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DETERMINANTS OF MORTGAGE REPAYMENT AFFORDABILITY AMONG MIDDLE INCOME HOUSEHOLD IN PENANG

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Universiti Utara Malaysia

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DETERMINANTS OF MORTGAGE REPAYMENT AFFORDABILITY AMONG MIDDLE INCOME HOUSEHOLD IN PENANG

By

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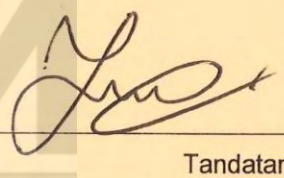

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ABSTRACT

The affordable houses are offered in urban cities are beyond the accessibility of middle income households due to high cost of living and heavy debt. The common issue have been discussed on homeownership is the eligibility to access the financing. However, the ability to pay the mortgage installment while maintaining basic necessities is also another issue that needs to be given an attention too. Hence, to have deep understanding on homeownership issue, this study will explore a new perspective by reviewing the repayment affordability of house buyers. This study will examine the determinants of mortgage repayment affordability among middle income households in Penang. The samples of this study comprising of middle income households who still pay for mortgage loans in the recent ten years. A total of 142 respondents have been chosen by using the convenience sampling to answer the questionnaires. Statistical Package for Social Sciences (SPSS) is use to run the analysis. The findings show that non-housing expenditures are significantly affecting the mortgages repayment affordability of medium and long term house buyers. Whereas, housing expenditure only gives an impact on medium term house buyers. Hire purchase, food and non-alcoholic beverages, child expenses and personal loan variables show a significant influence of housing expenditure toward mortgage repayment affordability of the middle-income households in Penang. However, an analysis on the house purchasing period shows only food and non-alcoholic beverages, and hire purchase are significant and influence repayment affordability of the medium term of house buyers. On the other hand, four variables namely children expenses, hire purchase, food and non-alcoholic beverages and communication are significant to long term house buyers. This paper brings this issue to the forefront as an effort for future research and to engage the policy maker to be conscious of the importance of the non-housing expenditure in homeownership issue.

Keywords: repayment affordability, housing expenditure, non-housing expenditure, household expenditure category, middle income households

ABSTRAK

Rumah mampu milik yang ditawarkan di kawasan bandar adalah di luar jangkauan isi rumah berpendapatan sederhana disebabkan oleh kos sara hidup dan hutang yang tinggi. Isu yang biasa diperbincangkan tentang masalah pemilikan perumahan ini ialah kelayakan pembeli rumah mengakses pembiayaan perumahan. Namun, keupayaan untuk membayar ansuran gadai janji sambil mengekalkan keperluan asas juga merupakan isu lain yang perlu diberikan perhatian. Oleh itu, bagi memahami isu pemilikan perumahan, kajian ini akan meneroka perspektif baru dengan mengkaji kemampuan pembayaran pembeli rumah. Kajian ini akan mengkaji penentu kemampuan pembayaran balik gadai janji di kalangan isi rumah berpendapatan sederhana di Pulau Pinang. Persampelan kajian ini terdiri daripada isi rumah berpendapatan sederhana yang masih membayar pinjaman gadai janji dalam masa sepuluh tahun. Seramai 142 responden telah dipilih menggunakan kaedah persampelan secara kebetulan untuk menjawab soal selidik. Pakej Statistik untuk Sains Sosial (SPSS) digunakan untuk menjalankan analisis kajian ini. Hasil kajian menunjukkan perbelanjaan bukan perumahan sangat memberi kesan kepada kemampuan membayar balik gadai janji pembeli rumah jangka masa sederhana dan juga panjang. Manakala perbelanjaan perumahan iaitu bayaran bulanan perumahan hanya mempengaruhi kemampuan pembeli rumah jangka masa sederhana. Pemboleh ubah sewa beli, makanan dan minuman bukan alkohol, perbelanjaan anak dan pinjaman peribadi menunjukkan perbelanjaan bukan perumahan memberi pengaruh yang signifikan terhadap kemampuan membayar balik isi rumah berpendapatan sederhana di Pulau Pinang. Namun apabila ujian dijalankan berdasarkan jangka masa pembelian rumah, hanya pemboleh ubah makanan dan bukan alkohol dan sewa beli signifikan mempengaruhi kemampuan membayar balik gadai janji bagi pembeli rumah jangka masa sederhana. Manakala hasil kajian untuk pembeli rumah jangka masa panjang menunjukkan empat pemboleh ubah yang mempengaruhi ialah perbelanjaan anak, sewa beli, makanan dan minuman bukan alkohol dan komunikasi. Kajian ini diharapkan menjadi usaha untuk penyelidikan di masa hadapan dan membantu penggubal polisi menyedari kepentingan perbelanjaan bukan perumahan dalam isu pemilikan perumahan.

Kata kunci: kemampuan pembayaran balik, perbelanjaan perumahan, perbelanjaan bukan perumahan, kategori perbelanjaan isirumah, isi rumah berpendapatan sederhana

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

House is a place or building that serves as a shelter to one or a family and to store valuable items (Keman, 2005) . It is an important component that needs to be owned in life. In Islam, owning a house is considered as one of the fundamental needs known as Maqasid ad daruriyyat (Shuid & Zamin, 2018), which defines the basic necessities of human life in the world and hereafter. There are five essential needs to be preserved in order to ensure the achievement of the goals of life in the world and in the hereafter (Kara, 2012). These needs are religion, soul, intellect, ancestry and property (Al-Badry, 2007). Property, such as houses is a basic necessity for people, where social values are learnt, and families are being built.

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In conventional perspective, Maslow (1943) with the Theory of Human Motivation states shelter as a physiological need that must be met before proceeding to the next level of needs. According to Martin and Loomis (2013), people need water to drink, food to eat and a shelter to live in before thinking about anything else. If these requirements are not fulfilled, the human body will not be working properly and fails to fully functioning. Moreover, Kim and Chatterjee (2019) and Marcussen (1990) describe a house as also contains the concept of safety and security and contributes to the physical and psychological health which plays an important role in people‟s wellbeings. Therefore, owning a house is the most important needs and a dream of every individual.

Homeownership is one of the current issues that is often discussed. House is not just a shelter; but it is important for social and economic development of households (Rameli, Salleh, & Ismail, 2016). This is because the house is one of the assets and investments that benefit the homeowners. The variety of homeownership‟s benefits have led many countries to put housing affordability issues as a country's priority (Rameli et al., 2016).

To date, there is no single agreed definition of housing affordability among practitioners or academicians. However, there are two core components that are mostly used in defining housing affordability; which are adequate accommodation, and adequate residual income (DTZ New Zealand, 2004). Australian National Housing Strategy defines housing affordability as a reasonable housing expenditure in relation to income (Cass, 1991). In order to measure the households‟ ability to own a house, both elements, the housing expenditure and household income must be considered and the cost of house should not exceed 30% of the households income (Freeman, Chaplin, & Whitehead, 1997). However, the continuous studies on housing affordability revealed that researchers began to agree that the housing affordability does not only concern about housing expenditure and household income but also about one's capability to obtain a house and to stay in it (Housing New Zealand Corporation, 2004) while maintaining the ability to meet other basic costs of living (Burke & Ralston, 2004).

According to DTZ New Zealand (2004), housing affordability can be viewed through three perspectives which are affordability for potential/ prospect homeowner, affordability for existing homeowner, and affordability for renter. In a study done by Gan and Hill (2009), the authors classified these perspectives into purchase affordability, repayment affordability, and income affordability.

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Firstly, purchase affordability is considering the ability of households to borrow enough funds to purchase a house. The group of people who intent to buy a house is known as prospect house buyers or would be homeowners can be categorized under this purchase affordability perspective (Gan & Hill, 2009).

Secondly, repayment affordability is concerned on the existing homeowners about their ability to pay for the mortgage. If the household have capability to pay the monthly housing expenditure and non-housing expenditure, the households have the affordability to own a house. In additional, an affordable house will not be considered as a burden cost to these households (Gan & Hill, 2009).

Thirdly, income affordability is referred to the measurement of house prices to the income ratio. This perspective concerns about the accessibility of one to purchase a house at their place for example existing renter. Does renter have the ability and affordability to purchase available house at the current place? Hence, income median house price to income ratios or also known as median multiple approach will be used in order to measure the affordability level of households. This indicates that housing affordability is not just concerning about the ability of people who intends to buy a house but also to those renting and people who have already bought a house.

The issue of housing affordability is a major global concern especially towards the households in the developed and developing countries (O'Flynn, 2011). In 2014, it is estimated that 330 million global households in urban areas live in substandard housing or having financial stress due to high housing expenditure (Bank Negara Malaysia, 2018). Cox and Pavletich (2016) stated that the most comprehensive international comparison

survey of housing affordability at the level of metropolitan area is the 12th Annual Demographic International Housing Affordability Survey which covers on 367 urban cities in nine countries which include Australia, Canada, Hong Kong, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States. This study measures the housing affordability among the middle income households. The Median multiple approach, which is recommended by World Bank and The United Nation, is used as the standard measurement to access housing affordability of the sample in this study. The median multiple approach divides the median income and median house price of the selected area to rate the housing affordability at that area. The result will indicate the housing affordability level of the area. If the calculated index is below 3.0, it indicates the houses price as affordable. Housing affordability index of 3.1 to 4.0 reflects a moderately unaffordable, while, 4.1 to 5.0 is seriously unaffordable and above 5.1 indicates the households at the area is facing a severely housing unaffordability issue. Each area has a different degree of affordability towards homeownerships. Urban area‟s affordable level is different comparing with the rural areas due to some others factors like income earn, cost of living, population, and others.

The result of the 12th Annual Demographia International Housing Affordable Survey found that Hong Kong is the most severely unaffordable country compared to other countries. The affordability index slope of Hong Kong aggressively outstripping other countries with the median multiple of 17.0 as shown in Figure 1-1 below. High Industrialization and urbanization in China have led to dramatic population growth in urban areas such as Hong Kong (Gong et al., 2012). The housing price is skyrocketing and affecting the low to middle income households living in the urban city, who could

not afford to buy their own houses (Cheng & Fung, 2015). In order to reduce housing problems, Hong Kong has built affordable houses in mainland China. However, the distribution of affordable housing did not achieve the goal of this program (Zheng, Shen, Wang, & Lombardi, 2015).

Furthermore, other developed countries such as the United States, the United Kingdom, Australia, New Zealand, Japan, Singapore, Canada and Ireland are also facing the same homeownerships problem but not as severely as compared to Hong Kong. Although these countries‟ housing affordability slope are below from Hong Kong but still it is beyond the normal affordable index which is 3.00. This indicates that urban cities in these developed countries are also facing serious unaffordable problem of homeownerships issues.

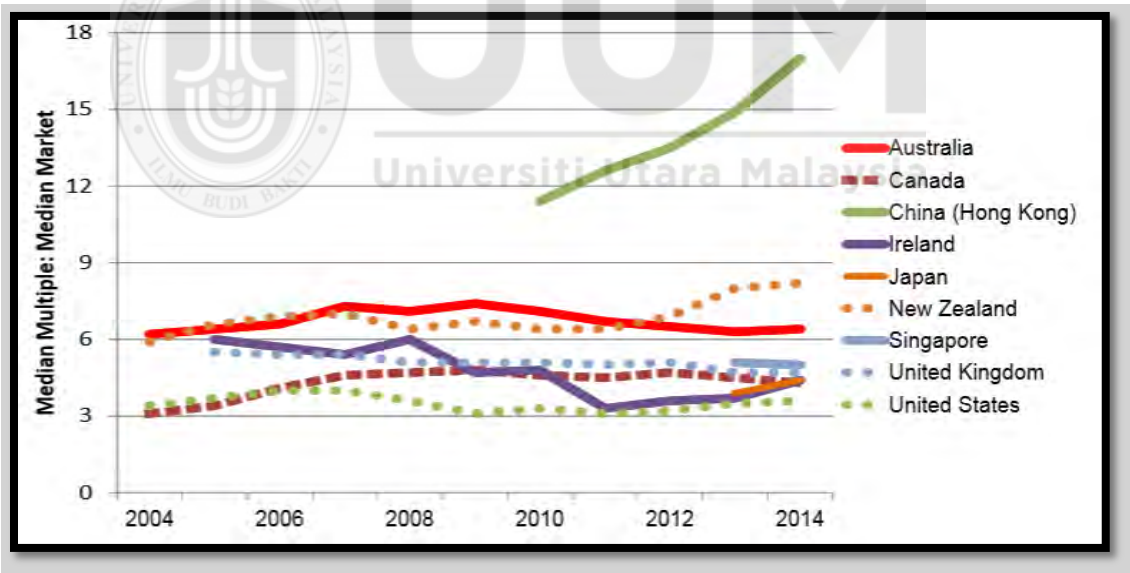

Figure 1-1
Global Housing Affordability Index according to country
Source: The 12th Annual Demographia International Housing Affordability Survey, W. Cox and H. Pavletich, 2016

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The crisis of housing affordability has been a critical issue worldwide including in Malaysia. Median multiple affordability for Malaysia in 2014 was 4.4 which is above the normal affordability of 3.0 and below (Bank Negara Malaysia, 2017). This situation reflects the seriousness of unaffordable issue of houses at national level where the average national house prices is 4.4 times of median income.

Wan, Noor Rosly, and Kuppusamy (2010) stated that the development of the housing sector in Malaysia is driven by three factors which are growing economy, the increase in population and high rate of urbanization. During the period of 2001 to 2009, Malaysia's house price growth was relatively stable, a gradual increase at an average of 3% annually. However, starting from 2010, the house price continued to increased sharply and reached 12% at the beginning of 2011 (International Monetary Fund, 2014). The increasing in house price is not good for Malaysia when the income level does not even reach 5% of growth per annual (Osmadi, Kamal, Hassan, & Fattah, 2015).

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The tremendous increased of house prices over the last decade especially in the major cities in Malaysia have caused inaccessibility to housing. This problem has greatly impacted the housing affordability of the low to middle income households who live in urban areas. In addition, several urban cities in Malaysia, such as Kuala Lumpur and Penang have housing affordability beyond the national index (Khazanah Research Institute, 2015).

In relating to that, the rapid growth of population as well as the high rates of migration from rural to urban area have added pressure to this housing affordability issue. Most of the migration comes to major cities to find a job in order to improve their life. The urban

areas such as Kuala Lumpur, Johor and Penang have been identified as the area with high demand for affordable house (Bank Negara Malaysia, 2018). A report of Malaysia housing affordability in 2014 by Khazanah Research Institutes (KRI) found major cities like Kuala Lumpur and Penang falls into severely unaffordable. Table 1-1 below shows the housing affordability across states in Malaysia for the year 2014.

Terengganu, which recorded 59.1% urbanization rate, have the highest housing affordability index compared to Kuala Lumpur and Penang. These two states recorded an urbanization rates of 100% and 90.8 % respectively (Khazanah Research Institute, 2015). The unaffordable situation in Terengganu is due to the low annual household‟s income compared to the median all house prices. The median house price in Terengganu is lower compared to Kuala Lumpur and Penang, and the income received by households in Terengganu is also less than the income received by households living in Kuala Lumpur.

Kuala Lumpur, which is a metropolitan state, ranked the second place with median multiple of 5.4. This state is expected to have low housing affordability since the median of all house price is the highest and unreachable by the low to middle income households in Malaysia. Penang, with median multiple of 5.2 ranked the third place after Terengganu and Kuala Lumpur. This signals that the median house price in Penang is 5.2 times over than the annual household‟s income. In the median multiple approach, house is considered as reasonable and affordable if the price is lower than three times of the household‟s annual income. Thus, it can be concluded that the households of those states are severely unaffordable.

Table 1-1
Comparison of housing affordability based on annual household median income and median all house prices across states in Malaysia for the year 2014.

State	Annual Household Median Income (RM)	Median All-House Price (RM)	Median Multiple Affordability
Terengganu	45,324	250,000	5.5
Kuala Lumpur	91,440	490,000	5.4
Penang	**56,424**	**295,000**	**5.2**
Sabah	44,940	230,000	5.1
Pahang	40,668	200,000	4.9
Kelantan	32,592	157,740	4.8
Perak	41,412	180,000	4.3
Perlis	42,000	181,000	4.3
Johor	62,364	260,000	4.2
Selangor	74,568	300,000	4.0
Negeri Sembilan	49,536	188,888	3.8
Sarawak	45,336	164,667	3.6
Kedah	41,412	140,000	3.4
Malacca	60,348	180,000	3.0

Source: Khazanah Research Institute, 2015

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1.2 Problem Statement

The Malaysian Government has taken an active action to overcome this affordability issue. Malaysia housing policy has been developed over the years through several national development plans in order to assure that housing prices are fair to all income levels. At the earlier stage of settlement by the government, the focus is more for low income group with several schemes announced during the eleven national development plans. Among the programs implemented are Program Rumah Mesra Rakyat (RMR), People Housing Program (PPR) and others. Although a number of government plans were implemented to help the low income households to purchase their own house, there is still not enough attention given on issues arise from the middle income households who wanted to own a house in major cities (Baqutaya, Ariffin, & Raji, 2016).

In 2014, the Middle income household category is for those who have income between RM3,860 to RM8,319 per month (Department of Statistic Malaysia, 2015) and increased to RM4,360 to RM9,619 per month for year 2016 (Department of Statistic Malaysia, 2017b) .This income group is also known as M40 which represents the percentages of the middle income household in the countries‟ population and the '40' represents 40% of the populations in Malaysia with this income group.

Dr. Yeah Kim Leng, the external member of Bank Negara‟s Monetary Policy Committee (MPC) also insists the government to aggressively overcome the shortage of affordable house among the middle income households especially in urban areas ("Housing affordability," 2014). Besides the unaffordable of house price offer in the market, the shortage supply of reasonable houses is also another issue that requires an immediate attention and solution by the government. According to the National Property Information Center, only 30% of the new houses priced below RM250, 000 were launched in 2015 and 2016 compared to 70% of the new houses launched in 2007 and 2008 (Bank Negara Malaysia, 2017). This shows the decreasing number of reasonable houses being developed for middle income to purchase. Furthermore, this shortage supply of reasonable house price is another main issue faced by middle income households in Malaysia.

Another issue that intense the middle income household is the houses price offer in the market especially in urban cities like Kuala Lumpur and Penang are beyond of their reach (Malek & Hussein, 2016). A study done by Mahamud, Khan, and Kamaruddin (2012) found that the homeownership among young citizens in urban areas are “impossible” and beyond the reach of middle income households. The critical issue for this income group

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is that they are not eligible to apply for low cost housing offer by government and yet could not afford to purchase houses especially in urban cities.

The Government of Malaysia has identified housing as a need of the people and one of the main components in the urban economy (Sood, Tawil, Hamzah, Che Ani, & Tahir, 2010). Therefore, government has taken several strategies to overcome this housing affordability issues facing by middle income household by introducing housing programs and scheme to suits the middle income households such as Malaysia People‟s Housing Program (PR1MA) and First House Deposit Financing (MyDeposit) Scheme. However, this government's assistance is seen as not achieving the target. The adjustment on PR1MA‟s conditions shows that the previous conditions are not capable to help most of the middle income household to own a house. PRIMA has loosen two of its policy in financing income qualifying RM10,000 and holding period of property of 5 years, in order to help more middle income households to own a house (Ghazali, Iskandar, & Osman, 2017).

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In addition, there are complaints from the households who win the draws of PR1MA house about the insufficient of finance problem faced by them especially involving high monthly housing payment, difficulty to provide 10% down payment and high priced of houses offered by PR1MA (“ Bantu Golongan Pertengahan,” 2016). Even though the middle income household has the eligibility and fulfilled the requirements, it does not mean that they are able to survive their monthly commitment and provide a down payment of 10% deposit. The houses in urban cities as offered by PR1MA is currently beyond the reach of fresh graduates and the lower-middle income households who have low wages and heavy debt commitment (Oorjitham, 2014). However, indirectly this

applicant's complaints can raise awareness to many parties especially the government about financing issue of PRIMA houses. It shows that the meaning of affordability in reality is different between the households and the government perspectives.

According to the newspaper article "Bantu Golongan Pertengahan" 2016) many households in Malaysia had participated in various housing schemes and mortgage loans without assessing their level of capability. Housing affordability is not about an access to the financial assistance for homebuyers but also the capability of the homebuyers to sustain the mortgage payment. Thus, having eligibility for housing loan does not guarantee those homeowners to be able to survive until the end of the mortgage loan and not putting more burdens the other household expenditures. According to the Malaysia Legal Affair Division (2016), housing loans commitment is the second largest reasons of bankruptcy among Malaysians with 12.04% for year 2016. This statistic proved that there are some of the mortgage loan borrowers who are unable to sustain the mortgage payment till the end of the term. Therefore, the households need to conduct a self-assessment on their financial ability before proceeding with the assistance provided by the government and apply for housing loans.

The Central Bank of Malaysia states that the issue of eligibility and access to financing is not a major problem faced by potential house buyers but the main issue that requires a solution are the shortage supply of affordable houses, and repayment affordability due to high living cost in urban cities (Bank Negara Malaysia, 2017). These costs include food, clothing, shelter, education costs and daily costs transportation costs and communication costs (Sabstu, 2014)

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Apparently, the cost of living is divided into two main categories which are daily and seasonal cost of living (Shaharuddin, 2016). The daily costs are expenses that incurred every day and are paid every month such as food, transportation, rental or mortgage installments, vehicle installments as well as monthly electricity bills, water, telephone, communication and so on. The other type of cost is the seasonal costs of living which are the expenses occur once or depending on the event and season such as expenses related to admission process of children to school, festive season, feast, and marriage season.

The rising cost of living is another urgent issue that intensifies the homeownership issues faced by the urbanite middle income households. This situation occurs due to high inflation rate which wes driven by an increased in prices of goods and services such as food and transportation costs. Other than higher demand for goods and services and weak currencies, the increment of income, which is lower compared to the increment in food price, also lead to the rising cost of living especially in urban areas (Mottain, 2017).

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The average food price increase is 3.6%, a rate higher than the overall inflation rate of 2.1% in 2016 (Department of Statistic Malaysia, 2017a). According to the Report of Household Expenditure Survey 2016, in selected urban areas like Kuala Lumpur, Selangor, Penang and Johor, the cost of feeding a family of five, taking into account the nutritional recommended by the Health Ministry is higher compared to the poverty line in Peninsular Malaysia which is RM930. Escalating food prices give huge impact as 94.6% of the households are spending a lot of money on food and non-alcoholic beverage categories compared to other household expenditure categories (Department of Statistic Malaysia, 2017a). The rising cost of living affects everyone, but it gives more pressure to low and middle income households than others group (Yuen, 2016). Being poor in urban

cities is harder than being poor in a rural area. The cost of living is cheaper in rural areas compared to urban cities (Yusof & Jamaluddin, 2018). Besides that, the poor households in rural area can still afford to have food by growing their own vegetables and rearing chickens at their land even they have low income. Unfortunately to urban poor, the households could not do that in flats in urban areas due to limited space and tight regulations (Yuen, 2016).

O'Flynn (2011) stated that in debating on the housing affordability, there is a part of issue needs to be analyzed and put into concern; which is the pressure on cost of living issues. The issues regarding cost of living has been one of the key focuses in the Malaysia Budget since the year 2014 until recent year (Ministry of Finance Malaysia, 2013, 2015; Office of The Prime Minister of Malaysia, 2016). An increase in cost of living will impact households" income which in turns makes them become poorer. Although the official cost of living metric by countries are difficult to obtain, including Malaysia, but the common cost of living calculations takes into account all of these prices; food, shelter, education, clothing, transportation, health care, utilities and entertainment (Dass, 2017). Thus indirectly, the rising cost of living will affect the changes in the household expenditure.

Truer than true, homeownership is the biggest decision for households because it requires large capital investment and it uses the largest part of household expenditure. Moreover, with the soaring housing market price and high cost of living nowadays, households will carefully think about the allocation for housing expenditure such as the monthly housing payment as well as unaffected allocation for non-housing expenditures of food, clothing, transport, medical care and education. Stone (2006) defined housing affordability as a

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connection between housing and people which means that homeownership is the family selection decision on household expenditure. This reflects the homeowners balancing act on the households spending that is very subjective and how the households are managing their spending between housing and other basic necessities to ensure they have comfortable life.

Subjective is influenced by or based on personal feelings, opinions or tastes. Thus, the context of subjective here means for some households, it is important to meet basic needs first such as food and utilities and the remaining income will be used to pay the most important debt or overdue debt. There is a high possibility that households may have late payment or skip the debt payment for the month. On the other hand, some households may choose to meet their debt obligations first and will use the remaining income to spend on other basic need. However, if households face inadequate income to meet their basic needs or debt burden, its mean the households are pressured by the cost of living which can led to mortgage stress.

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Furthermore, the calculation of mortgage eligibility also affects the future repayment ability of borrowers. The financing guidelines are provided to protect borrowers by ensuring that borrowers are capable to pay their financial obligations. The financial institution will offer funding to all eligible borrowers and only reject applicants who are clearly unqualified to take on additional debt and have a bad repayment history.

