussion:
Respondents' Profiles:

Altogether, five respondents participated in the survey. Two were from the developer's organisations and two from contracting firms and one consultant. One of the respondents from organisations has about ten years working experience while the other has more than 20 years' experience. The two are into the development of high rise buildings and both were from Penang. In terms of working experience, the two from the contracting organisation are very similar from those from the developer's organisations. However, one of them was from Perak while the other is from Kuala Lumpur. Both specialized in the construction of high rise buildings. The consultant is construction project manager and has more than 20 years' experience in the construction industry. His business operations are mainly in Penang and specialized in construction of high rise building. Therefore, on the basis of the

profiles, the respondents have good understanding of the housing sector in Malaysia consequently their opinions are valid and reliable.

Weighting the affordable housing cost:

The survey found that the five variables have major influence on the economies of affordable housing. However, while financing and profit margin occupy the largest portion of the cost, the cost of construction contributes the least, see Figure 2. The other three are cited in between. Specifically, the major cost determinant for the financing and profit margin is the contractor's profit contributing more than 50%. As part of the cost of land, location of the site was found to be the major determinant, with contributions of more than 50%. Besides the cost due to location cost of facilities also make significant contributions. Permit fees and cost due to stamp duties accounts for more than 60% of the compliance cost. The survey also found that cost of materials and components and labour's wages were the two major issues in construction costs. Transpiration cost is not making much meaningful contribution. With respect to the capital cost, the surveyed found that apart from the costs due to fixture and fittings, administrative cost, maintenance cost and consultancy fees are quite significant.

From the survey findings, it is evident that the both developer and government play vital roles in the determination of the cost of housing. However, contrary to expectation, construction cost is not the major important. It was not expected that the financing and profit margin will be the highest variable cost of affordable housing. Therefore this research confirmed the observations by the developers in Malaysia are responsible for the increasing in housing cost. At 21%, the profit margins for Malaysia property developers are high, almost 2x those of the US (12%), 1.2x those of the UK (17%) and higher than Thailand (14%), although Singapore has higher margins (25%) (Khazanah Research Institute, 2014). Specifically, profit margin, represents what percentage of sales are left over after all expenses are paid by the business. Profit as benefit that is gained when the amount of revenue gained from a business activity exceeds the margin cost of cost of production, is healthy for the growth of business, however, when it is in excess, is affect the business in the long run. Later the demand side and supply will not be able to match together. The housing industry may be responding the housing price, but on long term possible effect is housing glut as the prospective home buyers might not be able to buy the homes of their. This will also affect many institutions if the prospective home buyers could not settle their mortgages. Therefore to propelled growth the housing industry, the developers should reduce the profit margin. But, to do this the government needs to set up some measures.

In between, the government needs to reduce the fees developers and contractors. From the survey, it is also evident from the survey that, the compliance cost is excessive. Basically the compliance costs are fees that the developers and contractors to governments. At the states levels, that amount varies often high. The costs are passed to the home buyers as the contractors / developers considered these as part of the input costs. Although there are cases of abuse, without significant reduction on these and close monitoring to avoid multiple charges, it is very likely that this make the housing cost to remain be high. The contractors' operation costs are also found to be making high contribution to the housing costs. These costs are the responsibility of the contractors, the government have not much significant only this. While these costs may not be adjustable; but with the help of proper management system, the developers and contractors could improve their operating costs. Contractors may choose to hire plants rather move from one state to their in case their works schedules are not in close proximity. Sound maintenance schedule for the plant and equipment provide alternative for saving cost. Lacks of proper maintenance of the equipment are cited and even sometime leading accidents. Recently, there is being frequent cases of dearth on construction sites.