Debt Service Ratio (DSR) is used by banks to calculate the eligibility of a loan for borrowers. Each bank will have their own method and standard in calculating borrower‟s income, commitment and also different maximum allowable DSR thresholds. However,

the fundamental of DSR calculation will not be different too much from one bank to another. DSR shows how much of the person‟s income is used to pay the installment of debt (Drehmann, Illes, Juselius, & Santos, 2015). DSR is derived from two main components which are commitment and income.

$$Debt\ Service\ Ratio\ (DSR) = \frac{Commitments}{Income}$$

These two components are important to calculate one‟s eligibility for borrowing. Borrower need to have income in order to apply for a loan. There is no way for a borrower to pay their loans without an income. Income is important to determine the amount of loan that can be approved with the DSR range.

For other component which is the borrower‟s commitment, includes all existing debt or new loan from any banks or creditors. This customer's creditworthiness information will be reflected in the Central Credit Reference Information System (CCRIS) report which can be obtained from database of Bank Negara Malaysia. This CCRIS report is one important tools used by loan officers in making decisions to approve borrower‟s applications (Bank Negara Malaysia‟s Credit Bureau, n.d). Generally, CCRIS report have details of all existing and in progress of borrower‟s credit facilities such as car loan, housing loan, personal loan, education loan and credit card.

As seen, DSR calculation takes into account the monthly commitments to credit facility only. Other commitments which are not available on CCRIS report are not included. These commitments, which also requires a monthly payment, is better known as non-housing expenditures can be categorized as food necessities, child expenses,

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transportation cost or communication expenses. In additional, the credit purchase of house electronics appliances is one of popular facilities that is often used by households nowadays. This purchase also requires monthly commitment from households. If the eligibility calculation is not comprehensive and easy to approve housing loan, it will contribute to the delinquency of the mortgage payment crisis such as the subprime crisis in 2007 to 2010 (Rushton, 2007).

Most of the study concern on the eligibility to get loan and purchases but only few studies concerns about one‟s ability to sustain the payment of housing installment while maintaining the other basic consumption. With the rising cost of living which impacts on middle income household, there is a possibility that non-housing expenditure also affects their repayment affordability instead of only housing price itself. Many of the households who live in urban areas are unable to live happily due to the cost of living which is high than their income. The high cost of living issues need serious consideration as it does not only affect the housing affordability but also affecting the household's psychology, social and safety (Sabstu, 2014) which lead to other problems such as poverty, criminal (Sulaiman & Hashim, 2011) limitation to access education, skills and opportunities (Yuen, 2016).

All these issues are interrelated and it can be solved with correct actions taken by relevant authorities. Therefore, this study will determine the household expenditure categories which influence mortgage repayment affordability of middle income households in Penang. The household expenditure categories need be considered to ensure that they can maintain the basic necessities without any burden while having good credit rating.

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1.3 Research Questions and Research Objectives.

Research Questions	Research Objectives
Which category of non-housing expenditure is significantly influences the repayment affordability of middle income households in Penang?	To identify the category of non-housing expenditure that significantly influences the repayment affordability of middle income households in Penang.
Which category of non-housing expenditure is affecting the mortgage repayment affordability of middle income households in medium term and in long term?	To identify the category of non-housing expenditure that affect mortgage repayment affordability of middle income households in medium term and in long term.
Is the housing expenditure or non-housing expenditure has the highest impact on mortgage repayment affordability of the middle income households in medium term and in long term?	To determine whether housing expenditure or non-housing expenditure has the highest impact on mortgage repayment affordability of the middle income households in medium term and in long term.

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1.4 Significance of Research

Based on the research objectives, it is hoped that the findings of this study will benefit both parties directly or indirectly.

- Potential house buyer

  Most of the first house buyers have no or less experience and guidance on the house purchase process which can help to properly measure their purchasing power. Through this study, the potential buyer may have better understanding on their repayment affordability by knowing the cost of living‟s components that affect their level of financial capability. By knowing the appropriate portion to be allocated for the living cost component, it can help house buyers to make decision according to their ability to repay the mortgage installment and this in turnsgives less burden in the future. This is because the calculations for housing loan eligibility only cover commitments to debt which are recorded in the CTOS system. Whereas the rising cost of living also needs to be taken into account as households need to allocate money for this component in order to have sustainable and healthy life. The high burden to repay housing loans as well as the failure to maintain serving for other basic necessities in urban areas leads to the tendency to encounter repayment delinquency and foreclosure.

- Researcher

  The results of this study can be used as the basis, guidance and knowledge regarding the pattern of household expenditure of middle income households in Penang who are buying houses. With the data survey obtained, we can analyze the ability to

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repayment of house buyers if they are stressed with the rising cost of living in the urban city.

1.5 Scope and Limitation of Research

Several scopes of the study have been outlined to ensure the objective of the study is achieved. Due to limited time and constrains to access primary data, the scope of the study will focus on several things as follows:

1. The selected study area is within Mainland and Island area in Penang.
2. This study focuses on the middle income households who buy houses in Penang during the period of 10 years recently.
3. Data analysis based on the feedback from surveys through questionnaires is distributed into two groups of middle income households buying house in Penang. The first group is the house buyer in the medium term of one to five years period and the second group is for house buyers in the long term- six to ten years.
4. This study will focus on the household expenditure trends that basically included in their monthly allocation, in order to have comfortable life such as food, utilities, transportation, child expenses, insurance, communication, entertainment, and financial commitments to debtors.

The main constraint in this study is the data. The primary data have difficulty to obtain of some confidential consumer data due to the Personal Data Protection Act 2010 (Department of Personal Data Protection, 2016). Therefore, there may be some issues on topics that may not arise if these issues are not common to some states or cities which are not covered in this study. The other limitation in this study is conducting research in

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Penang as this state is one of the urban areas which have high cost of living and low homeownership levels. Therefore, finding the homeowners who buy a house in Penang within these recent ten years is quite challenging.

Besides, accessibility to primary data is also a constraint as the confidentiality of information by some respondents and time constraints to interview respondents. Most respondents do not have the time to be interviewed face to face. In addressing this limitation, the questionnaires were left for two weeks to ensure that the respondents can answer without any insistence that may deteriorate the quality of data obtained. In addition, respondents are assured that their information is confidential and only to be used for research matter.

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1.6 Organization of the Research

This study is organized as follows:

- Chapter 1: Introduction

  This introductory chapter will give a general overview of the issues arising on the topic of the study conducted. The section also relates the basic needs of a house, the homeownership issues which are crucially debated by many countries and the rising cost of living that influences the repayment ability of house buyers. The main content is related to the introduction of the topics, problem statements, objectives of the study, significant of the study, scope and limitations of the study and chapter layout.

- Chapter 2: Literature Review

This chapter elaborates the theory related to the topic of the study. Previous studies are also discussed in this section. This study used primary data (questionnaire) and secondary source of data derived from newspapers, internet sources, journals, articles and various sources of reading.

- Chapter 3: Research Methodology

The research methodology covers the methods and approaches used to achieve the objectives of the study. This chapter also describes the process of the study from identifying problems until the suggestions and improvements to these problems. In this chapter we discuss the dependent and independent variables including the theory used, the conceptual framework and the research design.

- Chapter 4: Data Analysis and Research Findings

This chapter is the most important stage in the study because at this stage the data obtained from the respondents will be conducted and analyzed. Collected data from the questionnaires will be statistically analyzed using Statistical Package for the Social Science (SPSS) and Microsoft Excel software. The analysis of the result will include additional evidence by presenting the percentage of income that are allocated by respondents for the variable which strongly influence their mortgage repayment affordability.

- Chapter 5: Conclusion

In this chapter, the study will restate the main point and findings of the thesis and summing up the overall findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Housing and Property in Penang

Housing issues are often the main agenda in social and political discussions in most countries. Housing also plays a very important role for the economy of a country as it is not only for consumers but also as investments. According to Jordà, Knoll, Kuvshinov, Schularick, and Taylor (2017), investment in housing and properties has been the best investment over the last 150 years. Therefore, housing does not only create stability and a healthy society, but it is also a sector that can stimulate the economy (Khan, Mahamud, & Kamaruddin, 2012).

Most researchers often use the house price index (HPI) to calculate house price movements. The objective of the house price index is to show how much house price changes over time. This index is issued by the Valuation and Property Services Department. The information of the house price index that includes house types and locations is beneficial to property investors and prospective investors for making good decision.

Based on the graph below (Figure 2-1), house prices are rising every year from 2013 to 2016. For example, all houses priced at RM100, 000 in 2010 have predictably increased to RM186, 000 in 2017 as shown in Table 2-1 as released by the Valuation and Property Services Department. This indicates that house prices have almost doubled in seven years. The increasing price of all types of houses has indirectly affected the households from various income levels. In addition, the increase in house prices more rapidly than

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household's income has become a problem in providing affordable houses. High housing prices in the market have caused most households to not have enough fund to buy a house.

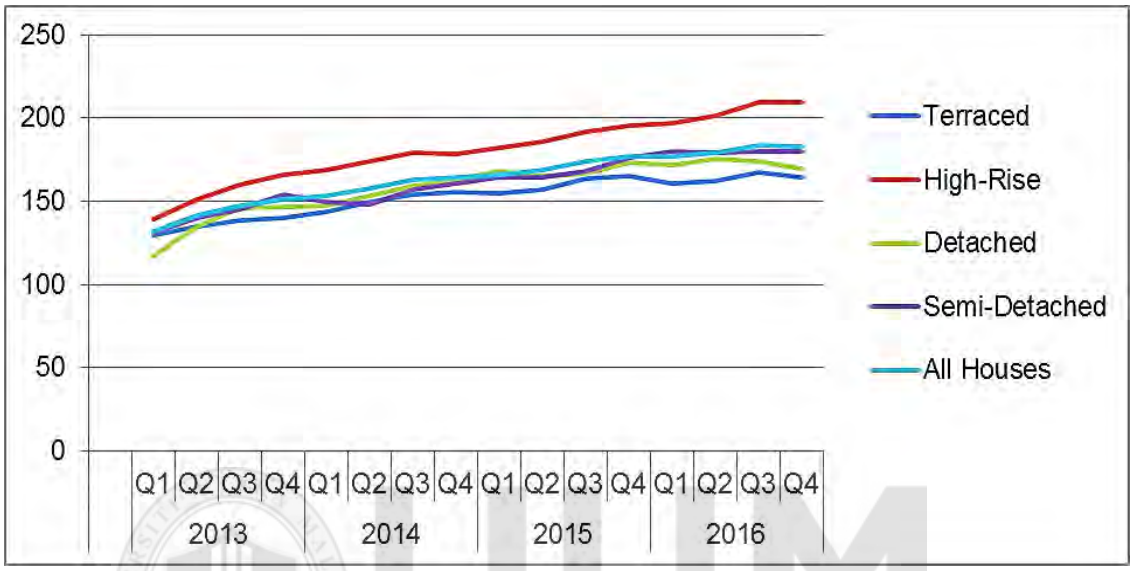

Figure 2-1
Penang House Price Index, Q1 2013 – Q1 2017
Source: Valuation and Property Services Department, 2017

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Table 2-1
Penang House Price Index, Q1 2013 – Q1 2017

Penang House Price Index, Q1 2013 – Q1 2017						
Year	**Quarter**	**Indices**				
		Terraced	**High-Rise**	**Detached**	**Semi-Detached**	**All Houses**
Weight (2010=100)		34.2	52.2	3.6	9.9	100
2013	Q1	129.6	139.1	117.3	131.1	132.2
	Q2	134.7	151.4	135.2	140.4	141.3
	Q3	138.7	159.7	146.3	144.9	147.3
	Q4	140.3	165.8	146.6	153.9	151.3
2014	Q1	143.7	169	147.4	149.9	153.5
	Q2	149.6	174.3	153.3	148.2	158.1
	Q3	154	178.9	159.5	157.3	163.1
	Q4	155.4	178.5	163.1	161	164.4

Table 2-1 (Continued)

2015	Q1	154.6	182.3	168.2	164.7	165.6
	Q2	157	186.2	165.1	164.4	168.5
	Q3	163.7	192.1	166.4	168.2	174.2
	Q4	165.2	195.6	173.2	176.4	177.3
2016	Q1	161.1	196.8	171.9	179.6	176.9
	Q2	162.4	201.4	175.5	179.1	179.1
	Q3	167.5	209.5	173.9	180	183.8
	Q4	164.6	209.6	169.7	179.9	182.9
2017*p	Q1	168.1	211.5	178.9	181.8	186

Source: Valuation and Property Services Department, 2017

2.1.1 Houses by Types and District in Penang

Penang had 407,107 units of existing housing as at the end of December 2016 (National Property Information Centre, 2017). Tables below show the numbers of houses launched and sold according to types and districts from year 2011 to 2015 in Penang. In 2011, the total houses built in Penang was 2,867 units, followed by 1,956 units in 2012, 1,745 units in 2013, 2,935 units in 2014 and 2,009 units in 2015, respectively. Almost 57% of the houses comprise of high rises house types. A high rise building is also known as a tall building or a tower block such as condominiums, apartments and lower-cost flats. As recorded in Table 2-3 below, the high rises residentials are mostly built at the North East and South West of Penang or the Penang Island. More than 80% of all housing units on the island are built of high rises types due to its inherent scarcity of land. The prices offered were as low as RM 250,000 to RM 1.53 millions in 2011. However, no more high rise residential were offered at a starting price of RM250,000 for the next year. The starting price offered had increased to more than RM550,000 for condominiums and

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apartments in Penang Island. Therefore, the house price index for high rises houses has been dramatically increased every year as compared to the other types of houses.

There is another type of high rise houses other than condominiums and apartments. Low cost flats were built in 2011 and 2012, in line with the aim of the government to assist low income households to own a house ("13,666 unit rumah kos rendah," 2011). The price offered for this flat was RM42, 000 and it was only eligible to Penang citizens with low income. On the other hand, the mainland with bigger land areas has provided more landed houses such as terrace houses, detached houses and semi-detached houses. Only few units built had priced below than RM200, 000 while the rest was above that price. In 2012, there were houses with price offered starting from RM278, 000 to RM 295, 000. However, in the following year, no such price was offered and house prices had increased is in the range of RM300, 000 to RM 1.3 millions.

The increments of house price in Penang have led to housing affordability crisis among citizen especially for middle income households. The middle income households are those people who are trapped between not eligible to apply for low cost houses and also cannot afford the house prices offered in the market. With a house price of RM 300,000 and above, the borrower must have a minimum monthly income of RM3, 500 and a monthly installments must not exceed 30% of monthly income to meet other basic needs. Based on the current market, the interest rate is about 4.2% to 4.4% per annum for housing loans. Borrowers need to allocate at least RM1, 368 per month for the next 30 years to finance a 90% house loan at a price of RM300, 000. However, the amount of monthly installment given is exceeding the 30% of borrowers with minimum income. Unfortunately, these rough estimations are not realistic to be used by prospect house

buyers and the desire to buy this house may be just a dream. According to Bank Negara Malaysia Annual Report 2016, individuals with income of RM5, 000 are able to finance the house purchased up to RM283, 000 and income of RM10, 000 for house price up to RM515, 000 by taking into account the current situation in Malaysia including the DSR average. However, the report also informed that only 35% of new houses in the market are affordable. Whereas, the remaining houses are offered above RM500,000 as well as in Penang as shown in table 2-2 below. The high cost of living especially in urban areas has influenced the ability of prospect buyers and also current mortgage borrowers.

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Table 2-2
Newly Launched Houses by Types and District in Penang for 2011 to 2015

2011				
DISTRICT	**HOUSING TYPES**	**NO. OF UNITS**	**PRICE (RM)**	**SALES (%)**
South West	3 Storey Terraced	149	898,880.00	66.40
	Double Storey Semi-Detached	12	715,000.00	16.70
	Double Storey Detached	4	1,041,000.00	-
	Low Cost Flat	165	42,000.00	-
	Kondominium/Apartment	771	250,000 - 561,260	4.00
North East	Double Storey Semi-Detached	38	990,000.00	39.50
	Kondominium	190	1,530,000.00	-
Southern Seberang Perai	Single Storey Terraced	114	80,000.00	14.00
	Double Storey Terraced	105	228,000.00	40.00
	Single Storey Semi-Detached	110	90,000 - 210,550	46.40
	Double Storey Semi-Detached	148	526,643.00	5.40
	Town House	226	38,000.00	-
Central Seberang Perai	Single Semi-Detached	96	279,194 - 380,000	75.00
	Double Semi-Detached	100	467,000.00	23.00
	3 storey Semi-Detached	20	632,160.00	85.00
	Double Storey Detached	30	545,000.00	13.30
	3 Storey Detached	5	741,134.00	60.00
Northern Seberang Perai	Single Storey Terraced	136	181,800.00	73.50
	Double Storey Terraced	137	258,000 - 305,100	32.80
	3 Storey Terraced	31	305,000.00	22.60
	Single Storey Semi-Detached	88	295,000 - 314,900	45.50
	Double Storey Semi-Detached	44	393,400.00	79.50
	Kondominium/Apartment	148	229,000.00	75.00
TOTAL		**2867**		

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Table 2-2 (Continued)

2012				
DISTRICT	**HOUSING TYPES**	**NO. OF UNITS**	**PRICE (RM)**	**SALES (%)**
South West	3 Storey Terraced	95	618,000.00	63.20
	Double Storey Semi-Detached	-	-	-
	Double Storey Detached	-	-	-
	Low Cost Flat	165	42,000.00	-
	Kondominium/Apartment	-	-	-
North East	Double Storey Semi-Detached	-	-	-
	Kondominium	684	612,000.00	70.50
Southern Seberang Perai	Single Storey Terraced	42	173,000.00	26.20
	Double Storey Terraced	230	318,000 - 378,000	87.80
	Single Storey Semi-Detached	24	278,000 - 295,000	50.00
	Double Storey Semi-Detached	192	538,000 - 570,000	34.90
	Town House	-	-	-
Central Seberang Perai	Single Semi-Detached	-	-	-
	Double Semi-Detached	68	476,400 - 680,000	58.80
	3 storey Semi-Detached	16	683,800.00	81.30
	Double Storey Detached	43	570,300.00	27.90
	3 Storey Detached	28	672,800 - 1,188,000	7.10
Northern Seberang Perai	Single Storey Terraced	105	199,900.00	100.00
	Double Storey Terraced	58	360,900.00	6.90
	3 Storey Terraced	48	758,000.00	-
	Single Storey Semi-Detached	20	376,400.00	25.00
	Double Storey Semi-Detached	138	362,000 - 472,200	68.10
	Kondominium/Apartment	-	-	-
TOTAL		**1956**		

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Table 2-2 (Continued)

2013				
DISTRICT	**HOUSING TYPES**	**NO. OF UNITS**	**PRICE (RM)**	**SALES (%)**
South West	3 Storey Terraced	19	1,248,160.00	36.80
	Double Storey Semi-Detached	-	-	-
	Double Storey Detached	-	-	-
	Low Cost Flat	-	-	-
	Kondominium/Apartment	1,024	560,000.00	80.00
North East	Double Storey Semi-Detached	-	-	-
	Kondominium	-	-	-
Southern Seberang Perai	Single Storey Terraced	14	145,000.00	50.00
	Double Storey Terraced	646	378,000 - 438,000	80.50
	Single Storey Semi-Detached	-	-	46.40
	Double Storey Semi-Detached	-	-	5.40
	Town House	-	-	-
Central Seberang Perai	Single Semi-Detached	36	317,500.00	19.40
	Double Semi-Detached	6	658,000 - 438,000	-
	3 storey Semi-Detached	-	-	-
	Double Storey Detached	-	-	-
	3 Storey Detached	-	-	-
Northern Seberang Perai	Single Storey Terraced	-	-	-
	Double Storey Terraced	-	-	-
	3 Storey Terraced	-	-	-
	Single Storey Semi-Detached	-	-	-
	Double Storey Semi-Detached	-	-	-
	Kondominium/Apartment	-	-	-
TOTAL		**1,745**		

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Table 2-2 (Continued)

2014				
DISTRICT	**HOUSING TYPES**	**NO. OF UNITS**	**PRICE (RM)**	**SALES (%)**
South West	3 Storey Terraced	5	650,000.00	100.00
	Double Storey Semi-Detached	10	854,000.00	50.00
	Double Storey Detached	-	-	-
	Low Cost Flat	-	-	-
	Kondominium/Apartment	1,000	584,000.00	47.00
			-	
North East	Double Storey Semi-Detached	0	665,000.00	-
	Kondominium	977	1,530,000.00	75.00
Southern Seberang Perai	Single Storey Terraced	62	350,000.00	20.00
	Double Storey Terraced	284	468,000.00	40.00
	Single Storey Semi-Detached	32	455,000.00	20.00
	Double Storey Semi-Detached	16	685,000.00	20.00
	Town House	-	-	-
Central Seberang Perai	Single Semi-Detached	-	-	-
	Double Semi-Detached	4	882,420.00	20.00
	3 storey Semi-Detached	64	889,000.00	40.00
	Double Storey Detached	98	598,000.00	40.00
	3 Storey Detached	57	1,100,800.00	40.00
Northern Seberang Perai	Single Storey Terraced	224	175,770.00	40.00
	Double Storey Terraced	59	530,000.00	20.00
	3 Storey Terraced	33	474,550.00	20.00
	Single Storey Semi-Detached	-	-	-
	Double Storey Semi-Detached	10	709,690.00	20.00
	Kondominium/Apartment	0	-	-
TOTAL		**2935**		

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Table 2-2 (Continued)

2015				
DISTRICT	**HOUSING TYPES**	**NO. OF UNITS**	**PRICE (RM)**	**SALES (%)**
South West	3 Storey Terraced	107	1,388,800.00	49.50
	Double Storey Semi-Detached	-	-	-
	Double Storey Detached	-	-	-
	Low Cost Flat	-	-	-
	Kondominium/Apartment	432	1,150,000.00	40.00
North East	Double Storey Semi-Detached	-	-	-
	Kondominium	1,219	1,150,000.00	40.00
Southern Seberang Perai	Single Storey Terraced	148	300,000.00	81.10
	Double Storey Terraced	-	-	-
	Single Storey Semi-Detached	-	-	-
	Double Storey Semi-Detached	-	-	-
	Town House	-	-	-
Central Seberang Perai	Single Semi-Detached	-	-	-
	Double Semi-Detached	-	-	-
	3 storey Semi-Detached	30	908,000.00	100.00
	Double Storey Detached	-	-	-
	3 Storey Detached	-	-	-
Northern Seberang Perai	Single Storey Terraced	-	-	-
	Double Storey Terraced	-	-	-
	3 Storey Terraced	73	352,000.00	27.40
	Single Storey Semi-Detached	-	-	-
	Double Storey Semi-Detached	-	-	-
	Kondominium/Apartment	-	-	-
TOTAL		**2,009**		

Source: Valuation and Property Services Department of Penang, 2016

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2.2 The Underpinning Theories

This section discusses the underpinning theories used in this study. There are two theories adopted namely Abraham Maslow theory of human motivation and the drift theory of consumption. The first theory explains the importance to own a house while the second theory focuses on the household consumption.

2.2.1 A Theory of Human Motivation

House is a human basic necessity to live. This is proposed by Maslow (1943) in his paper "A Theory of Human Motivation". The most essential and four basic layers of the pyramid are called „deficiency needs" as shows in Figure 2-2 below. They are physiological needs, security needs, friendship and love needs and esteem needs. Maslow's theory stated that physiological needs must be met before proceeding to the next level of needs. Physiological needs are the physical requirements for human to survive such as air, food, water, clothing, shelter, sleep and excretion (Bender, 2012). According to Martin and Loomis (2013), people need water to drink, food to eat and a place as a shelter before they think about anything else. If these requirements are not met, the human body will not work properly and fail. Moreover, De Sa (2017) says a house also contains the concept of safety and security and contributes to the physical and psychological health which plays an important role in people"s well beings. Therefore, owning a house is the most important needs and dream of every individual. Government of Malaysia has identified housing as a need of the folk and one of the main components in the urban economy (Sood et al., 2010). However, it is not about the house itself, the affordability is the main concern to the households. Eligibility for mortgage loan does not ensure that the household will not have any problem after purchasing the house. How the

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household will sustain the repayment of the mortgage and at the same time maintain a comfortable living in urban areas is an issue that needs an attention. The high price of houses and the rise in cost of living nowadays have brought some impacts on households especially the low to middle income households.

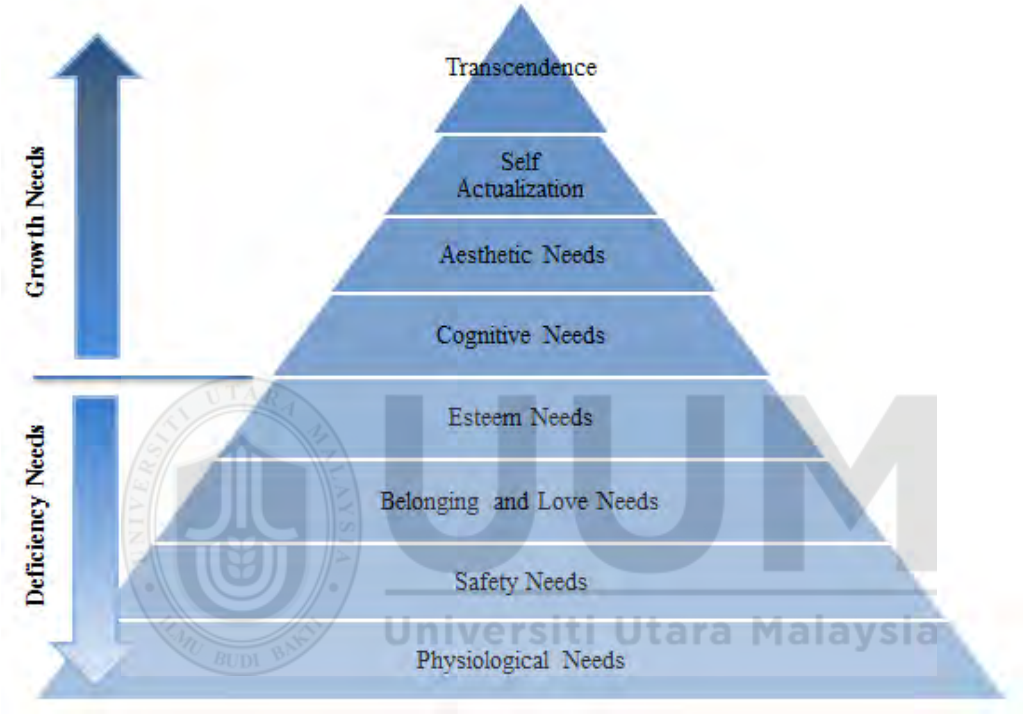

Figure 2-2
Maslow's Motivation Model
Source: Helena Bender, 2012

2.2.2 Drift Theory of Consumption

The second underpinning theory in this paper discusses the drift theory of consumption developed by Arhur Smithies and James Tobin. Consumption is an action or activity of using up a resource (Hermanto, 2015). In a simple word, Corporate Finance Institute (n.d) defined consumption as „the use of goods and services by a household".

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This drift theory of consumption is the first attempt to reconcile the short run and long run consumption functions (Chand, n.d). The consumption function was introduced by John Maynard Keynes in 1936 (Keynes, 2018). Thus, the name of this theory is also called as Keynesian Theory and Absolute Income Hypothesis (Foster, 2018). This consumption function is an economic formula that represents the functional relationship between total consumption and disposable income(Keynes, 2018). Keynes stated that the household's consumption level only depends on its absolute level which is the current level of income and ignores the potential future income. As the income rises, the consumption will also rise but not necessarily at the same rate. That means income consumption relationship is not proportional.

Then, Arhur Smithies and James Tobin tested the consumption function theory in separate studies. They found that the short run relationship between consumption and income is non-proportional while the time series data shows the long run relationship is proportional. The income consumption relationship shows an upward shift or drift in the short run non proportional due to factors other than income. This means that besides household disposable income, other factors have determined the household consumption level. The following factors are asset holdings, new products, urbanization, decline in saving motive, consumer credit and expectation of income increasing (Chand, n.d; Friedman, 2018; Tobin, 1952, 1971).

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1. Asset Holdings

An asset is a resource that has economic value or simply defines as anything that can be converted into cash (Borone, 2019). Assets can be owned or controlled by an

individual, corporation or country with the expectation that it will benefit future (Borone, 2019). In this study, an asset holding means any resources that a household owns. There are various types of personal assets and might be in kind of:

I. Cash and cash equivalents is an assets that have high liquidity. Cash means money in the physical form of currency such as coins and banknotes. Whereas, cash equivalents are assets that can be easily converted into cash such as checking, savings accounts, certificates of deposit, treasury bills and money market accounts (Folger, 2018).

II. Property or land assets are also called as real estate. This type of asset is any structure that fixed permanently or attached to one location such as land or buildings (Kagan, 2018)

III. Personal property is any asset owned other than real estate. Personal property is a movable asset and does not fixed permanently to one location such as collectibles, jewelry, boats and household furnishings (Kagan, 2018).

IV. Investment asset is an asset that is held with the speculation to producing additional income or increase the value in future (Chen, 2018). The example of investment assets are annuities, mutual funds, stocks, bonds, the cash value of life insurance policies and retirement plans.

The diversity of household assets holding varies according to their wealth distributions (Bertaut & Haliassos, 2006). In particular, low income households often hold mostly liquid assets and vehicles with a few numbers of low income households who own a house (Mariotti, Mumford, & Pena-Boquete, 2015). For middle income households, the number of households with real estate asset increase and the

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mortgage loans are important for this group (Fessler, Lindner, & Schürz, 2019). Lastly, high income households are more likely to include risk-taking assets in the form of private business assets. (Gentry & Hubbard, 2004). Equity is one of the assets that is held by this group and is less relevant for lower to middle income households (Feldstein, 1976).

Tobin as the earlier economist researcher who tested and reconciled on Keynes Theory has introduced asset holdings in the study on Negro and white household to test consumer function theory (Tobin, 1971). His study concludes that the increase in the household's asset holdings tends to increase their propensity to consume. The study done by Al Gahtani, Bollino, Bigerna, and Pierru (2019) also found that assets holding have significant effects on household consumptions in Saudi Arabia. Thereby, this situation had led to an upward shift in their consumption functions.

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2. New Products

Products and services are produced to be used by people. A variety of new consumer products have been introduced at a rapid rate after the Second World War event (Bohanon, 2012). New household products that have better innovations will increase demands for the product. Therefore, this introduction of new products tends to shift upward the propensity to consume of the households (Chand, n.d). Moreover, the entrance of new products will affect the price level of other products in the market. The introduction of new products may lead to other products in similar line of function to compete in order to survive. Besides enhancing the product‟s uniqueness, this situation will cause price competition and reduction of the price level. A

reduction in the price will increase holding assets and thus boost the household's consumption (Rittenberg & Tregarthen, 2012). Therefore, the propensity to consume of the household will shift upward. With the innovations and technologies nowadays, varieties of new products are produced and introduced to households especially those staying in urban areas to help and ease their living. Therefore, the production of new products in the market also can increase the household consumptions. A study done by Crosbie (2008) explores on how new technologies products and the services contribute toward the household‟s energy consumption. By collecting data from in depth interview on twenty households, the study found that the uses of televisions have shifted upward the propensity to energy consumption. Another study done by De Almeida, Fonseca, Schlomann, and Feilberg (2011) focused on European Union households showed the upward shift on household‟s electric consumption. It showed the existing of new products increased the household consumptions.

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3. Urbanization

Urbanization is a process of population shift from rural areas to urban areas (Altarans & Pradoto, 2019). A rural area is the countryside while an urban area is a developed area such as a town or city. This process will gradually increase the proportion of people living in urban areas and the ways of the society adapt to the changes to an urban life (United States National Library of Medicine, n.d).

Industrialization and employment opportunities in the cities have influenced more people to begin to migrate and work in this areas (Chen & Liang, 2019). The large numbers of migrations of rural people to cities are the ultimate force driving to

promote the level of urbanization. As a country industrializes, the number of people living in urban areas tends to increase. This movement of population tends to shift upward the propensity to consume of the household because of the urban employee earns higher wages compared to rural employee (Tobin, 1971).

There is a study done by Haider, Adil, and Ganaie (2019) to know does industrialization and urbanization affect energy consumption in India and Iran. The study found that the industrialization did have positive impact on energy consumption. However, urbanization has different effect on both countries. Urbanization in India has shift the energy consumption downward while it shows an upward shift on energy consumption in Iran. Perhaps the different relation between urbanization and energy consumption in both countries is because the level of efficiency in using energy. Urbanization in India may be encouraged the energy conservation which provides ways to energy efficiency. While urbanization in Iran has risen the demands for energy may be due to inefficiency uses in energy by the households.

The proportion of people living in urban areas is highly correlated with their income level. Urban areas offer richer market structures and there is a strong evidence that employees in urban areas are more productive and earn more than rural employees (Bloom, Canning, & Fink, 2008). For Malaysia, besides Kuala Lumpur as a capital city with 100% level of urbanization, Penang is also the second state in Malaysia with second higher urbanization level with 90.8% (Khazanah Research Institute, 2015). Therefore, this study focuses on the middle income households working in Penang.

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Even though this household has higher income compared to rural employees, they are the most affected by the high cost of living in urban areas.

4. Decline in Saving Motive

Consumption function can be used to show the relationship between household saving and disposable income (Rittenberg & Tregarthen, 2012). Household saving is a disposable income that is not spent on household consumption during a particular period. The household has to choose between using disposable income for consumption or for saving depends on the financial situation at that time. In a slow economic condition or any expected to bad event in their financial ability such as unemployment problem and high interest rate or inflation, households may prefer to make saving for future rather than consume and vice versa (Duca, Murphy, & Organ, 2016). Thus, declining in saving motive will increase the propensity to consume and shift the curve upward while increment in saving will shift the propensity to consume downward (Chand, n.d).

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However, it may be different to some case such as high cost of living in urban areas. The saving itself is not the main concern to these households since they must spend on the basic need for continuity of living. According to Bank Negara Malaysia, 75% of Malaysian have difficulties to raise RM 1,000 for emergency fund (Wong, 2017). It may be speculated as these households have difficulties with their income inequality and most of their income is used to spend on the household consumption.

5. Consumer Credit

After the Great Depression, the global economy had experienced the worst economic condition in 2007 and 2008 due to subprime mortgage crisis in the United State (Eigner & Umlauft, 2015). Financial institutions started to restrict the access of credit facilities to consumer and business. This tighten financial restriction have restrained the aggregate demand and economic activity. Therefore, to enhance an economic activity, the central banks of countries including United States, European countries, England, and Japan had offered special credit facilities to institutions and markets (Beaton, 2009).

Furthermore, the improvements in financial technology nowadays have reduced the lender's cost to review the credit applicants and loan payments processes. As a result, it became easier to access credit cards and auto loans (Duca et al., 2016). Not only focuses on financial products, the consumer product also offers the credit purchase and it is one of the popular methods of payment lately. This situation has increased the availability and convenience of short term consumer credits such as purchase through credit cards, debit cards, online banking, cheque and installments. The increased access to consumer credit has shifted upward the household's propensity to consume (Rittenberg & Tregarthen, 2012).

A study done by Beaton (2009) shows 10% reduction in consumer credit is associated with a 0.4% reduction in consumer spending rate. Another study done in the United State found that increased availability of consumer credit and mortgage credit had great contribution to the household consumptions in the mid-year of 2000

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(Duca et al., 2016). Therefore, the result shows the relationship between consumer credit and household consumption is strongly influenced by each other. The availability of consumer credit should be taken into account when predicting the consumer spending.

6. Expectation of income increasing

The household consumption is closely related to their disposable income. In spite of that, the expectation to have better financial condition in the future also tends to be associated with the household consumption (Friedman, 2018; Rittenberg & Tregarthen, 2012; Tobin, 1971). The relationship between household's expectations in future financial conditions and consumptions level tends to be in a form of self-fulfilling predictions. If the households are optimistic about their future financial conditions, they were likely to spend money and boost household consumption level. On the other hand, if the household expects a worsened financial condition, they will cut their consumption which led to a decreased number of demand and slower the economic activity.

The example of this situation is after the global financial crisis in 2008, the reduction in consumer confidence had contributed to a downward shift in the propensity to consume (Rittenberg & Tregarthen, 2012). An increase in stock and bond prices in the future would make the holders of these assets wealthier. This situation will encourage the households to increase their propensity to consume (Friedman, 2018).

All of the factors discussed above may affect the household consumption patterns of the middle income households working in Penang. This situation has probably occurred to

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the sample of this study since Penang is the urban area with the second highest level of urbanization level in Malaysia after Kuala Lumpur (Khazanah Research Institute, 2015). Besides disposable income and urbanization, the other factors such as asset holding, introduction of new products, declining in saving motive, availability of consumer credit and expectation of better financial condition in future as discussed above may influence the households‟ spending patterns. Thus, this study will examine the allocation of household's spending to find the categories of non-housing expenditure that affect their mortgage repayment affordability.

2.3 An Overview of Literature Review

This part of the thesis will review the work carried out by other researchers concerning on three aspects; namely housing affordability, repayment affordability, and cost of living. These three aspects are connected to each other. Therefore, it will be divided into three subtopics. Each subtopic will discuss the theoretical literature and empirical studies for the respective aspects.

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2.3.1 Housing Affordability

House is one of the most important necessities in life. A house is also a place to relax and spend time with the family after a hard day‟s work. In Malaysia, we can see that there are different types of houses, whether traditional or modern. In the category of modern house types, Malaysia offers a wide range of houses such as apartments, condominiums, terraced houses, bungalows, located in downtown, close to the beach, near forests, recreation areas and more choices. Each type of house has different rates depending on market price and location. Until now, the increments in housing price attract many parties including foreign investments. The treasurer of Real Estate and Housing Developers'

Association (Rehda), Datuk N.K. Tong recently said that the rise in property prices was due to supply and demand factors. According to him, as land prices continue to rise, there is also an issue of not being able to produce a house faster to meet the growing demand (D. Tan, 2013).

To minimize housing affordability crisis, the government has taken actions by implementing various housing programs to encourage and assist people especially the lower and middle income households to purchase a house. There are efforts of providing affordable housing for both urban and rural communities to fulfill the increasing demands and needs of housing, especially among the middle income households which is in line with the goal of inclusive development in the Tenth Malaysia Plan (Economic Planning Unit, 2015).

To promote house ownership, several financing schemes such as the 1Malaysia People's Housing Program (PR1MA), 1Malaysia Civil Servants Housing (PPA1M) programme, Skim Perumahan Mampu Milik Swasta (MyHome), My First Home Scheme and Youth Housing Scheme have been introduced as the government‟s effort to offer opportunities and encourage young people and first house buyers to purchase a house. Although the programmes have been implemented, there is still a poor community who cannot afford to own a house and some who are trying hard to pay for a house. They need to consider the cost of housing as well as to find the ways to pay the loan while dealing with the rising cost of living.

Related studies have been done on housing affordability but from different perspectives. There are studies in finding the suitable approaches to measure housing affordability,

determining the standard for affordable houses, evaluating the issues and challenges for homeownerships, determining the factors that influence housing affordability and also the analyzing housing prices in Malaysia.

Mahamud and Hussein (2002), Wan, Noor Rosly, and Kuppusamy (2011) and Bujang, Shapee, Abu Zarin & Ismail (2017) did a study to determine the standard houses that are affordable by households. Bujang et al., (2017) and Mahamud and Hussein (2002) focused on Johor Bharu area but Mahamud and Hussein‟s target sample only focused on the middle income households while Bujang focused on both low and middle income households. Wan et al determined prices of house in the market that can be bought by the middle income households in a wider research area. The study focused on the major cities in Kuala Lumpur, Penang, Kangar, Alor Setar, Melaka, Johor Bahru, Kuantan, Kota Bharu, Kuching, and Kota Kinabalu.

In fact, the earlier research by Mahamud and Hussein (2002) found that the middle income households in Johor Bharu can afford to buy a house below RM112,000 and have low ability to own a house compared to higher house price offered in the market. The researcher concluded that the middle income households in Johor Bharu faced a problem where they cannot afford the market house price and are also not eligible for low cost housing scheme. In 2009, Wan et al. study‟s finding showed that affordable house price range was between RM120,000 to RM150,000 except for Kuala Lumpur, Kota Bharu, and Kuantan. For Kuala Lumpur the median house price that are affordable for middle income households was between RM180,000 and RM200,000. For Kota Bharu and Kuantan, the range for affordable house was between RM120,000 and RM180,000. Meanwhile, the latest study by Bujang et al. (2017) shows that most of the low and

middle income households in Johor Bharu with monthly income of RM5,000 cannot afford to buy a house. However, for those who have already owned a house, they can only afford to buy a house at an average price between RM200,001 to RM250,000 only. It can be seen that the range of affordable houses is increasing by years and makes the affordability for homeownership becomes low due to mismatched between income and housing price (Malek & Hussein, 2016; Wan et al., 2011). The researcher suggested more government assistance that focuses on this group to address housing affordability issues faced by the middle income households (Mahamud & Hussein, 2002; Wan et al., 2011).

Many studies have agreed that housing affordability measurement is complex. Every measurement has its own criteria and elements that make it different from another (Stone, 2006). There are some research done in Malaysia to identify possible approaches to measure housing affordability such as a study by Tawil, Sood, Hamzah, Che Ani, and Tahir (2011) and Sani (2013). Tawil et al. (2011) used price to income ratio to measure the affordability of the middle income households who are the first buyer of medium cost landed house in Selangor while Sani (2013) used residual income approach to examine the housing affordability among the low income households in Kuala Lumpur. Both researchers found that the measurement is suitable for the sample of their study respectively.

Besides valuating the suitable approach towards those groups, they also identify the factors or variables that influence the affordability among the samples. Both study found that household income (Bujang et al., 2017; Gapor, Malek & Hussein, 2010; Malek & Hussein, 2016), education level, types of occupation (Gyourko & Linneman, 1996), number of households that work (Clark, Deurloo, & Dieleman, 1994; Dieleman &

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Everaers, 1994) and monthly house installment as variables that affect housing affordability for the low and middle income households. In addition, household expenditure (Bujang et al., 2017) is also one of the variables affecting housing affordability among the low income households in Kuala Lumpur (Sani, 2013). The only variable that does not affect the ability of the lower income group to have low cost houses in Kuala Lumpur is having children. However, having a child does affect homeownership among the middle income households as found in the research by Tawil et al. (2011) , Clark et al. (1994) and Dieleman and Everaers (1994) as well as housing subsidies (Thalmann, 2003).

The recent study done by Malek and Hussein (2016) concerns on homeownership issues in urban cities of Selangor, Kuala Lumpur, Penang and Johor. The data collected through questionnaires distributed to the low and middle income households have concluded that the major factor to own a house in urban cities are fixed income sources and the availability of financial facilities particularly in the form of loans either by the government or by private financial institutions. The rising in housing price is also one of the reasons for the low ability to own a house. This is because besides the location of the house, housing price is also the main factor to be considered by respondents when buying a house (Gapor, Malek, & Hussein, 2010).

Other than that, housing issues regarding the establishment of suitable housing standards to meet the needs of the country is not the only major problem. The issues and challenges faced by households to own an affordable house should also be a concern. The purpose of the study is to understand the housing problem faced by households and also provide a way to address these issues. This is to ensure more households have the opportunity to

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own a property and can directly improve the quality of life of Malaysians. Housing price is also one of the issues arises along with housing affordability problems. Respondents feel that houses in urban areas in Malaysia are too expensive and beyond their affordability (Gapor et al., 2010).

The study done by Liew and Haron (2013) and Osmadi et al. (2015) concern on the determinants of housing price in Malaysia. The finding in both studies agreed that housing price in Malaysia evidently depends on the population growth, cost of construction and demand attributes. The demand is not on the housing units only but also about the location of the house. The location of the property is also one of the factors that influences housing prices (Gapor et al., 2010; Osmadi et al., 2015). In addition, Osmadi et al.,(2015) and Chin, Chau, and Ng (2004) found that neighborhood factor and property types also impact house price as people nowadays will likely to choose a better neighborhood with availability of transportations and public safety when choosing a house location. These factors determine whether the housing price will be high or low. From the previous literature review, presently in Malaysia there is a need to study housing affordability coinciding with policy changes and the country's economic condition.

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2.3.2 Repayment Affordability

In the homeownership research area, Gan and Hill (2009) introduced three concepts of affordability which are purchase affordability, repayment affordability and income affordability. Purchase affordability considers whether a household is able to borrow enough funds to purchase a house. Repayment affordability considers the burden imposed

on a household in repaying the mortgage while income affordability simply measures the ratio of house prices to income ratio.

Purchase and income affordable are two concepts often discussed and studied when researchers or authority institutions deliberate on homeownership issues among the low to middle income households. On the other hand, the research on homeownership issues rarely concern on the household affordability in terms of their repayment affordability. The repayment affordability acknowledges that housing may be affordable at the time of purchase but unaffordable towards housing during the repayments periods (Gan & Hill, 2009; Gopalan & Venkataraman, 2015). It means that households may be eligible for the mortgage loan however they face burden when it comes to repayment of mortgage which leads into a situation known as mortgages stress.

Up till now, there is no concrete definition for mortgage stress. However, it is widely accepted that mortgage stress happen when households spend 30% or more of their income on mortgage repayment (Gillard, 2007). A high housing installment may cause financial hardship for households by leaving too little in household budgets for non-housing expenditure and increase the tendency of households unable to pay their housing installments or other basic necessities (O'Flynn, 2011). According to Digital Finance Analytics, a firm provides research, analysis and consulting services on commercial services to Australian and international, the survey found that more than 29% which is almost equal to one million Australian households are currently experiencing mortgage stress. Besides market and interest rate risks, stagnant income growth and the rising cost of living are making it harder for households to meet their financial obligations with their current income (Marsh, 2017).

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The measurement of repayment affordability can be done in various ways depending on what will be reflected in the results. Basically, it is a ratio of measuring the financial burden to repayment during the mortgage period. When considering housing loans, several factors are taken into account and it determines the repayment of a mortgage. Repayments consist of installment, interest, bank fees and costs claimed by the authorities upon obtaining a mortgage loan. The fees will be charged into the loans and this will make the principal amount of mortgage increased. Bank‟s fees are difficult to be calculated as in some cases additional costs are hidden. This cost depends on the lender's rates and regulations by the authorities.

The period prior to the subprime crisis, many mortgage loans were approved without concern about the household's ability to repay the loan. Some of the creditors fail to verify household's income or their debts which led to mortgage delinquencies or mortgage arrears. A decline in residential investment activity followed by the decrease in household spending and business investment would lead to a high household debt (Mian & Sufi, 2015).

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In response to this crisis, in 2008 the Board of Governors of the Federal Reserve System has implements a rule under the Truth in Lending Act (Consumer Financial Protection Bureau, 2016). This rule prohibits creditors from approving mortgage loans without assessing consumers‟ ability to repay the loans. The ability to repay (ATR) rules is adopted in the lender‟s decision in approving mortgage loans application (Bhutta & Ringo, 2015; Cassidy, 2012).

What is more, the ability to repay is a financial capacity of individual to make good on a debt. This rule requires the creditors to make a reasonable and good faith determination that potential borrowers can afford r the applied mortgage amount and are able to pay back the loan. Creditors need to look at the applicant's total current income and existing debt to make sure that the existing commitments plus the upcoming mortgage debt, property taxes and insurance do not exceed certain percentage of the applicant's income (Consumer Financial Protection Bureau, 2017). In additional, the creditors also have to make a reasonable effort to figure out whether the applicants can pay the higher interest rate if the interest rate goes up in the future.

The purpose of this requirement is to prevent creditors from employing loose lending standard which easily allowed households to receive loans that they could not really afford and then have a high risk to loss their houses a few years later. Furthermore, borrowers who are not properly accessed to the ability to repayment standard may have high tendency for foreclosure.

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Regarding the previous study which focuses on the ability to repay, it is done towards microfinance institutions. Microfinance or also known as micro credit is a small loan or micro loan. The microloans provide loans to small entrepreneurs or lower income group who do not have access to banking, lack collateral, steady employment and a verifiable credit history (Ann, 2018). The objective of micro financing is to provide individuals or a group of people with funds to invest in their business as working capital and capital expenditure (Bank Negara Malaysia, 2014).

Currently, microfinance products in Malaysia only cover micro loans and it does not provide other microfinance products such as micro insurance and deposits. The first institution in Malaysia which offers micro loans to the poor and helping establish micro enterprises was developed in 1988 known as Amanah Ikthiar Malaysia (AIM). Followed by Yayasan Usaha Maju (YUM) in the same year and the Economic Fund for the National Entrepreneur Group (TEKUN) in 1998 (Mokhtar, Nartea, & Gan, 2012b)

As known by many, microfinance promotes economic development and employment through the support given to the small businesses and entrepreneur and at the same time helps poor households to get out from poverty. Due to the importance of micro enterprises in the country's economic growth, Malaysia encourages the involvement of more financial institutions in providing microcredit products to the public. In 2006, Bank Negara Malaysia has listed the involvement of seven commercial banks and three development banks in providing microfinance facilities. The institutions are Alliance Bank, AmBank, Public Bank, CIMB Bank, Maybank, United Overseas Bank, Bank Muamalat, Agrobank, Bank Simpanan Nasional and Bank Rakyat (Bank Negara Malaysia, 2014).

Those previous studies which review on the borrower‟s repayment ability are more focused towards micro finance institutions particularly farmers such as a study from Ghana by Wongnaa and Awunyo-Vitor (2013), Kohansal and Mansoori (2009) for Iran, Oladeebo and Oladeebo (2008) for Nigeria and Mashatola and Darroch (2003) for sugarcane farmer in Kwazulu, South Africa. In Malaysia, researchers concentrated on microfinance program such as Amanah Ikthiar Malaysia (AIM), Yayasan Usaha Maju (YUM) and Economic Fund for the National Entrepreneur Group (TEKUN).

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Microfinance programs have been widely accepted as a policy option to reduce poverty. However, microfinance institutions often face problems with repayment of loans. Therefore, these studies determine the factors that affect the repayment performance of microfinance programs in Malaysia such as Al Mamun, Abdul Wahab, Malarvizhi, and Mariapun (2011), Nawai and Shariff (2012) and Mokhtar, Nartea, and Gan (2012a). Al Mamun et al. (2011) studied the repayment performance among the microfinance borrower from Amanah Ikthiar Malaysia. While the other studies by Nawai and Shariff (2012) and Mokhtar et al. (2012a) take TEKUN‟s borrower as a sample while Mokhtar et. al also added a microfinance borrower from YUM.