Cost of materials and labour form the major variables contributing to the construction costs. But this bit surprising because the materials and components required for affordable housing could be sourced locally. However, may be government need to relax the import duties for certain construction materials. The contractors and material suppliers could form partnership (Black, et al., 2000). Utilities cost comprising cost of water, telephone electricity fees and others were cited to be major factors. The location of land is a very significant factor contributing to the cost land. Certainly there is close correlation between housing and it location. In real 'affordable housing' when cited in or close city areas they often beyond the means of those in low and middle income groups.
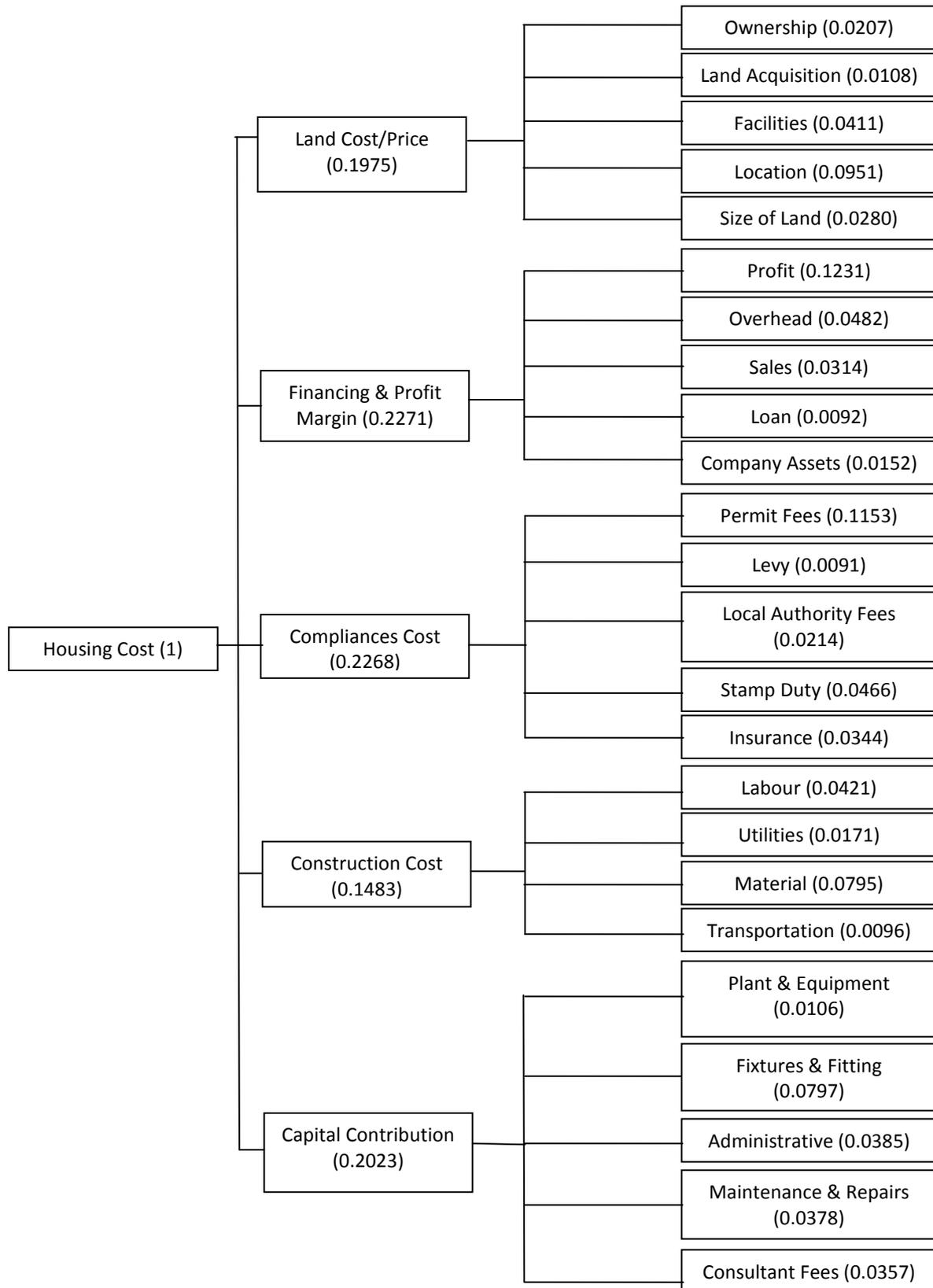
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Fig. 2: Hierarchy models of affordable housing cost

However, with government intervention, this is possible by balancing integration and economic

growth. Those in the low and middle groups working in the major cities have discovered that transportation cost hugely contributed to dwindle in their salary.

Conclusion:

This research found that to improve cost of affordable housing, both the government and developers have major roles to play. Profit and national growth should be tie together with social integration. In anticipation of the main research, this proposal has outlined a plan to proceed with the main research project. The need to supply affordable housing cannot be overemphasized enough, as this is the only way that the available resources can be put to maximum application without compromising the benefits of all stakeholders. Therefore, organisations, including developers and government could use these criteria to predict the cost of affordable housing more accurately as compared to using the traditional rating method.

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