The studies found that borrower‟s characteristics such as gender, age and education are significantly affecting the repayment affordability of microfinance borrower. In additional, these factors are also significant to the finding of repayment loan among farmers.

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2.3.2.1 Gender

Regarding to gender, Nawai and Shariff (2012) found that female borrowers have a higher probability of having a repayment problem. However, this result is contrary to previous studies that find female borrowers are more credible than male borrowers such as Mokhtar et al. (2012a), Musafiri Papias and Ganesan (2009) and Sharma and Zeller (1997). For the studies with the sample of farmers, Wongnaa and Awunyo-Vitor (2013) and Kohansal and Mansoori (2009) also get a contrary result compared to Nawai and Shariff (2012). Their finding found female borrowers are usually much disciplined about loan management. Therefore, female borrowers may have higher repayment rates than men farmers. This is due to the disciplined nature of women in ensuring that the funds

will used for the intended purposes. Another possible reasons for the repayment problem among female borrowers is due to some of these women entrepreneurs involved in high risk or low returns business or have personal problems such as divorce, husband death, and childbirth that may disturb their business activities.

2.3.2.2 Age

Other than that, age is also one of the factors that affect the repayment ability of micro finance borrowers. However, it is argued that the older borrowers are more responsible and wiser than the young borrowers. In contrast, young borrowers are argued to be more independent and more knowledgeable. Hence, age variable might have a positive or negative effect on repayment ability of microfinance loans (Akpan, 2010; Kebede & Tafese, 2016; Mokhtar et al., 2012a; Ojiako & Ogbukwa, 2012; Wongnaa & Awunyo-Vitor, 2013).

Mokhtar et al. (2012a) found that borrowers in between the age of 46 to 55 years old has high probability of having repayment problems. This finding is similar to the study done by (Akpan, 2010) who shows that the growing age of farmers in most parts of rural Nigeria have low repayment rates. This could be due to higher financial commitments toward their family and business expenses for borrower at this age group. Clearly, higher financial obligations will cause difficulty in repaying their loans. Henceforth, microfinance institutions should have set a limit of loans amount to the borrowers who have high financial commitments to family or other financial institutions.

This finding contradicts to the hypothesis that older borrowers were more responsible in repaying their loans compared to younger borrowers which is found in the study by

Kebede and Tafese (2016), Wongnaa and Awunyo-Vitor (2013) and Ojiako and Ogbukwa (2012). These studies found older farmers have better loan repayment abilities as compared to young farmers. This could be due to the numbers of years of farming experience (Angaine & Waari, 2014; Arene, 1993; Kohansal & Mansoori, 2009; Oladeebo & Oladeebo, 2008). The longer years of business operations ensure the farmers to have good knowledge, wise management and stable financial. Thus, their business can survive till today. This explains a relation to another significant variable which is length of operation (Angaine & Waari, 2014).

2.3.2.3 Education

Another borrower‟s characteristic factors that influences repayment affordability is education. Education level has a positive relationship with the repayment ability of the loans. Highly educated borrowers ensure the greater repayment ability and performance. This also confirms the results of Nawai and Shariff (2012), Kebede and Tafese (2016), Wongnaa and Awunyo-Vitor (2013), Ojiako and Ogbukwa (2012) Oladeebo and Oladeebo (2008) and Ibekwe (2007) who stated that the level of education has a significant positive correlations. The finding by Wongnaa will strengthen the statement. The study found that the 42% of yam farmers in the Sene District was unable to repay the loans. They are illiterate farmers who do not receive formal education and are lack of knowledge in management of the loan.

2.3.2.4 Others

Another factor that have positive relationship with loan repayment performance of micro finance loans are farm size or business size (Arene, 1993; Mashatola & Darroch, 2003), supervision of microfinance officer (Nawai & Shariff, 2012), income and profit

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(Kohansal & Mansoori, 2009; Nawai & Shariff, 2012) and amount of loan received (Kebede & Tafese, 2016; Kohansal & Mansoori, 2009; Nawai & Shariff, 2012; Oladeebo & Oladeebo, 2008).

Besides to these two aspects discussed in literature review, another aspect that is related to homeownership issues lately is the high cost of living impact on the low to middle income households especially those living in urban areas. Therefore, the review on cost of living aspect will be discussed below.

2.3.3 Cost of Living

The cost of living is a cost that households have to cover not only to meet basic needs such as food, clothing and shelter but also other necessities for daily use such as education costs, communication costs and transportation costs in order to live comfortably (Sabstu, 2014). According to Shaharuddin (2016), cost of living is divided into two main categories namely daily and seasonal cost of living. Daily cost of living is an expense that incurred every day and is paid every month such as food, transportation, rental or mortgage installments, vehicle installments as well as monthly electricity bill, water, telephone, communication and so on. While seasonal cost of living is an expenses that occur once or depends on the event and season such as expenses related to admission process of children to school, festive season, feast and marriage season.

The issues regarding the cost of living has been one of the key focuses in the Malaysia Budget since the year 2014 until the recent year (Ministry of Finance Malaysia, 2013, 2015; Office of The Prime Minister of Malaysia, 2016). The rising in the cost of living gives an impact on households especially to the middle and low income groups.

Previously, the issue of poverty was associated with those living in rural areas but now, the issue of poverty has also hit those who live in urban areas. This group is known as the “Urban Poor” household or "*Miskin Bandar*".

According to Dr. Afzanizam Abdul Rashid, Bank Islam's Chief Economist, the rising cost of living in Malaysia may be higher by 2018 (Luqman, 2017). This situation occurs may be due to the continued rise in petrol retail prices that have led to rising inflation rates in Malaysia. The depreciation of the Ringgit and the slow growth of economic sectors also put pressure on the cost of living. Furthermore, Director of Khazanah Research Institute,, Dr Muhammed Abdul Khalid said, the situation is worsen because of the rising of goods price is higher compared to the wages which contributed to the high costs of living nowadays (Noorazam, 2016).

Apart from that, the salary rate in Malaysia rose but with a slow rate. The amount of salary found to be lower in urban areas as a result of high inflation. Additionally, the downturn in the global economy which led to the slowdown in the Malaysian economic sector was also one of the causes of gradual rise in salary rate.

According to the Report of Household Income and Basic Amenities Survey 2016, median monthly household income grew at 4.4% for 2016 compared to 2014 (Department of Statistic Malaysia, 2017b). Meanwhile, Report of Consumer Price Index Malaysia 2016 stated that the Food and Non-Alcoholic Beverages Index increased to 3.7% in 2016. This increasing rate was driven by the rising index of other subgroup food namely Oils and Fat (36.9%), Fish and Seafood (5.6%), Vegetables (3.0%) and Meat and Food Away From Home (3.5%) (Department of Statistic Malaysia, 2017a). Food and Non-Alcoholic

Beverages prices rise by nearly 30% and were faster than other items (Noorazam, 2016). This is because Malaysia imports a lot of basic food from other countries such as milk and raw meat. About 90% of milk and 70% of raw meat are imported from the Europe countries.

In some states such as Malacca, Johor and Penang, the increments of salary rates are seen to be zero as the food and non-alcoholic beverages index is above the national index level. There were six states which have higher food and non-alcoholic beverages index namely Melaka (5.2%), Johor (4.7%), Penang (4.6), Selangor (3.9), Federal Territory of Kuala Lumpur and Negeri Sembilan (3.8%) (Department of Statistic Malaysia, 2017a).

Moreover, the inflation rates for the year increased to 2.1%. Besides the Food and Non-Alcoholic Beverages group, among the main groups that stimulate to the increase in inflation was the rising in prices for Transportation (3.4%), Recreation and Culture Services (3.3%), Health (2.4%) and Housing, Water, Gas and Other Fuels (2.4%) (Department of Statistic Malaysia, 2017a).

Also, increased prices of basic and food items, coupled with daily transportation costs and utilities are suppressing household's lives. All of these prices are expected to continue rising dramatically in year 2018. Other than the lower income households, the majority groups of people living in Malaysia are those with middle income who are heavily hit by the high cost of living especially those living in the urban areas.

In order to endure the financial problem, many Malaysian are doing two jobs to cover the cost of living that is burdening families. This extra income is not only to accommodate

the increased in the price of goods but also the children education cost since education is necessary to ensure better quality of life in the future.

Homeownership is the family selection decision between the housing and non-housing expenditure. Stone (2006), the researcher defined that housing affordability are connected between housing and people. This indicates the homeowners balancing action on the households spending is very subjective. It means how the households are managing their spending between housing and other basic necessities to ensure they have comfortable living. Subjective is influenced by or based on personal feelings, opinions or tastes. Thus, the context of subjective here means for some households, it is important to meet basic needs first such as food and utilities and the remaining income will be used to pay the most important debt or overdue debt. There is a high possibility that the households may have late payment or skip the debt payment for the month. On the other hand, some households may choose to meet their debt obligations first and will use the remaining income to be spent on other basic needs.

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However, if households face inadequate income to meet basic needs or debt burden,it means that the households are pressured by the cost of living which can led to mortgage stress. O'Flynn (2011) stated that in debating on the housing affordability, there is part of issues that need to be analyzed and concerned which is the pressure on cost of living issues. A paper by The Australian Conservation Foundation and The Victorian Council of Social Service (2008) links the perception of affordability with sustainability. The paper argued that housing affordability must take into account other costs such as transportation and energy costs other than rental or mortgage rates only.

The researchers see congestion as a challenge and it is closely related to the rising of travel cost and housing affordability. If the fuel costs continue to rise, it is expected that the households may face financial impact more than those people living outside from the suburban areas with low households income that travel a lot to reach their workplaces. Inadequate public transport at this village encourages car dependency and households can save more if renting a house near to work place instead of high travelling costs.

This paper by in The Australian Conservation Foundation concluded that the best way to improve housing affordability is not to build low cost housings outside suburban location which normally has cheaper land cost yet are far away from work place, services and public transport. This action only transfers the high houses price to other expenses such as higher transportation cost and higher time of travelling.

For the situation in Malaysia, until 2015, there are no comprehensive studies regarding the rising cost of living in Malaysia are clearly done (Shaharuddin, 2016). From my reading, this is one of the detailed studies on the cost of living made in Malaysia. This report is published in the Ringgit edition of April 2017 with joint publisher by the Association of Consumer Association of Malaysia (FOMCA) and Bank Negara Malaysia (BNM).

This paper examines the effect of the rising cost of living towards the household‟s economy. The rising cost of living due to rising prices of goods and services has a significant impact on household spending and savings. Finding of the paper states 59.7% of the respondents who are lower income households was burdened by the rising cost of living and 52.6% of the them was also burdened by their debts (Sabri, 2017). It shows

more than half of the lower income households in this paper are burdened by accumulated debt additional with high cost of living. The three main forms of debts that pressure the households are hire purchase loan, housing loan, and personal loans.

Besides being burdened by the high cost of living and debts, more than half of households have just enough income for basic needs while 33% of respondents admitted having an inadequate income problem and only 16% of respondents had income fulfilling both basic needs and savings. The majority of respondents are relying on the Employees Provident Fund as their retirement savings because they cannot afford to allocate part of monthly income for saving. This situation can be related with the drift of consumption theory as discussed above in section 2.2.2. As the household decline the saving motives, the propensity to consume is shifted upward. However in this case, the households are unable to do saving due to insufficient income. The major part of the household income is spent on household expenditure. The situation may become worsen when the households are facing various forms of financial problems such as late paying bills, depression due to financial problems, not having insurance protection, unable to raise cash during emergency time which force them to borrow from unlicensed institutions and be declared as bankrupt for failing to settle the debt.

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Thus, a high cost of living which impact urban poor households is one of the main issues debated recently. There are four ways which are recommended to cope with high cost of living such as preparing the budget, work overtime, buy goods only when needed and be thrifty in spending (Sabri, 2017). The former Deputy Minister of International Trade and Industry, Datuk Ahmad Maslan said the government encouraged the people to do two jobs as one of the efforts to address the rising cost of living.

Nevertheless, there are pros and cons of doing another job after normal working hours. As has been discussed on the impact of high cost of living, it affects psychology, social and safety aspects. Spending more time on doing extra work will affect time for families which causes social problems to arise later. This recommendation should be applied and adapted depending on the household‟s situation. For those living alone, they have no problem to do extra jobs as long as they are capable and have no pressure. On the other hand, married persons need to balance between working and family time. But they also can try another alternative like doing online business to have additional side income. They can stay at home spending time with family while earning extra income.

As discussed above on all three aspects, this study concludes that there are some new areas that can be explored to assist the homeownership issue. There are some limitations of the study areas mentioned above such as the researches done to find a solution on homeownership issue, extra concern on purchase affordability, and income affordability aspect. Rarely or few research has been found to be focusing on the after purchase ability of the house buyers and concern on the household's mortgage repayment affordability. Whereas, this matter also needs to be looked at as there might be a probability that the households are facing a financial problem to pay mortgage loans and maintain the other household‟s expenditure to have a comfortable living. In addition, most of the previous researches concern the repayment affordability is done on microfinance loan in Malaysia and internationally. It is difficult and uncommon to find a study on repayment affordability focusing on household‟s mortgage. Additionally, with the high cost of living issues that often burden the households especially those living in the urban area and the lack of comprehensive research on this issue has led this study to be carried out. The

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issue on how to help household in having their own house is not the only matter that needs to be discussed, the issue of mortgage repayment affordability and the cost of living should also be a research to ensure the house buyers can live comfortably in his own residence without being burdened with financial problems.

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter elaborates on the underpinning theory of housing affordability and the data used in this study which are repayment affordability, housing payment and non-housing expenditures. Further explanation about the classification of the types of housing and non-housing expenditures were also being discussed with proposed framework used.

3.1 Dependent Variable (DV)

The dependent variable in this study is the repayment affordability among the middle income households working in Penang. Repayment affordability is one of the ways to measure housing affordability as introduced by Gan and Hill (2009). The measurement for housing affordability is discussed as below.

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3.1.1 Measurement for Housing Affordability

There are many of housing affordability measurements being developed by researchers (Belsky, Goodman, & Drew, 2005). However, some approaches established by economists such as hedonic approach is not suitable to be used by practitioners. According to Jewkes and Delgadillo (2010), the common housing affordability measurement widely used by practitioners, lenders, non-profit organizations and legislator in United States are the Department of Housing and Urban Development (HUD) Affordability Index and the National Association of Realtors (NAR) Affordability Index. Both housing affordability indices are named according to the organization that proponent to the chosen approach. HUD Affordability Index adopts housing price to

income ratio while the NAR Affordability Index adopts median multiple approach. Both approaches are being used worldwide for measuring homeowner affordability (Robinson, Scobie, & Hallinan, 2006).

Apart from that, housing price to income ratio can be applied to measure affordability for homeowner and rental households. This measurement is extensively applied and the most standard measure of housing affordability as it is often regarded as the definition of housing affordability (Linneman & Megbolugbe, 1992). This index defines that housing is considered as affordable if the total housing expenditure including principle and interest of mortgage loan, utilities, property taxes and insurance spend is below than 30% of gross annual income (Belsky et al., 2005). If the households spend more than 30%, it will be considered as housing expenditure burden (Jewkes & Delgadillo, 2010). For instance, if households spend too much money on housing which is more than 30% as recommended, they will suffer financial burden to spend for others the non-housing expenditures such as food, transportation, cloth, health care, and human capital investment (Kutty, 2005).

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On the same note, previous research by Gabriel, Jacobs, Arthurson, Burke, and Yates (2005) reported that the Australian Housing and Urban Research Institute (AHURI) prefer to used housing price to income ratio because it is simple to apply and easy to understand. Thus, it is rationale to continue using this approach in measuring the housing affordability and to be used as a legal standard to assess potential borrower application for mortgage loan (O"Dell, Smith, & White, 2004). In addition, this method is also being used by lender to estimate the eligibility of mortgage loan application by the first-time house buyer.

The second common measurement used in United States is National Association of Realtors Measure (NAR) Housing Affordability Index. This housing affordability index (HAI) uses median multiple approach which is recommended by the World Bank and the United Nations. This approach has been widely used to evaluate middle income housing affordability and it is suitable to be implemented in urban markets. This approach has been seen as "the most widely reported index for measuring housing affordability" (United States Department of Housing and Urban Development, 2006). Most of the discussions in the newspaper articles about national housing affordability use the median multiple approach in their analysis.

Besides NAR, the Demographia International Housing Affordability Survey adopts median multiple approach in rating middle income housing affordability. This study covers a huge amount of metropolitan area and releases an annual report. The Demographia Survey may be the most comprehensive international comparison of housing affordability by Wendell Cox and Hugh Pavletich, with the first report released in early 2005.

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Malaysia also adopts median multiple approach in measuring housing affordability. Most of the researchers and government bodies such as Khazanah Research Institutes (KRI), Department of Statistic Malaysia (DOSM) and National Property Information Centre (NAPIC) use Housing Affordability Index (HAI) in assessing the housing affordability level among Malaysians.

Table 3-1 below shows the housing affordability rating categories using median multiple approach. According to Cox and Pavletich (2012), people afford to access a house if the

house price is less than 3 time of their income. If the calculation shows the result of more than 3 times of their income, it means that there are several affordability crisis arise according to the level shown in the HAI table construct below.

Table 3-1
Housing Affordability Rating Categories

Rating	Median Multiple Index
Severely Unaffordable	5.1 and over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 and under

Source: United States Department of Housing and Urban Development (2006)

This approach can be used in almost any housing, local or national market as long as median house prices and median household income are known (United States Department of Housing and Urban Development, 2006). Therefore, this approach is only suitable for homeowner as a standard measurement for the 'ability to pay mortgage loans' (Jewkes & Delgadillo, 2010). Even though the multiple median approach is simple to calculate and widely used by nation to measure housing affordability, the ratio is not comprehensive as compared to housing price to income ratio. The multiple median approach does not include total housing expenditure such as property taxes, insurances and utilities (National Association of Realtors, n.d). However, housing price to income ratio also fails to consider cost of living variable or non-housing expenditure such as healthcare, transportation, food and others (O"dell et al., 2004). These variables are important to be included in measuring housing affordability since it will give different costs from one location such as rural area and urban area or a household to another household due to different size of households. This indicates that the cost of living of one location and household size is different to another (Belsky et al., 2005). For example, the cost of living

in urban cities such as Kuala Lumpur, Penang and Johor Baharu is more expensive compare to rural area such as Perlis, Kelantan and Kedah. Thus, affordability of households in urban areas may be different as compared to rural area. Unfortunately, these approaches, price to income and multiple median ratios are not taking into account the different costs of living in urban and rural area.

Therefore, this study considers another approach to measure dependent variable which is residual income approach. The residual income approach is a connection between housing expenditure and living standard (Stone, 2006). According to Sani (2013), residual income approach is also one of the most widely used approaches to measure the housing affordability. The household‟s residual income is measured after deduction of housing expenditure. This type of income is used to examine the adequacy of income to maintain the standard of living Stone, Burke & Ralston, 2011). If the income is adequate to pay for a housing and non-housing expenditure, then the households has the affordability to purchase houses. This is because the housing expenditure is the largest and least flexible expense for households. Therefore, the amount of money spent on non-housing expenditures depends on how much income left after mortgage payment. This would be a better indicator for household‟s ability compared to other standard or ratios used (Stone, 2006).

However, Yates and Gabriel (2006) commented that this approach involves a judgmental to be made on what constitute the non-housing needs. This effort requires a more complex and time consuming data, needed to measure housing affordability. Other than this limitation, this approach depends on subjective assumptions about household expenditures (Paris, 2007). Therefore, residual income approach is difficult to calculate

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compare to housing price to income ratio since it requires knowing much more about a respondent‟s household than just their total income (Sani, 2013). There are few studies that examine issues of low-income housing affordability such as Bramley (1990b) and Housing New Zealand Corporation (2004) which prefer to use price to income ratio because of the difficulty in defining those measurement criteria.

The positive aspect of using residual income approach is because it is used to close the gap between different housing expenditure from one housing market to another as it takes into account household size and geographical location. Furthermore, this approach also can be applied on both before and after homeownership process. Residual income approach is suitable to be used in the loan application process. Loan officer can estimate the monthly expenses of the applicant for the mortgage loan and determine the amount of money one can afford to pay the mortgage while still be able to meet the non-housing needs. Kutty (2005) states that households who spend on housing expenditure that exceeds their repayment ability leads to reducing their spending on food, clothing, healthcare, education, and other human capital investments. Thus, by using this approach, it ensures that households have adequate financial support on housing and non-housing expenditure, so that it is not endanger to their financial situation.

In conclusion, this approach is considered to be the most appropriate method to be used as it takes into account the size of the household, geographical location and non-housing expenditure. In addition, this indicator is not just the qualifying points or the standard for housing loan applicant to get maximum amount but also an indicator for their financial sustainability to purchase a house.

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3.2 Independent Variables (IV)

The objective of this study is to analyze the household expenditure categories that influence household"s repayment ability. There are some changes made to suit the objectives of this study. The variables to be tested are based on four out of eight determinations of the Ability to Repay (ATR) theory and Classification of Individual Consumption According to Purpose (COICOP). The four determinations of ATR adopted are as follows:

1. The monthly payment on the covered transaction,
2. The monthly payment on any simultaneous loan,
3. The monthly payment for mortgage related obligation such as insurance.
4. Current debt obligations such as alimony, child support and other.

Therefore, based on this theory, the study will focus on monthly expenses that recur every month. The categories of household expenditure that will be used as independent variables are adapted from Classification of Individual Consumption According to Purpose (COICOP) established by United Nation Statistics Division. The Malaysian Department of Statistics (DOSM) also used this COICOP starting from January 2006. There are 12 categories as shown in Figure 3-1 below.

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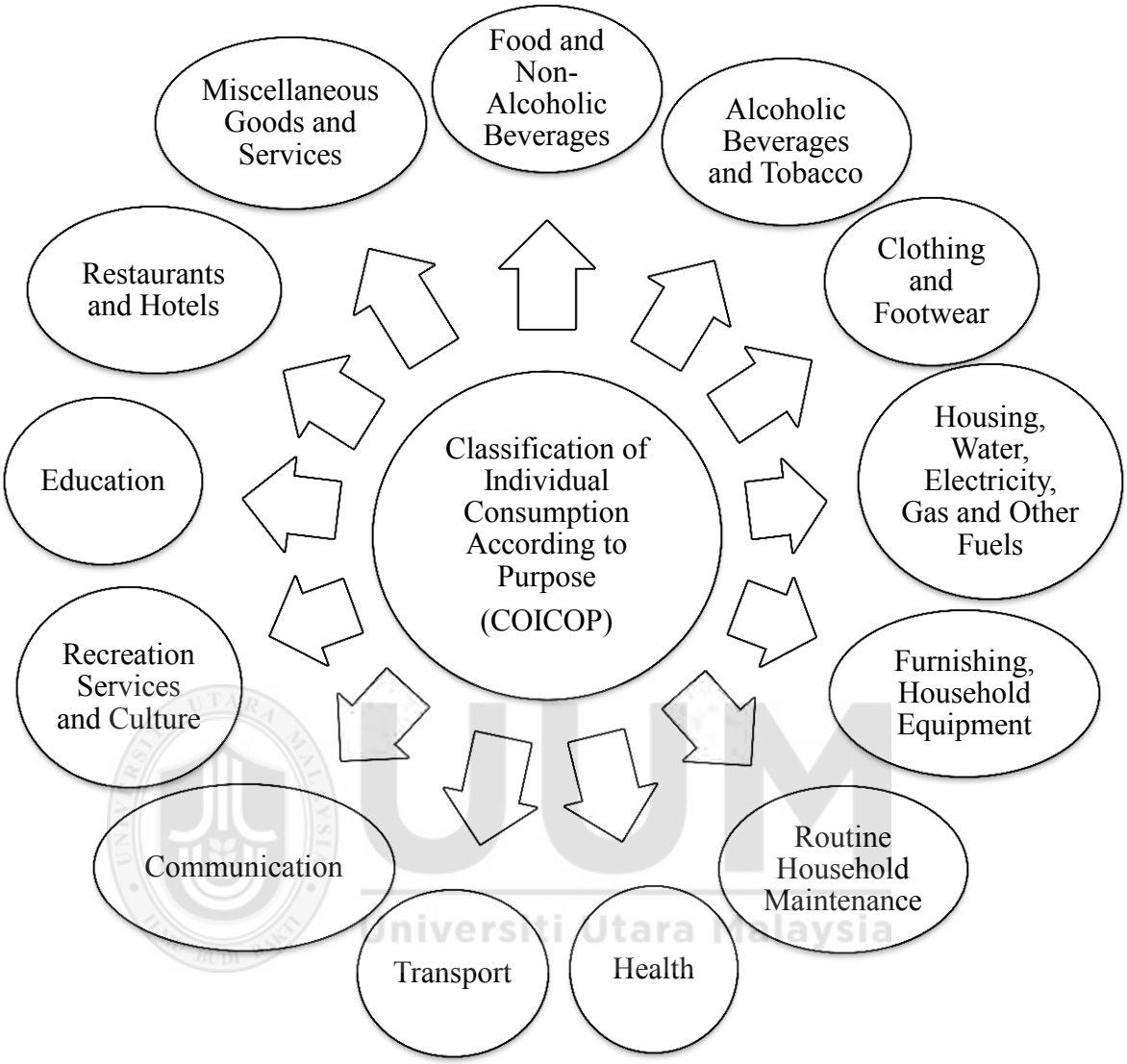

Figure 3-1
Classification of Individual Consumption According to Purpose
Source: Department of Statistic Malaysia, n.d

However, this study does not exactly take twelve categories and does a little changes to suit the objectives of this study as stated earlier. The household expenditure factor in this study will be divided into two; namely housing expenditure and non-housing expenditure. Housing expenditure will use a value of monthly mortgage installment needed to be paid by households. Table 3-2 lists the categories of the non-housing expenditures used in this study.

Table 3-2
The Categories of Non-Housing Expenditure

No	Categories of Non-Housing Expenditure
1	Food and Non-alcoholic Beverage
2	Utilities Monthly expenses regarding electricity, water, sewer and any regular expenses need to paid in order to operate the house
3	Transportation and Fuel Monthly expenses regarding transportation services, fuel or gas expenses includes parking fees (if any)
4	Communication Monthly expenses regarding telephone fixed line, mobile phone and internet service
5	Entertainment Monthly expenses regarding subscriptions to television networks
6	Child Expenses Monthly expenses regarding child/ren care (nursery/kindergarten), child/ren education expenses
7	Insurance
8	Hire Purchase Loan
9	Education Loan
10	Personal Loan
11	Credit Card

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However, the housing expenditure variable will only be tested in the third objective. For the first two objectives, the housing expenditure will be included as part of the dependent variables because this study will use the residual income approach to measure repayment affordability. Further explanation will be discussed in the data analysis method below.

3.3 Conceptual Framework

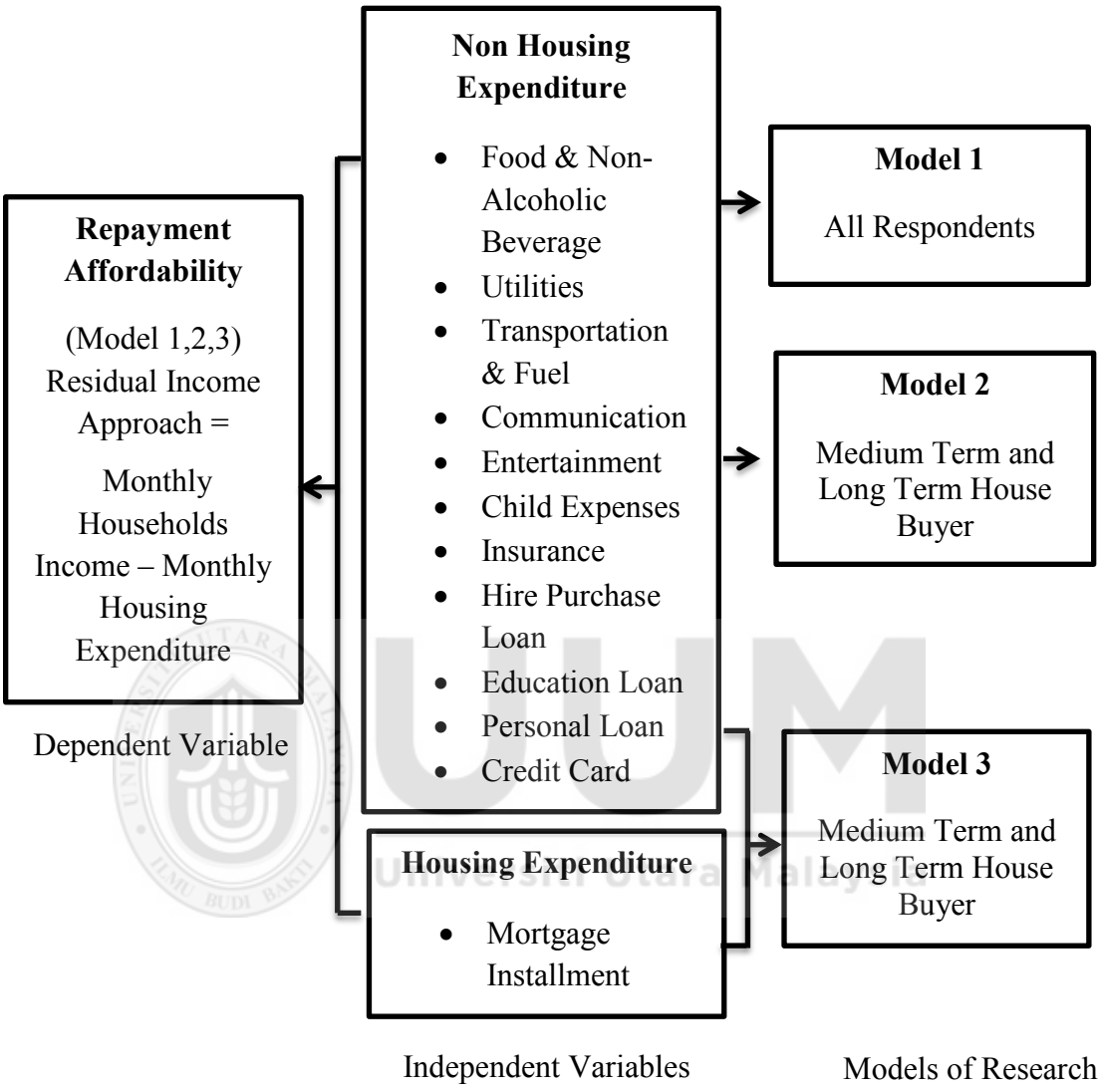

Figure 3-2
Conceptual Framework of the study

The conceptual framework is a tool to organize a study to ensure that the research‟s objective is achieved. The dependent variable in this study is repayment affordability of the middle income households working in Penang. The residual income approach is adopted to obtain data for repayment affordability of respondents in model 1 and 2 while in model 3 the value of repayment affordability is proxy by gross households‟ income as

stated below. The residual income of the respondents is finalized after the deduction of housing expenditure on the household‟s income on monthly basis. The data of residual balance of the household‟s income will assist this study to determine which of the household expenditure categories influence the mortgage repayment affordability of the respondents in the first two models.

As for independent variables, besides adaptation from COICOP, the study also considers the drift theory which determines the factor that influences the household consumption level to construct the framework of the study. The factors that assume to shift the propensity to consume of the household are urbanization, new product, consumer credit and expectation of increased in income (Chand, n.d; Friedman, 2018; Tobin, 1952, 1971).

According to drift theory, urbanization tends to shift upward the propensity to consume of the household because of the urban employee earns higher wages compared to rural employee. An urban area is often associated with high cost of living. Even though this household has higher income compared to rural employees, they are the most affected by the high cost of living in urban areas. This study was conducted in Penang, which has the second highest urbanization rate after Kuala Lumpur (Khazanah Research Institute, 2015). Thus, study has assumed there are changes of household consumption pattern of middle income group in Penang.

Besides urbanization, the introduction of new technology or product is also one of the determinants of household consumption level. The rapid growth of new technology has create new household product with better innovations. This situation has increased the demands for the new product which tends to shift upward the propensity to consume of

the households. Along with introduction of new product, the availability of consumer credit also has influence the household spending. As we can see, the easy access to credit purchase on consumer product such as using credit cards and installments is one of the popular methods of payment lately. The availability of consumer credit to the urban households living in urban area has caused their propensity to consume to shift upward. This is due to the time efficiency for the households to manage their shopping activities due to their busy working schedule.

Lastly, drift theory also the expectation of increased in income to shift the propensity of consumer spending. The household consumption is closely related to their disposable income. If the households are expect to have better future financial conditions, they were likely to spending and increase household consumption level. In additional, the assumption of salary increments of worker yearly has lead this study to examine the categories of non-housing expenditure that effect mortgage repayment affordability from two period of house purchase which are medium and long term period.

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This study has three models to be analyzed. Model 1 will use all respondents‟ data without separating the respondents into medium or long term house buyers. The objective of this model is to determine which of the household‟s non-housing expenditure categories namely food and non -alcoholic beverage, utilities, transportation and fuel, communication, entertainment, child expenses, insurance, hire purchase loan, education loan, personal loan and credit card significantly influence the repayment ability of the respondents.

Model 2 also has the same objective as in model 1 but the respondents will be divided into two groups based on their period of purchasing houses. The respondents in model 2 are medium term house buyers who bought houses in this recent five years period and long term house buyer who bought houses in six to ten years recently. This study wants to know if the repayment affordability of house buyer is affected by different amount of non-housing expenditure own by medium term house owner and long-term house owner. If the non-housing expenditure does affecting the repayment affordability, what are the categories which influence the ability to repay for both house buyer groups? Model 3 focuses on medium and long term house buyer as in model 2 but the objective is to determine either housing expenditure or non-housing expenditure of the households give high impact on respondent"s repayment ability

3.4 Research Design

This paper is exploratory in nature. Exploratory research is conducted when the situation at hand is not been studied more clearly or no information is available on how the similar research issues or have been solved in the past (Sekaran & Bougie, 2013). Brown (2006) stated that exploratory research "tends to tackle new problems on which little or no previous research has been done". In additional, according to Shields and Rangarajan (2013), exploratory research can also be used for planning to establish priorities, develop operational definition and improve the final research design. This research can help in determining the research design, data collection method and sampling methodology (Singh, 2007).

This exploratory research is conducted in order to have a better understanding on the existing problem and to gain further insight, but will not provide conclusive results

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(Saunders, Lewis, & Thornhill, 2012). For such a research, a researcher starts with a general idea and uses research as a medium to identify issues that could be the focus of future research (Winston, n.d).

In this paper, the study adopts exploratory research due to little or no previous research has been done on this topic. Many studies which were carried out on homeownership focus on income and purchase affordability as stated in Chapter 1. However, in the perspective of repayment affordability which is the period after purchasing the house, no or less research has been discussed. Therefore, this study takes an opportunity to make a research on this new issue.

This paper will narrow down the broad issue of housing affordability by focusing only on one of the way to measure housing affordability which is repayment affordability. This study has in depth research towards a group of middle income household who lives and works in Penang with the objective of determining the household"s expenditure categories which influence mortgage repayment affordability for this income group.

In addition, quantitative research is adopted where it focuses on the gathering of numerical data through survey method. The used of survey method will help this study to collect data faster compared to an observation or interview method. Although the other two methods are collecting more information, more time are needed to use it.

3.5 Data Collection Method

This section discusses the way in which data will be gathered to answer the research objectives of this study.

3.5.1 Source of Data

This research consists of primary and secondary data. The instrument used to collect primary data is using questionnaire. This questionnaire will be carried out in two ways; hardcopy and online questionnaires. Hardcopy questionnaires are distributed to work places around mainland (Butterworth) and island (Georgetown). As the target sample for this study is working people, the online questionnaire is a convenient way for the respondents to answer at any time using their electronic devices. The division of the questionnaire will be shown at the end of the chapter. The primary data collected will be analyzed using Microsoft Excel and Statistical Package for the Social Science (SPSS) to obtain the result.

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The secondary data used for this study are taken from literature review of previous researchers. The literatures include reading materials from journals, government reports and publication, thesis or dissertation paper, books and newspaper.

3.5.2 Instrument

The set of questionnaire used (see Appendix A) for this study is divided into six categories. Each category consists of different types of questions.

- Part A consists of questions related to the respondent‟s background information and demographic characteristics such as gender, age, race, marital status and number of households.

- Part B consists of questions related to the respondent‟s socioeconomic status including education level, households‟ income, types of occupation, duration of employment and availability of other income.

- Part C consists of questions related to household‟s saving patterns, percentage of saving, purpose of saving and emergency fund.

- Part D focuses on the respondent‟s house purchase details which include the location of the house, price of the house, duration of repayment, amount of monthly installment, how long has the house being purchased and years of employment when the housed being purchased.

- Part E focus on the respondent‟s monthly household expenditure. This part examines the respondent total monthly household expenses and also the breakdown expenses according to the categories of household expenditure.

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3.6 Sampling

Sampling is the process of predetermining the number of respondent that should be taken from population. In this process, researcher needs to select the right individuals, objects or events as representative to the whole population because a study is considered as a useful research if the research questions are answered successfully. A good data collection and analyses may help a research to have answer. But, if the population is not correctly targetted, it could be harmful more than good. In simple words, if the data are not collected from the respondents who can provide correct answers to solve the problem, the data is useless as it could not determine the research objective. Therefore, this section will discuss the sampling design for the study.

3.6.1 Sample Method

In distributing the questionnaire, simple random sampling method is chosen at the first place. A simple random sample is a method that states every set of individuals has equal chance to be selected as a sample and unbiased to represent of a group. However, during the distribution of questionnaires process, there are some problems arise such as difficulties to get cooperation from selected sample due to social problem and time constrain.

Social problem is a condition that creates difficulties in our society and requires a solution. Social problems are often associated with certain events such as poverty, famine and crime that prevent society from achieving their maximum potential (Eitzen, 1984). These social problems are inevitable occurrences in the society nowadays. The exposure about the various criminal activities that occur in our society can be seen on television and newspaper every day. The social misconduct in society that prioritizes individualism and materialism has prompted the public to be in a state of worry and they are beginning to be more careful on their surrounding environment to avoid any harm. Furthermore, Penang is one of the six states that shows the crime rates above the national average for the year 2017 besides Kuala Lumpur, Selangor, Negeri Sembilan, Malacca and Kedah (Teoh, 2018). Thus, this problem has led to difficulties for this study to have cooperation from the respondent during the collection of data from public.

To add, time constrain is part of the limitation occurs in this study. As the respondents were working people, their time is limited. Other limitation is on the answers given by the respondents due to the confidentiality of some questions in the questionnaire which ask about their monthly household‟s consumption. When using simple random method,

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the study found difficulties to have a respondent‟s cooperation to answer the questionnaire.

Due to these problem, the study had to change the sampling method used earlier to convenience sampling which also known as availability sampling. This convenience sampling collect data from the population members who are conveniently available to participate in the study (Dudovskiy, 2016). In simple words, this sampling method finds the respondent wherever is convenient to access.

Therefore, this study distributes the questionnaire to workplaces at the study area. In order to avoid deterioration of the data, the respondents were given two to three weeks to answer the questionnaire. The questionnaires are collected at their workplace once they are done answering the questionnaire.

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3.6.2 Subject

For this study, the right subject to answer the questionnaire must be middle income household who work and purchased a house in Penang area. According to the Economic Report 2015/2016, middle income households or known as „M40‟ refers to the group of 40% with middle household income. The M40 group is those who have salary between RM3,860 to RM8,319 per month. In additional, the subject must be in a contract to pay the housing loan installment for ensuring they are qualified as a respondent to give the data needed.

3.6.3 Sample Size

The number of respondent employed in this study is based on rules of thumb of the minimum acceptable sample size for multiple regressions suggest by Green (VanVoorhis

& Morgan, 2007) and Tabachnick and Fidell (Bujang, Sa"at & Bakar, 2017) also based on some previous studies. Those researchers proposed a formula to determine the minimum required of sample size. The formula is N > 50 + 8 m, where m is the number of independent variable. Therefore, the minimum required sample size for this study using this formula is 138 respondents.

Secondly, the study also looks at on some previous studies sample size to determine the sample size for this study. As listed in Table 3-3, there are three researchers who had done a homeownership study using house owner as the respondents in different states. The first research is a study by Malek and Hussein (2016) from University of Science Malaysia (USM) on paper *'Pemilikan Rumah dalam Kalangan Masyarakat Bandar Berpendapatan Sederhana dan Rendah di Malaysia'*. This paper chooses 400 respondents from four selected states namely Penang, Kuala Lumpur, Selangor and Johor Bahru. The Penang state consists of 122 respondents followed by 79, 96 and 103 respondents for Kuala Lumpur, Selangor and Johor Baharu respectively as shown in table 3-3 below. All respondents are of homeowners or the head of household.

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Table 3-3
Sample size of respondents from previous researchers

Authors	Number of respondents	
Malek and Hussein (2016)	**Penang**	**122**
	Kuala Lumpur	79
	Selangor	96
	Johor Bahru	103
Wan et al. (2011)	**Penang**	**120**
	Kuantan	131
	Kota Bharu	120
	Kota Kinabalu	130
	Kuching	120
	Johor Bahru	120
	Kuala Lumpur	171
	Melaka	120
	Alor Setar and Kangar	130
Mahamud and Hussein (2002)	Johor	111

The second research carry out by Wan et al. (2010) from University of Malaya (UM) with the title of „A Study on Affordable Housing within The Middle Income Households in The Major Cities and Town in Malaysia". The authors used 10 major cities in Malaysia for data collection including Penang. There are 120 respondents from Penang who answered the questionnaire.

Lastly, the previous research from Mahamud and Hussein (2002) on paper entitled „*Kajian ke atas Golongan Berpendapatan Sederhana dalam Memliki Rumah di Kawasan Johor Bahru'*. The researcher have distributed 111 sets of questionnaires but only 85 sets are qualified respondents that classified as middle income households. Another 26 respondents is not qualified since they are not in the range of middle income households.

Evidently, by looking at all these three previous papers done in Malaysia, the researchers choose an average of 120 people in Penang to become their respondents. Therefore, this

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paper will be analyzing 150 middle income household who works and purchased a house in Penang to become the research sample.

3.7 Data Analysis Method

This study chooses multiple regression test to analyze the primary data. Multiple regression test is an extension of simple linear regression. This statistical test is used to predict the change in two or more independent variables which influence the level of change in the dependent variable. In multiple regression test, the variable that study wants to predict is called as the dependent variable (Y). While, independent variables (X) is variable used to predict the value of dependent variable and known as predictor variable. The value of dependent variable (Y) is predicted by using k independent variables, which the number of k ≥ 2. Below shows the multiple regression equation:

$$Y = \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_k X_k + a$$

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Where,

β is beta coefficient or standardize regression coefficient

a is constant in the regression

The parameter of β (β1, β2, βk), represents the beta coefficient for each independent variable (X1, X2, Xk). Beta coefficient is an estimate resulting from a process where the variables are transformed into variables with a mean of zero and a standard deviation of one as their units. In other words, the studied variables have been standardized to ensure the variables can be comparing easily to each other in perform multiple regression analysis. This means, it allows the researchers to compared relative effect of independent variables on dependent variables when the measurement of independent variables is

different. In additional, beta coefficient compares the strength of the effect of each independent variable to the dependent variable. The higher value of the beta coefficient indicates the stronger effect on independent variables toward dependent variable. The constant (a) term in regression also known as the Y intercepts. It is the expected mean value of dependent variables (Y) when all independent variable is (X) is zero.

The regression equation in this study is:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + a$$

Where,

Y = Repayment Affordability

B_1 = Beta coefficient for Food and Non-Alcoholic Beverage

β_2 = Beta coefficient for Utilities

β_3 = Beta coefficient for Transportation and Fuel

β_4 = Beta coefficient for Communication

β_5 = Beta coefficient for Entertainment

β_6 = Beta coefficient for Child expenses

β_7 = Beta coefficient for Insurance

β_8 = Beta coefficient for Hire purchase loan

β_9 = Beta coefficient for Personal loan

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β_{10} = Beta coefficient for Education loan

β_{11} = Beta coefficient for Credit card

X_1 = Food and Non-Alcoholic Beverage

X_2 = Utilities

X_3 = Transportation and Fuel

X_4 = Communication

X_5 = Entertainment

X_6 = Child expenses

X_7 = Insurance

X_8 = Hire purchase loan

X_9 = Personal loan

X_{10}= Education loan

X_{11}= Credit card

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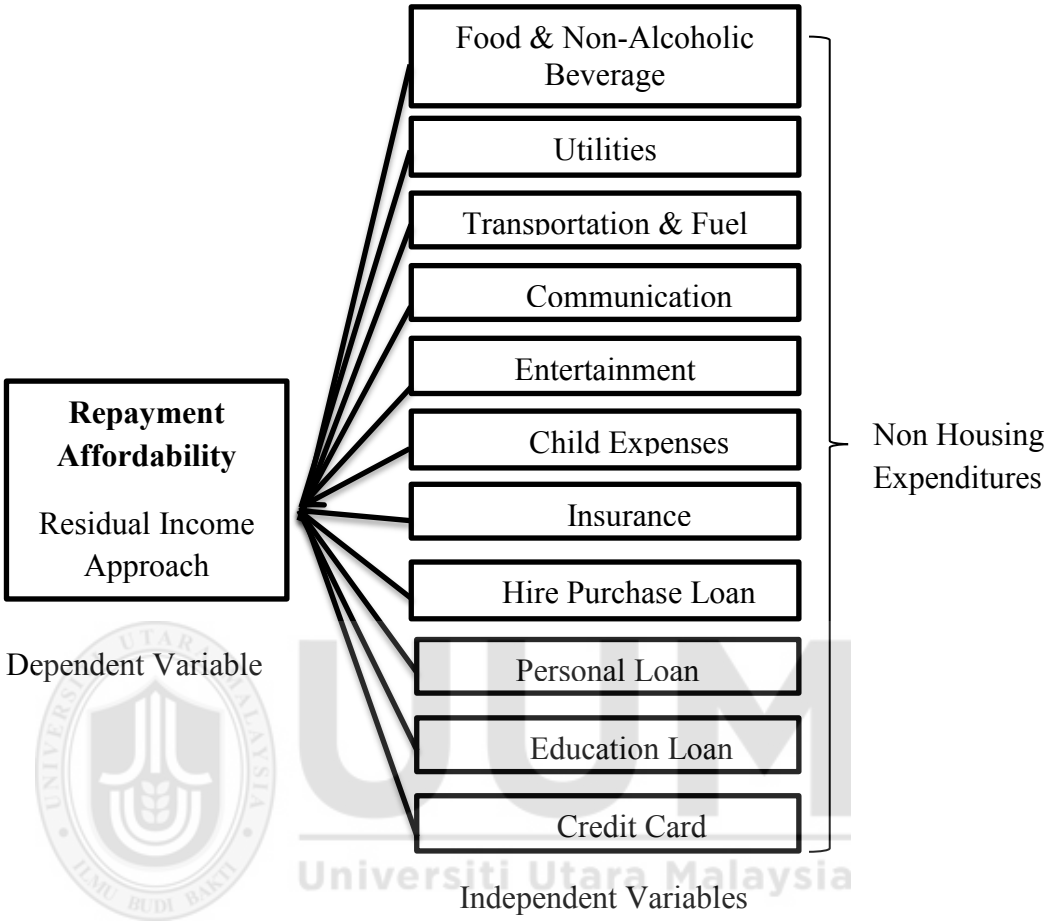
3.7.1 Framework for Model 1 and 2



The framework above is adopted in Model 1 and 2. These two models will answer the first two research objectives in determining the significant of non-housing expenditure categories of the households toward their repayment affordability. However, the different between these models is the group of the respondents who purchased and own the house in different period; medium term or long term. The detail of the models is explained below.

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Model 1

Model 1 is used to answer the first research objective which is to identify the categories of household"s non-housing expenditure that significantly influences the repayment affordability of middle income households working in Penang. This model uses data of all respondents regardless of their period of purchasing the house. Eleven categories of non-housing expenditure as shown in figure above will be tested. The regression equation for model 1 is as follows:

$$Y = \beta_1\, Food + \beta_2\, Utilities + \beta_3\, Fuel + \beta_4\, Comm + \beta_5\, Ent + \beta_6\, Child + \beta_7\, Ins + \beta_8\, HPL + \beta_9\, PL + \beta_{10}\, EL + \beta_{11}\, CC + a$$

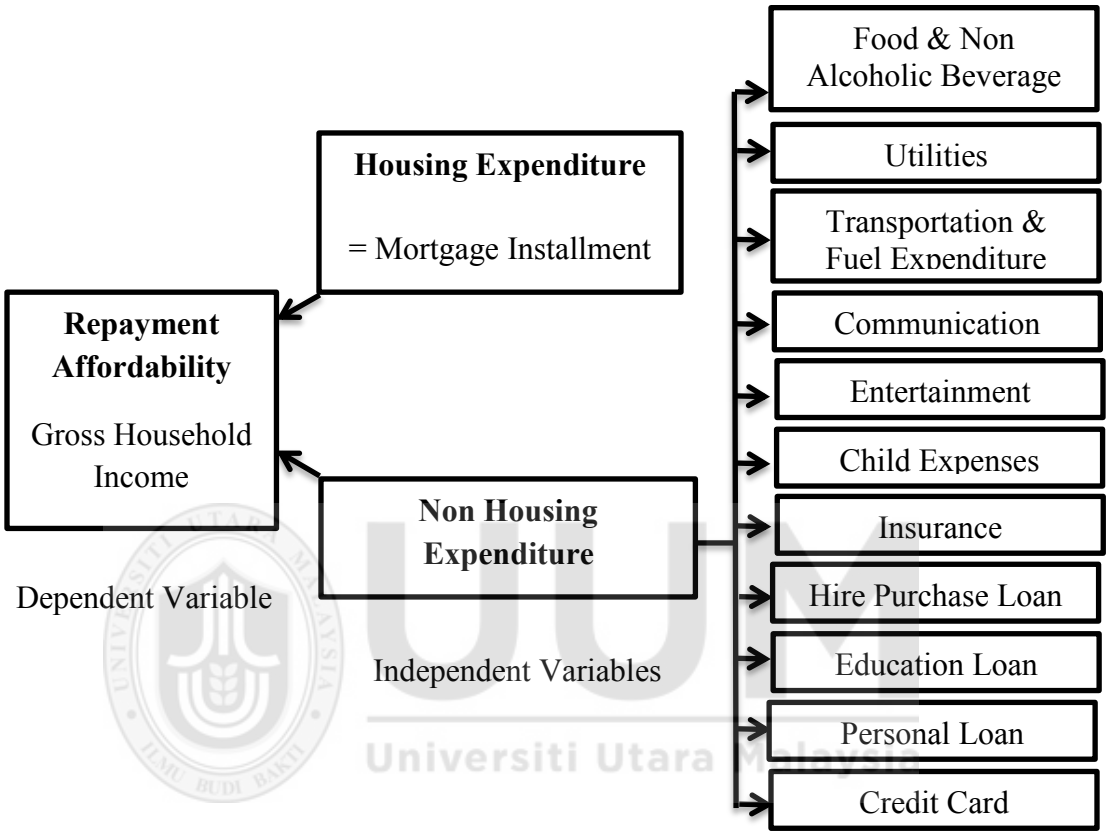
Model 2

The establishment of model 2 is to answer the second research objective which is to identify the categories of non-housing expenditure that affect house buyer"s among middle income household in Penang. The difference between Model 1 and Model 2 is, in model 2, the data was divided into two groups which are medium term and long term house buyer. Medium term house buyer is middle income households who buy houses within the five years while long term is those who buy houses within the six to ten years recently. The objective of this study is to examine is there are any different impacts of non-housing expenditure on the house buyer"s repayment affordability based on the period of buying houses. The regression equation for model 2 is as follows:

$$Y = \beta_1\, Food_s + \beta_2\, Utility_s + \beta_3\, Fuel_s + \beta_4\, Comm_s + \beta_5\, Ent_s + \beta_6\, Child_s + \beta_7\, Ins_s + \beta_8\, HPL_s + \beta_9\, PL_s + \beta_{10}\, EL_s + \beta_{11}\, CC_s + a$$

These three models will be analyzed using the same independent variables which are the eleven categories of non-housing expenditure.

3.7.2 Framework for Model 3



Model 3 will be using this framework to ensure the third research objective is achieved. In this model, the study wants to find out between non-housing expenditure and housing expenditure of the middle income households, which one is highly affecting the mortgage repayment affordability of the households? The dependent variable in these models is repayment affordability. The value of the dependent variable is a bit different compared to models 1 and 2 where the value used in model 3 is only gross household‟s income without deducting the housing expenditure. This is done in order to reduce any redundancy from previous models 1 and 2. The non-housing expenditure will include all

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the eleven categories which have been tested in the first two models while the value for housing expenditure will use a data of household‟s monthly mortgage installment. In Model 3, the data is divided into two groups which are medium term and long term house buyer. Medium term house buyer is middle income households who buy houses within the five years while long term is those who buy houses within the six to ten years recently. This study wants to know is there are any different impacts on the house buyer‟s repayment affordability based on the period of buying houses. The regression equation is as follows:

$$Y = \beta_1 X_1 + \beta_2 X_2 + a$$

Where,

Y = Repayment affordability

B_1 = Beta coefficient for Housing expenditure

β_2 = Beta coefficient for Non-housing expenditure

X_1 = Housing expenditure

X_2 = Non-housing expenditure

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CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Questionnaire Feedback

The questionnaires are distributed among middle income a household who works and owns a house in Penang. In this study, 200 copies of the questionnaire have been printed and distributed. The respondents were given two weeks to answer the questions related to their household expenditure and other related questions. After the two weeks period, 168 copies are collected and only 142 of the questionnaires are classified into final data.

The 32 copies of the remaining questionnaire failed to be collected and 26 copies from the collected questionnaire are not valid to be used as a final data. This is because most of the rejected questionnaires are not answering the questions.

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4.2 Respondent's Demographic Profile

According to the data collected, this section will analyze demographic profile of the respondent. The finding related to the gender, age, race and marital status of the respondent will be shown in Table 4-1 below. Among 142 of the respondents, 28.17% are male and 71.83% are female respondents.

The majority of the respondents are middle income households aged 31 to 39 years old. 45.07% of the respondents represent early adulthood group which is 31 to 39 years old. This is followed by an adult group with the age range between 40 to 44 years old and other respondents who aged above 45 years old and still working and paying the mortgage loan. Each group represents 21.83% and 26.76% respectively. Lastly, the least respondents with 6.34% are the late youth group with age of 25 to 30 years old. From this

finding, we can possible state that majority of the homeowners in Penang are from the adulthood group. Inability for youth to own a house is one of the issues discussed regarding housing affordability in Malaysia nowadays. Normally, at the age of 25 to 30 years old, this youth group are having low and unstable income (Ismail, 2015). Moreover, the house price offer in the market is in the range of RM250,000 and above, this has become a barrier to youth homeownership (Ismail, 2015).

The finding indicates that the races of the respondents in this study are Malay with 91.55%, Chinese with 5.63% and India with 2.82%. This study has more distribution on the Malay race than other may related with the high number of respondents is working with government sector. The distribution of worker"s races in the government sector tends to have high number of Malay worker. More than 80% of civil servants are Malays while only 5% of Chinese, 4% of Indians and the remaining is other races (Cuepacs, 2012). Therefore, this situation has led to this study having more Malay respondenst. Moreover, 92% of the respondents are married and only 7.04% of the respondents in this study represents the unmarried and single parent respectively. This may be due to married couple have a more stable income and financial condition to eligible for getting mortgage loan compared to unmarried person.

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Table 4-1
Demographic Profile of the Respondent

		Number of Respondent	Percentage (%)
Gender	Male	40	28.17
	Female	102	71.83
	Total	**142**	**100**
Age	25-30 years old	9	6.34
	31-39 years old	64	45.07
	40-44 years old	31	21.83
	>45 years old	38	26.76
	Total	**142**	**100**
Race	Malay	130	91.55
	Chinese	8	5.63
	India	4	2.82
	Total	**142**	**100**
Marital Status	Single	10	7.04
	Married	122	85.92
	Widow	10	7.04
	Total	**142**	**100**

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4.3 Respondent's Socioeconomic Status

Table 4-2 shows the socioeconomic of the respondent"s which include education level, employment sectors, duration of working and household income. The finding shows that most of the respondents have their education at tertiary level. 80.99% of the respondents are holding a Bachelor degree, 7.04% with Diploma and 5.63% of the respondents are graduates of Master or Philosophy Doctor (PhD). 6.34% represents the rest of the respondents who hold Sijil Pelajaran Malaysia (SPM).

As for the respondent employment sector, 84.51% of the respondents are working with government organizations. The remaining 15.49% of the respondents are working with

private sector such as industrial factory, private office, and others. The number of respondents working with government sector is high perhaps because this issue is more related with their situation. The respondent working with government has high opportunity to own a house because of the benefits offered by the government such as loosen the requirement for mortgage loan through Malaysia's Public Sector Housing Financing Board's (Shamsuddin, 2017). Even though the civil servants are eligible for mortgage loan, it does not mean they can sustain the mortgage repayment affordability while maintaining other household expenses. The president of Cuepacs, Datuk Azih Muda said that the civil servants have to manage household spending more prudently even the new requirements for mortgage loan has been loosened (Shamsuddin, 2017). More than half of the respondents are working for more than 10 years. This is followed by 27.46% of respondents who have been working for 5 to 10 years and the remaining of 6.34% of the respondents are working less than 5 years.

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All of the respondents are from the middle income household category (M40) with a range of salary between RM3860 to RM8319 as quantified by Malaysian government. The largest number of the respondents in this study has an income between RM7101 to RM8319 and the smallest group of the respondents has an income between RM4001 to RM4500. Table 4-2 below reported the socioeconomic of the respondents.

Table 4-2
Socioeconomic Status of the Respondent

		Number of Respondent	Percentage (%)
Education Level	SPM	9	6.34
	Diploma	10	7.04
	Bachelor	115	80.99
	Master/Phd	8	5.63
	Total	**142**	**100**
Employment Sector	Government sector	120	84.51
	Private sector	22	15.49
	Total	**142**	**100**
Employment Duration	1-5 Years	9	6.34
	5-10 Years	39	27.46
	>10Y Years	94	66.20
	Total	**142**	**100**
Household Income	RM3860 - RM4000	11	7.75
	RM4001- RM4500	7	4.93
	RM4501- RM5000	10	7.04
	RM5001- RM5500	10	7.04
	RM5501- RM6000	28	19.72
	RM6001- RM6500	18	12.68
	RM6501- RM7100	28	19.72
	RM7,101- RM8,319	30	21.13
	Total	**142**	**100**

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4.4 Multiple Regression Analysis

Multiple regressions tested in this study use stepwise method. Stepwise regression has been selected as it was recommended to be used in an exploratory research (Lewis, 2007). This exploratory research occurs when neither theory nor knowledge about the situation is well developed and understood. In this early stage of an exploratory research,

the study are more concerned to develop a theory rather than testing a theory (Menard, 2002). Since this study is an exploratory research, stepwise regression is adopted to test the non-housing expenditure that influences the repayment affordability of middle income household in Penang.

The difference of stepwise method is, after each selection of independent variable into the regression, a second significant test is made to determine the contribution of each independent variable that has been included in the regression model assuming that the variable is the last variable selected. According to Diekhoff (1992), the stepwise method has some advantages as compared to other multiple regression methods. The stepwise method is more economical, because through this multiple regression method, only significant independent variables are entering into the regression.

In addition,- the stepwise regression can prevent multicollinearity problems arising from strong correlation between independent variables. The correlation may be meaningless and results in an ineffective analysis (Diekhoff, 1992). This multicollinearity problem can be solved through stepwise regression because these problematic and irrelevant variables are not included in the regression. The output tables below will explain the result for multiple regression analysis.

4.4.1 Model 1

Model 1 is constructed to answer the first objective of this study. The research question for model 1 is what categories of non-housing expenditure that significantly influences the repayment affordability of middle income households working in Penang? The tables below will answer the first research question.

Table 4-3
Variables Entered/Removed for Model 1

Model	Variables Entered	Variables Removed	Method
1	Hire Purchase	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Food & Non Alcoholic Beverage	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Child Expenses	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Personal Loan	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Repayment Affordability

Table 4-3 indicates that there are four models being tested. Out of eleven independent variables tested, only four are found to have p-value less than alpha value which is 0.05. This means that those independent variables included in the model are significantly influencing the repayment affordability of middle income household in Penang. Model 1 shows Hire Purchase is the most significant independent variable which influences the repayment affordability. This is followed by Food and Non Alcoholic Beverage as the second stronger independent variable, then Child Expenses and lastly Personal Loan variable as can be seen in respective Model.

Table 4-4
Model Summary for Model 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.381[a]	.145	.139	1091.489
2	.510[b]	.260	.250	1018.942
3	.558[c]	.311	.296	986.877
4	.579[d]	.335	.316	973.106

a. Predictors: (Constant), Hire Purchase
b. Predictors: (Constant), Hire Purchase, Food & Non Alcoholic Beverage

c. Predictors: (Constant), Hire Purchase, Food & Non Alcoholic Beverage, Child Expenses
d. Predictors: (Constant), Hire Purchase, Food & Non Alcoholic Beverage, Child Expenses, Personal Loan
e. Dependent Variable: Repayment Affordability

Table 4-4 above shows the correlation between repayment affordability of middle income household and hire purchase is 0.381. The correlation between the repayment affordability with the combination of Hire Purchase and Food and Non-Alcoholic Beverage is 0.510 while the correlation between dependent variable and combination of the four independent variables is 0.579.

The R^2 represents the coefficient of determination value. The R^2 value in first model is 0.145, which means that Hire Purchase category accounted for 14.5% of the variation in Repayment Affordability. In the second model, this value increased to 0.260 or 26% variance in Repayment Affordability. Thus, the independent variable of Food and Non-Alcoholic Beverage category which is in the second model is accounted for 11.5% (26% - 14.5%) of the variance in Repayment Affordability. The Child Expense and Personal Loan categories contributed for 5.1% and 2.4% variance in Repayment Affordability respectively.

In the stepwise regression method, only significant independent variables are added into the model. Table 4-4 shows there are four models, which add a significant independent variable at each model. The final value of adjusted R^2 is 0.316 which represents that four independent variable namely Hire Purchase, Food and Non Alcoholic Beverage, Child Expense and Personal Loan accounted for 31.6% of variance in the overall satisfaction. This is slightly disappointing but pretty normal for social science research. According to

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Hair, Ringle, and Sarstedt (2013), in social science research study, the „rough" rule of thumb stated the value of adjusted R^2 of 0.75, 0.50, or 0.25 are respectively described as substantial, moderate or weak. This value is generally accepted for studies in the field of arts, humanities and social sciences because human behavior cannot be accurately predicted. As in this study, the respondent was asking about their monthly expenditure which different from one and another depends on their spending behavior and lifestyle. The adjusted R^2 value is 31.6% which consider as moderately satisfied.

In addition, Lewis (2007) stated that the stepwise regression may not yield the largest adjusted R^2 because it ignore the suppressor variables. In multiple regressions, suppressor variable has zero or close to zero correlation with the dependent variable but is correlated with one or more of the independent variables (Nathans, Oswald, & Nimon, 2012). Thus, it will suppress irrelevant variance of independent variables and penalizes the value of adjusted R^2 for adding independent variables which do not improve the model.

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The decreasing value of adjusted R^2 compared to R^2 value means that if the data were obtain from the population rather than sample, it would be accounted for approximately 1.9% (33.5% - 31.6%) less variance in dependent variables.

Table 4-5
Analysis of Variance (ANOVA) for Model 1

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	65400810.135	4	16350202.534	17.266	.000[e]
	Residual	129730046.829	137	946934.648		
	Total	195130856.965	141			

a. Dependent Variable: Repayment Affordability
e. Predictors: (Constant), Hire Purchase, Food & Non Alcoholic Beverage, Child Expenses, Personal Loan

Table 4-5 shows that the independent variables statistically significant in predicting the dependent variable, F (4,137)=17.266, p <0.05. The F-test is significant, indicates that the group of variables in the model are jointly significant.

Table 4-6
Coefficients for Model 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
4	(Constant)	3787.680	192.785		19.647	.000
	Hire Purchase	.804	.153	.366	5.245	.000
	Food & Non Alcoholic Beverage	.639	.150	.306	4.277	.000
	Child Expenses	.495	.160	.220	3.085	.002
	Personal Loan	.295	.133	.156	2.221	.028

a. Dependent Variable: Repayment Affordability

Table 4-6 gives beta coefficient, b-value for each independent variable which indicates the individual variable contribution to the model. The b value reported the relationship for each independent variable with dependent variable used in constructing the regression equation.

Hire Purchase has positive relationship, b = 0.804

There is a positive relationship between Hire Purchase and Repayment Affordability, which indicates every 1% increase in Hire Purchase associated with 80.4% increase in Repayment Affordability.

Food and Non Alcoholic Beverage has positive relationship, b = 0.639

There is a positive relationship between Food and Non Alcoholic Beverage and Repayment Affordability, which indicates that every 1% increase in Food and Non Alcoholic Beverage associated with 63.9% increase in Repayment Affordability.

Child Expenses has positive relationship, b = 0.495

There is a positive relationship between Child Expenses and Repayment Affordability, which indicates that every 1% increase in Child Expenses associated with 49.5% increase in Repayment Affordability.

Personal Loan has positive relationship, b = 0.295

There is a positive relationship between Personal Loan and Repayment Affordability, which indicates that every 1% increase in Personal Loan associated with 29.5% increase in Repayment Affordability.

T-statistics is used to test significant relationship between single independent with dependent variable. The T- test needs to be associated with p-value in deciding the significant relationship. Large value of t and less than 0.05 of p value means that the single independent variable is significantly affects the repayment affordability.

The t-test for this model are, Hire Purchase, t = 5.245, p = 0.000, Food and Non Alcoholic Beverage, t = 4.277, p = 0.000, Child Expenses, t = 3.085, p = 0.002 and Personal Loan, t = 2.221, p = 0.028 are significantly affect Repayment Affordability of middle income household in Penang.

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Overall Result of Model 1

In order to answer the first objective of this study, there are four categories from the non-housing expenditure that significantly influence the repayment affordability of middle income households in Penang. The first independent variable that strongly affects the repayment affordability is Hire Purchase. Secondly is the Food and Non Alcoholic Beverage, followed by Child Expenses and Personal Loan. The regression equation for Model 1 includes only four strong independent variables. The equation is:

$$\text{Repayment Affordability} = \underset{(5.245)}{0.804\ (\text{Hire Purchase})} + \underset{(4.277)}{0.639\ (\text{Food \& Non Alcoholic Beverage})} + \underset{(3.085)}{0.495\ (\text{Child Expenses})} + \underset{(2.221)}{0.295\ (\text{Personal Loan})} + 3787.680$$

❖ The value in brackets represents t value.

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4.4.2 Model 2

Model 2 will answer the second objective of the study which is to identify the non-housing expenditure that affects mortgage repayment affordability of middle income household in Penang. This objective is the same as the first objective but will be answered according to their period of house purchase. The medium house buyer is a middle income household who buy houses within the five years period while long term house buyer is a middle income household who buy houses within the recent six to ten years period. Table 4-7 below provides answers on the non-housing expenditure which influence the repayment affordability of medium term group while Table 4-8 focuses on long term house buyer.

Table 4-7
Variables Entered/Removed for Model 2 (Medium Term House Buyer)

Model	Variables Entered	Variables Removed	Method
1	Food & Non Alcoholic Beverage	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Hire Purchase	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Repayment Affordability S

Table 4-7 shows the output for medium term house buyer. The middle income households who buy houses within one to five years were being analyzed in this regression model. There are two models of regression being analyzed. The result indicates that two independent variables were found significantly influencing the repayment affordability for this group. These two independent variables are Food and Non Alcoholic Beverage and Hire Purchase variables. Model 1 indicates that Food and Non Alcoholic Beverage is the strongest independent variable which influences the repayment affordability of the medium term house buyer. The next variable which strongly influences this income group is Hire Purchase variable.

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Table 4-8
Variables Entered/Removed for Model 2 (Long Term House Buyer)

Model	Variables Entered	Variables Removed	Method
1	Child Expenses	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Hire Purchase	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

Table 4-8 (Continued)

3	Food & Non Alcoholic Beverage	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Communication	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Repayment Affordability L

Table 4-8 shows the output for long term house buyer. The middle income households who buy houses within the recent six to ten years were being analyzed in this regression model. There are four models of regression being analyzed. The result indicates that four independent variables were found significantly influencing the repayment affordability for this group. These four independent variables are Child Expenses, Hire Purchase, Food and Non Alcoholic Beverage and Communication variables. Model 1 for this group of income indicates that Child Expenses is the strongest independent variable which influences the repayment affordability of the long term house buyer. The next variable which has a strongly influence is Hire Purchase, followed by Food and Non Alcoholic Beverage and Communication.

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Table 4-9
Model Summary for Model 2(Medium Term House Buyer)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.393[a]	.155	.132	1108.627
2	.531[b]	.282	.242	1035.884

a. Predictors: (Constant), Food & Non Alcoholic Beverage
b. Predictors: (Constant), Food & Non Alcoholic Beverage, Hire Purchase
c. Dependent Variable: Repayment Affordability S

Table 4-9 above shows the correlation between repayment affordability of medium term house buyer and combination of two independent variables which are Food and Non Alcoholic Beverage and Hire Purchase is 0.531

The R^2 value in the first model is 0.155, which means that Food and Non-Alcoholic Beverage account for 15.5% of the variation in Repayment Affordability of medium term house buyer. The next model shows that this value increased to 0.282 or 28.2% variance in Repayment Affordability. Therefore, the independent variable Hire Purchase which is in the second model is accounted for 12.7% (28.2% - 15.5%) of the variance in Repayment Affordability.

The final value of adjusted R^2 is 0.242 which represents that both the independent variables, which are Food and Non Alcoholic Beverage and Hire Purchase accounted for 24.2% of variance in overall satisfaction. The decreases value of adjusted R^2 compared to R^2 value means that if the data were obtain from the population rather than sample, it would account for approximately 4% (28.2% - 24.2%) less variance in dependent variables.

Table 4-10
Model Summary for Model 2(Long Term House Buyer)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.356[a]	.126	.118	1051.299
2	.510[b]	.260	.246	972.092
3	.558[c]	.312	.291	942.521
4	.582[d]	.338	.311	928.800

a. Predictors: (Constant), Child Expenses
b. Predictors: (Constant), Child Expenses, Hire Purchase
c. Predictors: (Constant), Child Expenses, Hire Purchase, Food & Non Alcoholic Beverage

d. Predictors: (Constant), Child Expenses, Hire Purchase, Food & Non Alcoholic Beverage, Communication
e. Dependent Variable: Repayment Affordability L

Table 4-10 above shows the correlation between repayment affordability of long term house buyer with Child Expenses variable is 0.356. The correlation between the repayment affordability with the combination of Child Expenses and Hire Purchase is 0.510 while the correlation between dependent variable and combination of the four independent variables is 0.582.

The R^2 value in the first model is 0.126, which means that Child Expenses accounted for 12.6% of the variation in Repayment Affordability of long term house buyer. In the second model, this value increased to 0.260 or 26% variance in Repayment Affordability. Thus, the independent variable of Hire Purchase which is in the second model is accounted for 13.4% (26% - 12.6%) of the variance in Repayment Affordability. The Food and Non Alcoholic Beverage and the Communication variables show an extra contribution of 5.2% and 2.6% variance in Repayment Affordability respectively.

The final value of adjusted R^2 is 0.311 which represents that four independent variables namely Child Expense, Hire Purchase, Food and Non Alcoholic Beverage, and Communication are accounted for 31.1% of variance in overall satisfaction.

Table 4-11
Analysis of Variance (ANOVA) for Model 2(Medium Term House Buyer)

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	15155455.262	2	7577727.631	7.062	.003[c]
	Residual	38630000.174	36	1073055.560		
	Total	53785455.436	38			

a. Dependent Variable: Repayment Affordability S

Table 4-11 shows that the independent variables are statistically significant in predicting the dependent variable, F (2, 36) = 7.062, p = 0.003. The F-test is significant and the p value for the independent variables in the group is less than 0.05, which indicates that all variables in the model are jointly significant to the dependent variables.

Table 4-12
Analysis of Variance (ANOVA) for Model 2 (Long Term House Buyer)

Model		Sum of Squares	df	Mean Square	F	Sig.
4	Regression	43238659.567	4	10809664.892	12.530	.000[e]
	Residual	84541556.957	98	862668.949		
	Total	127780216.524	102			

a. Dependent Variable: Repayment Affordability L
e. Predictors: (Constant), Child Expenses, Hire Purchase, Food & Non Alcoholic Beverage, Communication

Table 4-12 shows that the independent variables are statistically significant in predicting the dependent variable, F (4, 98) = 12.530, p = 0.000. The F-test is significant and the p value for the independent variables in the group below 0.05 indicating that all variables in the model are jointly significant to the dependent variables.

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Table 4-13
Coefficients for Model 2(Medium Term House Buyer)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	3698.878	326.979		11.312	.000
	Food & Non Alcoholic Beverage	1.044	.403	.367	2.593	.014
	Hire Purchase	.883	.350	.358	2.526	.016

a. Dependent Variable: Repayment Affordability S

Table 4-13 gives beta coefficient, b-value for each independent variable which indicates the individual contribution to the model. The b value also informs the relationship for

each independent variable with dependent variable used in constructing the regression equation.

Food and Non Alcoholic Beverage has positive relationship, b = 1.044

There is a positive relationship between Food and Non Alcoholic Beverage and Repayment Affordability, which indicates that every 1% increase in Food and Non Alcoholic Beverage is associated with 104.4% increase in Repayment Affordability of the middle income household who buy house in the recent five years period.

Hire Purchase has positive relationship, b = 0.883

There is a positive relationship between the Hire Purchase variable and Repayment Affordability, which indicates that every 1% increase in Hire Purchase is associated with 88.3% increase in Repayment Affordability of the middle income household who buy house in within the recent five years period.

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For this model, the t-test for Food and Non Alcoholic Beverage is, t = 2.593, p = 0.014 and T-test for Hire Purchase is, t = 2.526, p = 0.016. This indicates that both variables are significantly affecting Repayment Affordability of middle income household who buy house in within this recent five years.

Table 4-14
Coefficients for Model 2 (Long Term House Buyer)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
4	(Constant)	3892.521	233.699		16.656	.000
	Child Expenses	.677	.193	.298	3.511	.001
	Hire Purchase	.705	.170	.346	4.152	.000
	Food & Non Alcoholic Beverage	.374	.162	.198	2.311	.023
	Communication	1.405	.707	.171	1.987	.050

a. Dependent Variable: Repayment Affordability L

Table 4-14 gives beta coefficient, b-value for each independent variable which indicates the individual variable contribution to the model. The b value reported the relationship for each independent variable with dependent variable used in constructing the regression equation.

Child Expenses has positive relationship, b = 0.677

There is a positive relationship between Child Expenses and Repayment Affordability, which indicates that every 1% increase in Child Expenses is associated with 67.7% increase in Repayment Affordability of middle income households who buy houses within six to ten years.

Hire Purchase has positive relationship, b = 0.705

There is a positive relationship between Hire Purchase and Repayment Affordability, which indicates that every 1% increase in Hire Purchase is associated with 70.5% increase in Repayment Affordability of middle income households who buy houses within six to ten years.

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Food and Non Alcoholic Beverage has positive relationship, b = 0.374

There is a positive relationship between Food and Non Alcoholic Beverage and Repayment Affordability, which indicates that every 1% increase in Food and Non Alcoholic Beverage is associated with 37.4% increase in Repayment Affordability of middle income households who buy houses within six to ten years.

Communication has positive relationship, b = 1.405

There is a positive relationship between Communication and Repayment Affordability, which indicates every 1% increase in communication is associated with 140.5% increase in Repayment Affordability of middle income household who buy house for these recent six to ten years.

The t-test for independent variables in model 3 are, Child Expenses, t = 3.511, p = 0.001, Hire Purchase, t = 4.152, p = 0.000, Food and Non Alcoholic Beverage, t = 2.311, p = 0.023, and Communication, t = 1.987, p = 0.050 are significantly affect Repayment Affordability of middle income households who buy houses within six to ten years.

Overall Result of Model 2

The first independent variable that strongly affects the repayment affordability of medium term house buyer group is Food and Non Alcoholic Beverage, followed by Hire Purchase variable. However, there are four categories of non-housing expenditure that affect middle income household who buy houses within the recent six to ten years. The first independent variable that strongly affects the repayment affordability of long term house buyer group is Child Expenses. Secondly is the Hire Purchase, followed by Food and Non Alcoholic Beverage and Communication. The regression equation for medium

term house buyer group in Model 2 includes only two significant independent variables while four significant independent variables for long term house buyer. The equation is:

Repayment Affordability for Medium Term House Buyer = 1.044 (Food and Non Alcoholic Beverage) (2.593) + 0.883 (Hire Purchase) + 3698.88 (2.526)

Repayment Affordability for Long Term House Buyer = 0.677 (Child Expenses) + 0.705 (Hire Purchase) + 0.347(Food & (3.511) (4.152) Non Alcoholic Beverage) + 1.405 (Communication) + 3892.521 (2.311) (1.987)

❖ The value in brackets represents t value.

4.4.3 Model 3

Model 3 is constructed to answer the third objective of the study which is a little different compared to previous research objectives. The objective of model 3 is to find is the housing expenditure or non-housing expenditure that highly impact on repayment affordability of house buyer in medium term and long term? The tables below will answer the research question.

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Table 4-15
Variables Entered/Removed for Model 3 (Medium Term House Buyer)

Model	Variables Entered	Variables Removed	Method
1	Non Housing Expenditure	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Housing Expenditure	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Repayment Affordability

Table 4-15 shows the output for the third research objective which is to determine which types of expenditure that highly impact on repayment affordability of medium term house buyer among middle income household in Penang. The table indicates that both variables are significantly influence repayment affordability of house buyers who buy houses within the recent five years period. In the first model, it is stated that Non-Housing Expenditure has the strongest influence compared to Housing Expenditure.

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Table 4-16
Variables Entered/Removed for Model 3 (Long Term House Buyer)

Model	Variables Entered	Variables Removed	Method
1	Non Housing Expenditure	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Repayment Affordability L

Table 4-16 shows the output for long term house buyer. The table indicates that only one variable is significantly influence repayment affordability of house buyer who buys house in six to ten years recently. The model shows only Non-Housing Expenditure variable is significantly impact the repayment affordability of this group.

Table 4-17
Model Summary for Model 3 (Medium Term House Buyer)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501[a]	.251	.231	1177.612
2	.643[b]	.413	.381	1056.344

a. Predictors: (Constant), Non Housing Expenditure
b. Predictors: (Constant), Non Housing Expenditure, Housing Expenditure
c. Dependent Variable: Repayment Affordability

Table 4-17 above shows the correlation between repayment affordability of medium term house buyer and combination of the two independent variables which are Non-Housing Expenditure and Housing Expenditure is 0.531

The R^2 value in the first model is 0.251, which means that Non-Housing Expenditure accounted for 25.1% of the variation in Repayment Affordability. Next model shows that this value increased to 0.413 or 41.3% variance in Repayment Affordability. Therefore, the independent variable of Housing Expenditure, which in the second model, is accounted for 16.2% (41.3% - 25.1%) of the variance in Repayment Affordability of medium term house buyer.

The final value of adjusted R^2 is 0.381 which represents that both independent variables, Non-Housing Expenditure and Housing Expenditure are accounted for 38.1% of variance in overall satisfaction.

Table 4-18
Model Summary for Model 3 (Long Term House Buyer)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.561[a]	.315	.308	906.447

a. Predictors: (Constant), Non Housing Expenditure
b. Dependent Variable: Repayment Affordability L

Table 4-18 above shows the correlation between repayment affordability of long term house buyer with Non-Housing Expenditure is 0.561. The R^2 value is 0.315, which means that Non-Housing Expenditure accounted for 31.5% of the variation in Repayment Affordability among long term house buyer. The final value of adjusted R^2 is 0.308 which represents that the Non-Housing Expenditure variable accounted for 30.8% of variance in overall satisfaction.

Table 4-19
Analysis of Variance (ANOVA) for Model 3 (Medium Term House Buyer)

Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	28312992.527	2	14156496.264	12.687	.000[c]
	Residual	40171046.396	36	1115862.400		
	Total	68484038.923	38			

a. Dependent Variable: Repayment Affordability
c. Predictors: (Constant), Non Housing Expenditure, Housing Expenditure

Table 4-19 shows that the independent variables are statistically significant in predicting the dependent variable, F (2, 36) = 12.687, p = 0.000. The F-test is significant and the p value for the independent variables in the group is below 0.05, which indicates that all variables in the model are jointly significant to the dependent variables.

Table 4-20
Analysis of Variance (ANOVA) for Model 3 (Long Term House Buyer)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38112189.624	1	38112189.624	46.385	.000[b]
	Residual	82986259.891	101	821646.138		
	Total	121098449.515	102			

a. Dependent Variable: Repayment Affordability L
b. Predictors: (Constant), Non Housing Expenditure

Table 4-20 shows that the independent variable is statistically significant predicting the dependent variable, F (1, 101) = 46.385, p = 0.000. The F-test is significant and the p

value for the independent variables in the group is below 0.05, which indicates all variables in the model are jointly significant to the dependent variable.

Table 4-21
Coefficients for Model 3 (Medium Term House Buyer)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	3170.389	560.939		5.652	.000
	Non Housing Expenditure	.472	.135	.449	3.493	.001
	Housing Expenditure	.874	.277	.407	3.160	.003

a. Dependent Variable: Repayment Affordability

Table 4-21 gives beta coefficient, b-value for each independent variable which indicates the individual variable contribution to the model. The b value reported the relationship for each independent variable with dependent variable used in constructing the regression equation.

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Non-Housing Expenditure has positive relationship, b = 0.472

There is a positive relationship between Non-Housing Expenditure with Repayment Affordability, which indicates that every 1% increase in Non-Housing Expenditure is associated with 47.2% increase in Repayment Affordability of the middle income households who buy houses within the recent five years.

Housing Expenditure has positive relationship, b = 0.874

There is a positive relationship between Housing Expenditure and Repayment Affordability, which indicates that every 1% increase in Hire Purchase is associated with 87.4% increase in Repayment Affordability of the middle income households who buy houses within the recent five years.

The t-test for variables in model 4 are Non-Housing Expenditure, t = 3.493, p = 0.001 and Housing Expenditure, t = 3.160, p = 0.013. It indicates both variables are significantly affecting Repayment Affordability of middle income households who buy houses within the recent five years

Table 4-22
Coefficients for Model 3 (Long Term House Buyer)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4538.257	264.911		17.131	.000
	Non Housing Expenditure	.385	.057	.561	6.811	.000

a. Dependent Variable: Repayment Affordability L

Table 4-22 gives beta coefficient, b-value for each independent variable which indicates the individual variable contribution to the model. The b value reported the relationship for each independent variable with dependent variable used in constructing the regression equation.

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Non-Housing Expenditure has positive relationship, b = 0.385

There is a positive relationship between Non-Housing Expenditure with Repayment Affordability, which indicates that every 1% increase in Non-Housing Expenditure is associated with a 38.5% increase in Repayment Affordability of the middle income household who buy house in recent six to ten years.

The t-test for variable in model 5 is Non-Housing Expenditure, t = 6.811, p = 0.000 which significantly affecting Repayment Affordability of middle income household who buy house in six to ten years.

Overall Result of Model 3

The first independent variable that strongly affects the repayment affordability of medium term house buyer group is Non-Housing Expenditure and followed by Housing Expenditure. Meanwhile, for the long term house buyer only Non-Housing Expenditure variable significantly influences the repayment affordability of middle income households who buy house in six to ten years. The regression equation for Model 3 includes both significant independent variables for medium term house buyer while only one significant independent variable is included for long term house buyer group. The equation is:

Repayment Affordability for Medium Term House Buyer = 0.472 (Non-Housing Expenditure) + 0.874 (Housing Expenditure)
(3.493) (3.160)
+ 3170.389

Repayment Affordability for Long Term House Buyer = 0.385 (Non-Housing Expenditure) + 4538.257
(6.811)

- The value in brackets represents t value

4.4.4 Discussion on Overall Findings

From all tables show above, the findings shows that the repayment affordability of middle income households who buy houses within one to five years period are affected by both the non-housing expenditure and housing expenditure. Meanwhile, only non-housing expenditure is affecting repayment affordability of middle income households who buy houses within six to ten years. From the result, the study can conclude that, low

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ability to repay mortgage can led to mortgage delinquency and this is not totally due to the high mortgage payment itself but rather it is due to fulfilling other commitment of households consumption. This is where the government supports is needed to reduce the cost of living for people. As stated by Yates (2008), the housing affordability problem occurs due to the rising cost of housing which is faster than the income growth. This also true with other goods and services which are rising higher than the increase in income.

For households who buy houses within six to ten years, the finding shows that their repayment affordability is not affected by their housing expenditure. This result indicates that in long period, the housing expenditure is not the factor that influences the repayment ability. This situation can be related with human adaptation and coping behavior theory developed by Lazarus and Folkman (1987). The transactional theory of stress and coping evaluates how major life events and daily trouble impact on emotions with the emphasis to cognitive appraisal and coping with stress. The cognitive appraisal is an assessment of the mental process of acquiring knowledge and understanding through thinking, experiences and the senses. It consists of primary appraisal and secondary appraisal. Primary appraisal is about assessing the threat or harm of the situation that may occur and secondary appraisal is evaluating what actions need to be taken and the individual's ability to manage and cope with it.

Evidently, the house buyer who buys houses within six to ten years period, have already coping with the situation of paying monthly house mortgage following from the cognitive appraisal theory which is said to bring changes in the person environment relationship or the level of emotional distress that experienced by the individual (Scott, 2012). In addition, the house buyer is following the cognitive behavior therapies which enable

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them to identify and become aware of thoughts and feelings that lead to learn new ways to solve and cope with problem.

A study done by Padesky and Mooney (2012) has modified the traditional Cognitive behavior therapies which focus on resilience. There are many advantages by fostering resilience such as it helps people facing and managing positive and negative life events. Resilient people will be persistent in facing obstacles and when necessary, they accept circumstances that cannot be changed and adapt with the situation (Bonanno, 2004). As for the middle income households in Penang, after purchasing their houses for six to ten years period, they learn to face and manage the repayment of their mortgages. Apparently, the sustainability of repayment mortgages occurs during six to ten years period after purchasing the house.

These human behavior theories can explain the reason why housing expenditure is not affecting the long term house buyer (6 to 10 years period). This indicates that after few years of buying a house, the household knows that they must pay the mortgage no matter what happen in order to have more comfortable life in the future. Therefore, the household will find solution to adapt and coping with this issue. They may adapt with the allocation for housing expenditure since they had experienced this situation for long time. Furthermore, the experiences had taught the household to handle and control their expenditure or do extra work to have sufficient money to pay the mortgage. In addition, within six years and above, the household may have an increment in salary which leads to a more stable income.

The non-housing expenditure is the strongest variable which influences both the medium and long term house buyer. The findings of this study identify the categories of the non-housing expenditure which influence middle income household in Penang. This study divides the data into three groups which consist of all respondents, medium term house buyer and long term house buyer. The objective for each of the model is to find out what are the non-housing expenditure categories which influence repayment affordability of each income group.

The selections of non-housing expenditure categories, a monthly payment need to pay by households to proceed their living are adapted from COICOP and ATR theory. The payments that households have to cover are not only to meet the basic needs but also other necessities for daily use including education, communication and transportation which is also known as cost of living (Sabstu, 2014).

Based on the finding above, Model 1 which used the data from all respondents shows that there are four independent variables that significantly influence repayment affordability. These variables are Hire Purchase, Food and Non-Alcoholic Beverage, Child Expenses and Personal Loan. However, if the regression analysis is carried out on medium term respondents who buy house within five years period found, there are only two independent variables which have significant results which are food and non-alcoholic beverage and hire purchase. For long term house buyers, the independent variables which significantly influence repayment affordability are child expenses, hire purchase, food and non-alcoholic beverage and communication as shows in the finding in Model 2.

The hire purchase expenditure is the strongest variable influencing the dependent variable when using all data of respondents but this expenditure fall to second place when it comes to medium and long term house buyers. The strongest variable influencing repayment affordability of medium term house buyer is food and non-alcoholic beverage while child expense is the strongest variable for long term house buyer. This result indicates that, medium term house buyer allocates more on food and non-alcoholic beverage. Perhaps the medium term respondents in this study are youth or early adulthood who has babies and kids. Therefore, these households spend more on kid‟s food and milk which are quite expensive. On the other hand, for long term house buyer, the result shows child expenses is the strongest influence variable. Perhaps the long term respondents in this study have more children and have schooling children compared to medium term house buyer. Therefore, the household may allocate more on children expenses like their education inside and outside school, nursery, transportation, school activities and others.

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In addition, the output for the long term respondents shows that communication is one of the variables that influenced their repayment affordability but it has less impact compared to the other independent variables. Comparing to the output for all respondents, repayment affordability of long term house buyers is not influenced by personal loan but it is influenced by communication. This is likely to happen because the long term respondents have settled or at the end of the payment of personal loan. Normally, payment period for personal loan does not take longer than housing loan. Thus, personal loan has not significantly influenced repayment affordability of middle income households who buy houses within six to ten years.

On the contrary, communication has significantly influenced repayment affordability of this group. This situation may happen because this long term house buyers who have more children need to spend more on communication expenses like telephone fixed line, mobile phone and internet service. The household may need to use telephone to communicate with their children who study far from home or need to subscribe internet plan for their children at house since most of the school system nowadays need internet to do their homework and checking examination results. The discussion below will continue with the allocation of significant non-housing expenditure categories that influence the repayment affordability of middle income household in Penang.

4.4.5 Household Monthly Allocation for Significant Non-Housing Expenditure Categories

The tables below will show the allocation of significant independent variables for all groups in this study. The variables are hire purchase, food and non-alcoholic beverage, child expenses, personal loan and communication.

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4.4.5.1 Hire purchase

The hire purchase expenditure is one of the significant variables that influence the ability to repay the mortgage loan. According to Malaysia Department of Insolvency (n.d), hire purchase is the major reason of bankruptcy among Malaysian for year 2012 to 2016 with 27.2% of bankruptcy cases. The next reason of bankruptcy is caused by personal loans with 23.24%. This indicates that a lot of Malaysian who takes hire purchase and personal loan but unable to settle the payment. This is because they are lack of knowledge about financial management and spend more than what they are afford to pay.

The finding of this study reveals that, most of the respondents, 46% of the middle income household allocates 10% to 15% of their household income for hire purchase. 29% of the respondents spend 3% to 9% of their income to pay the vehicle loan. 14% of the respondents spend for 16% to 20%, 7% of respondent spend 21% to 30% and only 4% of respondent spend more than 30% of their income for hire purchase which its seen as too high. According to Figure 4-1, average middle income households in Penang spend 10 % to 15% of their income for hire purchase.

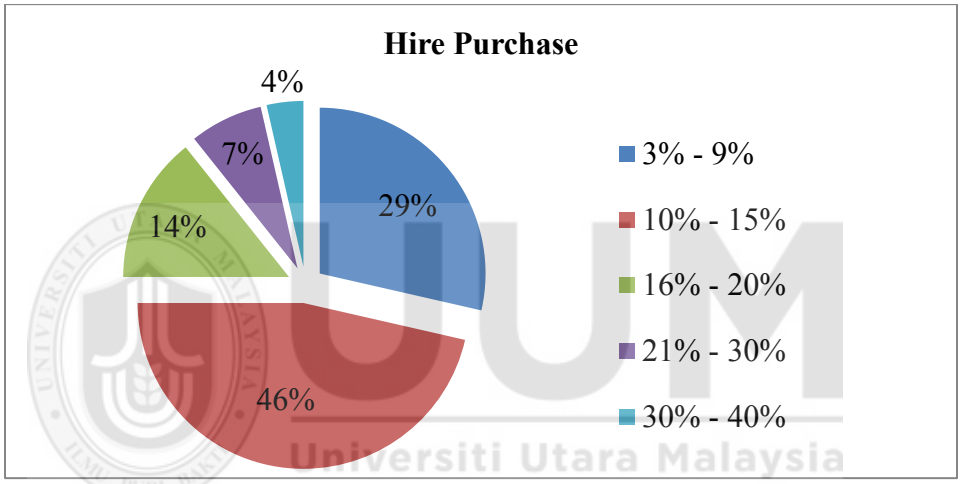

Figure 4-1
Allocation of Hire Purchase
Source: Own study

4.4.5.2 Personal Loan

As for personal loan expenditure, most of the respondents allocate 11% to 20% from the household income. This is followed by 34% of the respondents spend 3% to 10% to pay personal loan every month. There are also 19% of the respondents who spend 21% to 30% and 10% of the respondents spend more than 31% for personal loan.

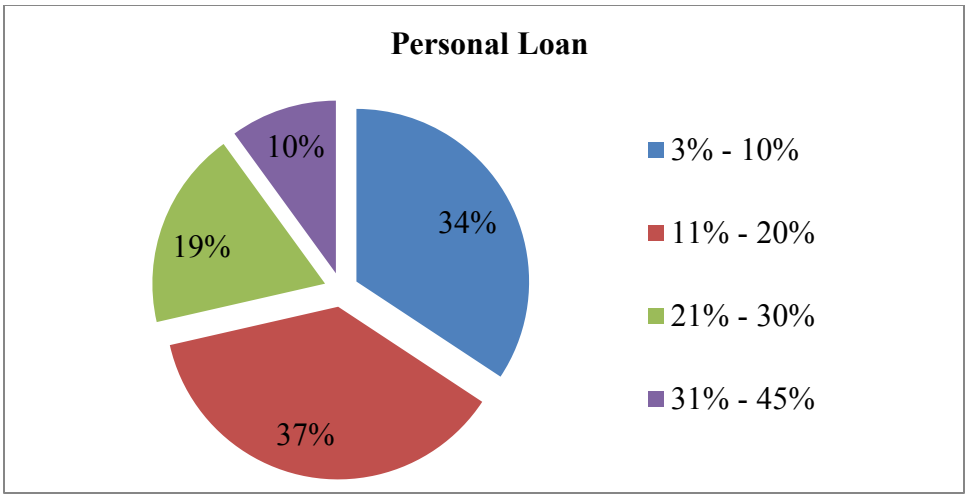

Figure 4-2
Allocation for Personal Loan
Source: Own study

The debt service ratio measures the amount of debt that can be taken by a household or an individual. This ratio shows the uses of one"s monthly disposable income to service total debt. The acceptable level of debt service ratio is 30%, which means that a household should not be spending more than one third of their income on debt repayment (Leong, 2014). If the person has allocated more than 30% for household debt, they may face a financial burden and unable to service their debt (Lim, 2015). The formula advises the household to spend below 30% for all debt such as hire purchase, mortgage, education loan and others. Therefore if the household allocates 30% only for hire purchase payment every month, they tend to face financial problem to pay another debt. This formula can be related to the rules of thumb for housing affordability which recommended that mortgage payment must be less than 30% of income. Otherwise, the household may face a burden to pay the mortgage and other consumptions.

If the house buyer has high commitment towards hire purchase and personal loan, it tends to affect the ability to repay for mortgage. A study from Chan, Haughwout, Hayashi, and

Van der Klaauw (2016) found homeowners tend to default on mortgages payment as they prioritize on repaying for hire purchase. Additionally, foreclosure delays increase default rates for housing payment. The foreclosure procedure for mortgage loan takes longer time and more steps compared to foreclosure procedure for hire purchase. Therefore, household will choose to pay hire purchase and personal loan instead of mortgage loan. Eventually, if the household allocates a high percentage on both loans, they will live with insufficient money to pay mortgage which affects their repayment affordability.

4.4.5.3 Food and Non-Alcoholic Beverage

Food is the first level in Maslow hierarchy of needs which is important to have for living. Food is a necessity which gives energy and nutrients to help human growth and development. It is normal if the household spends on food but too much amount spending on this category will influence the ability of household toward another commitment. The report of Consumer Price Index Malaysia 2016 shows that the Food and Non-Alcoholic Beverages Index increased to 3.7% in 2016 which rise nearly to 30% faster than another item (Noorazam, 2016).

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The increased prices of basic and food items especially in the urban area like Penang, Kuala Lumpur and Johor have suppressing household's lives. All of these prices are expected to continue rising dramatically in year 2018. Other than the lower income households, middle income households are also heavily hit by high cost of living. The higher allocation of Food and Non-Alcoholic Beverages will influence the repayment affordability of middle income households.

The finding in this study reveals that most of the respondents spend 3% to 10% of their income on food. This is followed by 39% of the respondents spend 11% to 20%, 13% of respondents spend 21% to 30% and lastly only 6% of the respondents spend more than 31% on food as show in Figure 4-3 below.

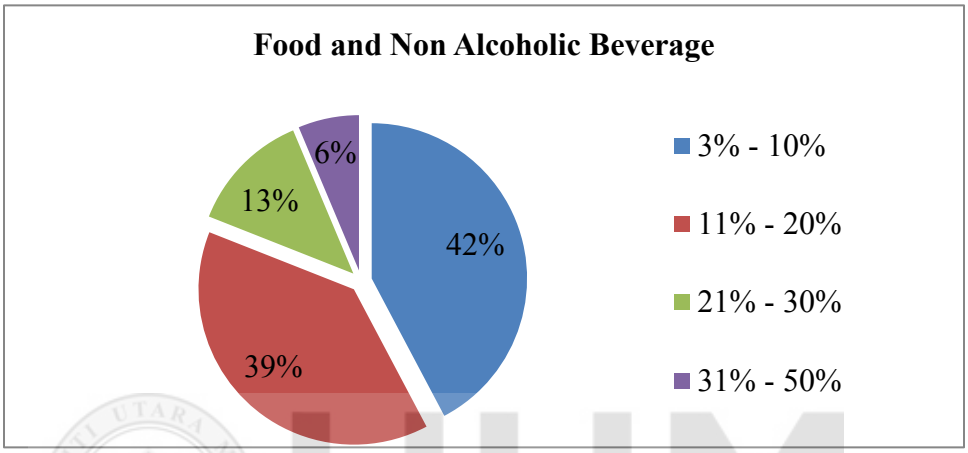

Figure 4-3
Allocation for Food and Non Alcoholic Beverage
Source: Own study

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4.4.5.4 Child Expenses

From the data collected (see Figure 4-4), this study found that more than half of the respondents allocate 3% to 10% of their income for monthly expenses on child care, child education, schooling transportation, school activities and other expenses related to their child. 31% of the respondents spend 11% to 20%, 16% of respondents spend 21% to 30% and only 1% of respondents spend 31% - 65% for their child expenses.

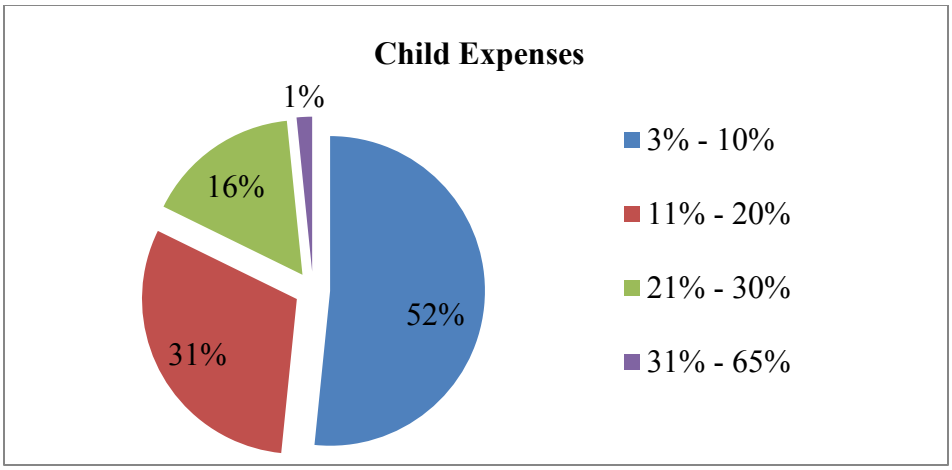

Figure 4-4
Allocation for Child Expenses
Source: Own study

4.4.5.5 Communication

Communication is the process of sending and receiving information among the people (Lasswell, 1948). Communication is important to facilitate the spread of news, knowledge and forms relationships between people (Hornmoen, 2015). Nowadays, the information can be communicated through Internet and telephone instead of face to face communication.

Besides that, migration also leads to an increased communication demand. People migrated from rural to urban and interstates due to job demands, learning institutions and other reasons. Due to this, communication is needed and important for people nowadays. Communication is not only to call on the phone, but every single required information can be searched through internet usage. In order to keep up with technology and information, people will spend more on communication.

This variable has significantly influenced repayment affordability of middle income households who bought houses within six to ten years period. Figure 4-5 shows that most

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of the respondents allocate 1% to 3% of their income for communication expenses. Only 5% of the respondents allocate as high as 7% to 14% for communication expenses. The rest 17% of the respondents spend 4% to 6% of their household income for communication expenses.

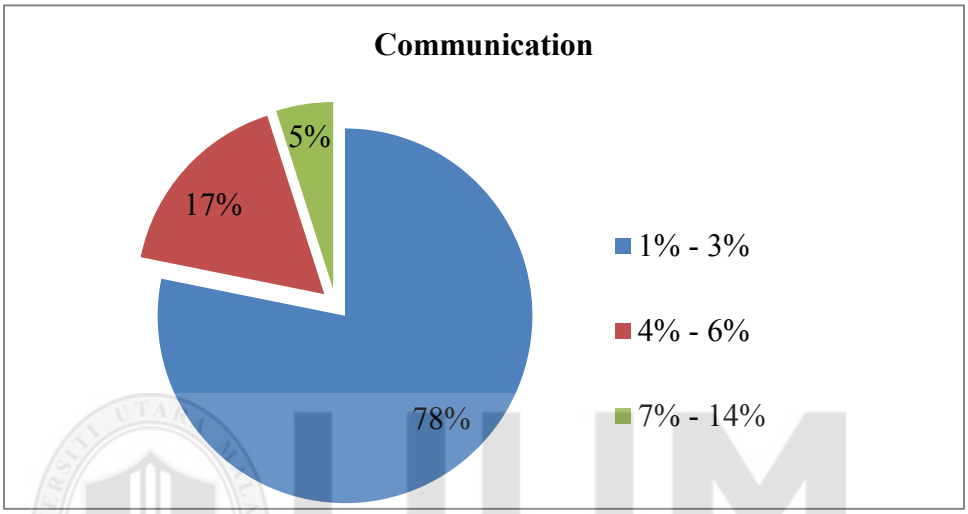

Figure 4-5
Allocation for Communication
Source: Own study

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All of these significant variables which influence repayment affordability need to receive attention by various parties in order to solve the housing affordability issues in Malaysia. Not only those who want to buy a house and current homeowners, policy maker and lenders also needs to take into accounts these non-housing expenditure categories which significantly influence repayment affordability. With the rising cost of living, this non-housing expenditure should be considered in credit assessment to avoid overestimation of the borrower's ability to repay of mortgage loan while having a comfortable living.

CHAPTER FIVE

CONCLUSION

This chapter presents the summary of the thesis findings including some discussion of the empirical results as well as other issues that have emerged. It will include all the results for model 1 to model 3.

5.1 Introduction

The rapid increase of house prices especially in the major cities in Malaysia has caused inaccessibility to housing. In 2014, the housing affordability for Kuala Lumpur and Penang fell into severely unaffordable rating which was above the Malaysia housing affordability that was 4.4 (Khazanah Research Institute, 2015). This problem had greatly impacted the housing affordability of low to middle income households especially those who lived in urban areas.

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The current supply of houses in urban areas was extremely beyond the reach of the middle income households due to high cost of living and heavy debt (Oorjitham, 2014). Moreover, with the soaring housing market price, purchasing a house seems to be difficult for this group because it requires large capital investments and also needs to maintain the basic living necessities like food, clothing, transport, medical care, and education at the same time.

Housing affordability issues does not only focus on the eligibility to access the housing loan but also the ability of households to pay mortgage installment while maintaining non-housing expenditure for the continuity of life without any burden (Bank Negara Malaysia, 2017). According to a report done by Sabri (2017), more than half of the low

income households living in Kuala Lumpur are burdened by cost of living and heavy debt.

In addition, the high cost of living problem has critically pressured the low and middle income households especially those who live in urban areas (Yuen, 2016). This high cost of living issue needs serious attention and consideration as it can cause other problems. The problems regarding the household's psychology, social and safety (Sabstu, 2014), poverty, criminal (Sulaiman & Hashim, 2011), limitation to access education, skills and opportunities (Yuen, 2016) can arise if this cost of living problem is not addressed.

5.2 Summary of the Findings

This study is conducted to examine what is the expenditure which affects the repayment affordability for houses buyers in Penang. The study focuses on middle income households with an income of RM3,860 to RM8,319 per month. The conclusion of the findings for all three models is discussed below.

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Table 5.1
Summary of the Finding

Strongest Influence	**All Respondent**	**Medium Term Buyer**	**Long Term Buyer**
Non-Housing Expenditure vs. Housing Expenditure			
1st	-	Non-Housing Expenditure	Non-Housing Expenditure
2nd		Housing Expenditure	-

Table 0-4 (Continued)

Non-Housing Expenditure Categories			
1st	Hire purchase	Food & Non Alcoholic Beverage	Child Expenses
2nd	Food & Non Alcoholic Beverage	Hire purchase	Hire purchase
3rd	Child Expenses	-	Food & Non Alcoholic Beverage
4th	Personal Loan	-	Communication

Based on the finding in Table 5-1, the study concludes that non-housing expenditure has high impact on middle income household regardless of their period of house buying. Both medium and long term house buyer‟s repayment affordability are affected by this non-housing expenditure. On the other hand, housing expenditure only gives less impact on repayment affordability of middle income households who buy houses within the five years period. The middle income households who buy houses more than five years will not be affected by this housing expenditure. This means after five years of buying a house, the monthly housing installment is not a burden to the middle income households. This situation occurs perhaps due to the household‟s adaptation behavior and having a stable income.

According to human adaptation and coping behavior theory, human have the ability to manage and cope with situations by understanding through thinking, experiencing and the senses. They will identify and become aware of the problem, then learn new ways to solve and cope with problems. As in this study, the middle income households in Penang know that they must pay the house no matter what happens in order to have more

comfortable life in the future. Thus, the household will find the solution to adapt and cope with this issue. The experiences had taught the households how to handle and control their expenditure or do extra work to have sufficient money to pay the housing loans. In additional, in six years and above, the household may have an increment in salary which has led to a more stable income. This finding has answered the third research objective which is to determine which types of expenditure that highly impact the repayment affordability of house buyers among the middle class households in Penang.

The non-housing expenditure has highly impacted the repayment affordability of the middle income households in Penang. Both medium term and long term house buyers are affected by these expenditure categories. However, the categories that affect these households are different according to the period of buying of their houses. Objective one is seeking for categories of non-housing expenditure that significantly influences the repayment affordability of the middle income households working in Penang. As the first research objective, this study is looking for general views which include all data from the middle income households without dividing them into medium and long term house buyers. The finding shows that there are four categories of non-housing expenditures that have significant impacts on the repayment affordability of the middle income households in Penang. The most significant category is hire purchase, followed by food & non-alcoholic beverage, child expenses and personal loan.

However, in the second research objective, this study has the same objective as the first objective but it divides the middle income households into two groups which are medium term and long term house buyers to know if the period of buying will give different

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results. The result shows there are different non-housing expenditure categories that influence the repayment affordability of the middle income households. For the middle income households who buy houses in five years have only two significant non-housing expenditures that influence their repayment affordability. The categories are food & non-alcoholic beverage and hire purchase. On the other hand, repayment affordability of the middle income households who buy houses in six to ten years are influenced by four categories of non-housing expenditure. The significant categories are child expenses, followed by hire purchase, food & non-alcoholic beverage, and communication.

The result on the table above shows there are three categories of non-housing expenditure that influence the repayment affordability of the middle income households in general and in long term period. They are hire purchase, food & non-alcoholic beverage, and child expenses. The medium term house buyers are also influenced by two of the categories which are food & non-alcoholic beverage, and hire purchase. These categories of non-housing expenditure have significantly influenced the repayment affordability of the middle income households but give a different degree of significant according to the duration of house purchase.

Apart from that, food & non-alcoholic beverage has a strong impact on medium term house buyers compared to long term house buyers. This situation happens perhaps because the medium term house buyers in this study are youths or young adults who have recently got married and have babies and kids. Therefore, these households spend more on kid‟s food and milk which are quite expensive. On the other hand, a child expense is the strongest non-housing expenditure category that influences repayment affordability of long term house buyer. Perhaps the long term house buyers in this study have more

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children and have schooling children compared to the medium term house buyers. Therefore, the households may allocate more on children expenses like their education inside and outside school, nursery, transportation, school activities and others.

All of these significant non- housing expenditures which influence repayment affordability need to be taken into accounts by various parties. Not only those who want to buy a house and current homeowners, policy makers and lenders also need to consider these non-housing expenditure categories which a significant influent in repayment affordability of the middle income households in Penang. Lenders and prospect borrowers need to calculate the ability to repay wisely in order to avoid financial burdens which can lead to mortgage delinquency and the worst is foreclosure and bankruptcy. In additional, financial burden may lead to social and psychological problems among the households.

Therefore, the study affirms the importance of the concerned parties to take into account these variables. Besides hire purchase and personal loans that are included in Debt Service Ratio (DSR) calculation, the lending officer needs to include other significant variables such as Food and Non-Alcoholic Beverage, Child Expenses and Communication in the mortgage calculation. With the rising cost of living nowadays, this non-housing expenditure should be considered to avoid overestimation of the borrower's ability to repay the mortgage loan.

As we cannot control the rising cost of living, the households must be able to control household expenditure. Prospective house buyers and mortgage borrowers must have financial management knowledge and financial planning in order to ensure that they are

not burdened with the rising cost of living and piles of debs. Wisely controlling finances not only avoids financial stress but also helps households to live more comfortably in a better social and psychological life.

There are four ways which are recommended to cope with high cost of living such as preparing the budget, work overtime, buy goods only when needed and be thrifty in spending (Sabri, 2017). The Deputy Minister of International Trade and Industry, Datuk Ahmad Maslan said, the government encouraged the people to do two jobs as one of the efforts to address the rising cost of living. In order to endure the financial problem, many Malaysians are doing two jobs to cover the cost of living that is burdening their families. This extra income not only accommodate the increased in the price of goods but also the children education cost since education is necessary towards ensuring better quality life in the future.

Nevertheless, there are pros and cons of doing another job after normal working hours. As has been discussed on the impact of high cost of living, it affects psychology, social, and safety aspects. Spending more time on doing extra work will affect time for families which causes social problems to arise later. This recommendation should be applied and adapted depending on the household‟s situation. For those living alone, they have no problem to do extra jobs as long as they are capable and have no pressure. On the other hand, married persons need to balance between working and family time. But they also can try another alternative like doing online business to get additional side income. They can stay at house spending time with family while earning extra income.

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APPENDICES

Appendix A
The questionnaire of the research

QUESTIONNAIRE

Determinants of Mortgage Repayment Affordability among Middle Income Household in Penang

Dear respondents,

The purpose of this study is to examine the determinants of mortgage repayment affordability among middle income household in Penang. We would kindly invite you to spend little time answering question related to these issues. All information gathered will keep confidential and only for research purpose. Your honest answer is very important to the accuracy of this study. Your cooperation in this regard is highly appreciated.

Responden yang dihargai,

Tujuan kajian ini adalah untuk mengenalpasti faktor-faktor yang mempengaruhi kemampuan membayar pinjaman perumahan bagi golongan isi rumah berpendapatan sederhana di Pulau Pinang. Kami ingin mengambil sedikit masa anda untuk menjawab beberapa soalan yang berkaitan dengan isu-isu ini. Segala maklumat yang diberikan adalah SULIT dan hanya digunakan untuk tinjauan kajian semata-mata. Kejujuran jawapan anda adalah sangat penting untuk ketepatan kajian ini. Kerjasama anda dalam hal ini amatlah dihargai.

Researcher/ *Pengkaji,*

Siti Zulaikha Binti Alzahari
Master Science of Finance
zulaikha_alzahari@yahoo.com

Part A: Respondent's background information / *Latarbelakang responden*

1 Gender / *Jantina*

- ☐ Male / *Lelaki*
- ☐ Female/*Perempuan*

2 Age (years old) /

Umur (tahun)

- ☐ 25 – 30 years old
- ☐ 31 – 39 years old
- ☐ 40 – 44 years old
- ☐ 45 years old and above

3 Race / *Bangsa*

- ☐ Malay/ *Melayu*
- ☐ Chinese/ *Cina*
- ☐ Indian / *India*
- ☐ Other/ *Lain-lain*

4 Marital status / *Taraf perkahwinan*

- ☐ Single/ *Bujang*
- ☐ Married / *Berkahwin*
- ☐ Widow / *Janda, Duda*
- ☐ Other / *Lain-lain*

5 Number of person in your households (including yourself)

Bilangan isi rumah (termasuk anda)

*Answer must be in number of person

**Jawapan hendaklah didalam bilangan angka*

Eg: (0 – 10 persons / *orang*)

- ☐ Numbers of family members ages less than 18

  Bilangan ahli keluarga yang berumur kurang daripada 18

- ☐ Numbers of family members ages 18-60, not working or still studying.

  Bilangan ahli keluarga yang berumur 18-60, tidak bekerja atau masih belajar

- ☐ Numbers of family members ages 18-60, working.

  Bilangan ahli keluarga yang berumur 18-60, yang bekerja

- ☐ Numbers of family members ages more than 60 years old.

  Bilangan ahli keluarga yang berumur lebih daripada 60 tahun

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Part B: Respondent's socio-economic status
Keadaan sosio-ekonomi responden

6 Level of education
Tahap pendidikan

- ☐ SPM and equivalent / *SPM dan setaraf*
- ☐ Diploma and equivalent / *Diploma dan setaraf*
- ☐ Bachelor"s degree */ Ijazah sarjana muda*
- ☐ Master, PhD / *Ijazah sarjana, Doktor falsafah*

7 Type of occupation
Jenis pekerjaan

- ☐ Government sector/ *Sektor Kerajaan*
- ☐ Private sector / *Sektor swasta*
- ☐ Self-employment / *Bekerja sendiri*

8 Duration of employment
Tempoh bekerja
*(*years / *tahun)*

- ☐ < 1 year
- ☐ 1 - 5 years
- ☐ 5 years - 10 years
- ☐ > 10 years

9 Total household income (monthly)
Pendapatan isi rumah (bulanan).

*(*Husband + wife *salaries* + monthly income in regular basis eg part time wages, royalty, dividends etc

Gaji suami + isteri + pendapatan berulang seperti upah kerja sambilan, royalty,dividend dan sebagainya.)

- ☐ RM 3860 – RM 4000
- ☐ RM 4001 – RM 4500
- ☐ RM 4501 – RM 5000
- ☐ RM 5001 – RM 5500
- ☐ RM 5501 – RM 6000
- ☐ RM 6001 – RM 6500
- ☐ RM 6501 – RM 7100
- ☐ RM 7101 – RM8319

10 Do you have part time work / side income?
Adakah anda mempunyai pendapatan atau pekerjaan sampingan?

- ☐ Yes / Ya
- ☐ No / Tidak

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Part C: Respondent's saving patterns
Corak simpanan responden

11 Do you have monthly allocation for saving? / *Adakah anda mempunyai peruntukan bulanan untuk menyimpan?*

- ☐ Yes / Ya
- ☐ No / Tidak

12 If Yes, What % of monthly income do you save?
Jika Ya, *berapa % daripada pendapatan bulanan yang anda simpan?*

- ☐ 1% - 15%
- ☐ 16% - 30%
- ☐ 31% - 50%
- ☐ >50%

13 Is the value of monthly savings are in fixed amount? / *Adalah nilai simpanan bulanan adalah dalam jumlah yang tetap?*

- ☐ Yes / Ya
- ☐ No / Tidak

14 What is your purpose of saving

Apakah tujuan tabungan atau simpanan anda?

- ☐ Wealth creation/ *Menjana kekayaan*
- ☐ Future expenses during financial difficulties/ *Perbelanjaan masa depan semasa kesulitan kewangan*
- ☐ Future expense after retirement/ *Perbelanjaan selepas bersara*
- ☐ Others: ……

15 Did you have emergency fund? Prepare for the unexpected by saving **three to six months of living expenses**

Adakah anda mempunyai dana kecemasan? Disediakan untuk perkara yang tidak dijangka dengan menyimpan ***tiga hingga enam bulan daripada perbelanjaan sara hidup****.*

- ☐ Yes / Ya
- ☐ No / Tidak

**An emergency fund should be easy to access in the event of unemployment, illness or a major unplanned expense / *Dana kecemasan harus mudah untuk diperolehi sekiranya berlaku pengangguran, sakit atau perbelanjaan besar yang tidak diduga.*

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Part D: Respondent's housing purchase information
Maklumat pembelian perumahan responden

16 Please specify the location of your house purchased _____
Sila nyatakan lokasi rumah yang dibeli

17 The total purchase price of the house? RM _____

J*umlah harga pembelian rumah?*

18 How long is the duration of housing loan repayments? Years /
Berapa lamakah tempoh bayaran balik pinjaman perumahan? _____ *Tahun*

19 How much is the monthly installment payment for housing loan? / *Berapakah bayaran ansuran bulanan untuk pinjaman perumahan?* RM _____

20 Duration of house purchased? / *Tempoh pembelian rumah?*
- ☐ 1 year - 5 years
- ☐ 6 years - 10 years

21 The house purchase on what year of your employment? / S*ewaktu pembelian rumah pada tahun ke berapakah anda bekerja?*
- ☐ < 1 year
- ☐ 1 - 5 years
- ☐ 5 years - 10 years
- ☐ > 10 years

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Part E: Respondent's household consumption expenditure
Corak perbelanjaan isirumah responden

22 The total amount of monthly household expenditure? / *Jumlah perbelanjaan bulanan isi rumah?* **(exclude housing installment/ *kecuali instalmen perumahan)*** RM_____

	Household Consumption Expenses Categories	Average Monthly Allocation
i	**Food & Non Alcoholic Beverage / *Makanan & Minuman Bkn Alkohol***	RM
ii	**Utilities / *Utiliti*** Monthly expenses regarding electricity, water, sewer and any regular expenses need to paid in order to operate the home / *Perbelanjaan bulanan mengenai elektrik, air, pembetung dan apa-apa perbelanjaan tetap perlu dibayar untuk mengendalikan rumah*	RM
iii	**Transportation & Fuel / *Pengangkutan & Bahan Bakar*** Monthly expenses regarding transportation services, fuel or gas expenses includes parking fees (if any) / *Perbelanjaan bulanan mengenai perkhidmatan pengangkutan, bahan api atau gas perbelanjaan termasuk bayaran letak kereta (jika ada)*	RM
iv	**Communication / *Komunikasi*** Monthly expenses regarding telephone fixed line, mobile phone and internet service / *Perbelanjaan bulanan mengenai telefon talian tetap, telefon bimbit dan perkhidmatan internet*	RM
v	**Entertainment / *Hiburan*** Monthly expenses regarding subscriptions to television networks / *Perbelanjaan bulanan mengenai langganan rangkaian televisyen.* Eg: ASTRO, Njoi, Netflix	RM
vi	**Child Expenses / *Perbelanjaan Anak-Anak*** Monthly expenses regarding child/ren care (nursery/kindergarten), child/ren education expenses/ Perbelanjaan bulanan mengenai penjagaan anak (taska/pegasuh/ tadika), perbelanjaan pendidikan atau persekolahan anak	RM
vii	**Life Insurance / *Insurans Hayat*** Monthly service charges for **life assurance**, **death benefit assurance**, **child education assurance**, etc / *Caj perkhidmatan bulanan untuk insurans hayat, jaminan manfaat kematian, jaminan pendidikan anak, dan lain-lain*	RM
viii	**Insurance Connected With The House/ *Insurans Berhubung Dgn Rumah*** Monthly service charges **paid by owner-occupiers for the kinds of insurance against fire, theft, water damage**, etc / *Caj perkhidmatan bulanan yang dibayar oleh pemilik-penghuni untuk jenis insurans terhadap kebakaran, kecurian, kerosakan air, dan lain-lain*	RM
ix	**Insurance Connected With Health / *Insurans Berhubung Dgn Kesihatan*** Monthly service charges for private **sickness and accident insurance** / *Caj perkhidmatan bulanan untuk penyakit dan insurans kemalangan.*	RM
x	**Other Insurance / *Lain-Lain Insurans :***	RM
xi	**Auto Loan /Hire Purchase Loan**	RM
xii	**Education Loan**	RM
xiii	**Personal Loan**	RM
xiv	**Credit Card**	RM

You may write any suggestion, problems or any comment relates to issues on housing affordability (optional).
Anda dijemput memberikan sebarang cadangan, permasalahan atau komen mengenai isu pemilikan rumah (pilihan).

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Thank you! I really appreciate on your additional comments. Your cooperation in this regard is highly appreciated. *Terima kasih. Kerjasama anda dalam hal ini amatlah dihargai.*

Your information will keep CONFIDENTIAL and only for research purpose / *Segala maklumat yang diberikan adalah SULIT dan hanya digunakan untuk tinjauan kajian semata-mata.*

~ MAY YOUR DAY BE FILLED WITH BLESSINGS ~

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Appendix B
An overview of research area: Penang

Appendix B review the research area of the study. The tremendous increased of house prices in several urban cities in Malaysia such as Kuala Lumpur and Penang have caused inaccessibility to housing (Bank Negara Malaysia, 2018). The housing affordability index that beyond the national index level for these major cities have greatly impacts the low to middle income households to buy a house (National Property Information Centre, 2015). Therefore, this study selects Penang as the research area.

History of Penang

Penang is formerly known as Pulau Ka Satu. This name is derived from the story of a sailor named Ragam. The island was the only big island he found when commuting to trade from Lingga to Kedah (Penang State Museum, 2013). The name Pualu Ka Satu continued to be used until the arrival of the British in year 1786. When the areca nut palm was planted on the island after the arrival of the British, the island's name was changed to Penang. Its comes from the modern Malay name *Pulau Pinang*, which means 'the island of the areca nut palm' (Gardner, Sidisunthorn, & Lai, 2011) The name Penang may refer either to Penang Island or the State of Penang. Penang is also known as the Pearl of the Orient and Penang Island, The Island of Pearls (National Library of Malaysia, 2000).

Before the used of Penang's became popular, residents in Seberang Perai referred Penang as Tanjong Penaga in honor of the name of the penaga trees that grew around the land of Fort Cornwallis. Until year 1800, this name or the short name of Tanjong is still used in land grant issued by the government. In fact, up until now the name Tanjong is so

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compatible with the residents of Penang and Seberang Perai when referring to Georgetown.

Pre History of Penang and Seberang Perai

Captain James Lancaster was among the earliest British traders who discover Penang. In 1591, Britain sending three vessels for a trade mission to the East Indies. James Lancaster's vessel known as The Edward Bonaventure was one of them. Based on the captain's journey notes, they stop by at Pulau Rimau which located in southern of Penang Island for few months in June 1593. On his way to proceed the journey, he discovered Penang Island that appeared to be uninhabited (Penang State Government, n.d).

Archaeological evidence shows that Penang Island and Seberang Perai have been inhabited since Neolithic era ("Prehistoric human skeleton found at Penang neolithic site ", 2017). The first proof of national history was found in Guar Kepah, Seberang Perai in 1860 ("Penang to seek Unesco heritage status for Guar Kepah neolithic site," 2017). Based on the human skeleton, beads, pottery and hunting tools found under the seashells, it is expected that Guar Kepah is inhabited at least about 3,000 to 4,000 years ago. While the discovery of rock tools in several places in Penang Island shows the tools was Neolithic evidence which used during the early agricultural era expected at least 5,000 years ago.

Historically, Penang and Seberang Perai were originally belonged to the Kedah sultanate. Before being taken over by the British East India Company, these two areas had occupants. Based on a land survey and area dated 1795, Datok Keramat area has been inhabited since 1705. The findings of the Malay village and eighteen acres of burial

grounds in the area are the evidence of early inhabited before being taken by the British East India Company. For Seberang Perai, during the takeover of the British East India Company in 1800, the population was estimated to be between two to three thousand occupants and heavily forested.

Founding of Penang.

Penang's modern history began in 1786 when an English trader from the British East India Company, Captain Francis Light landed in Penang Island, which was a part of Kedah state on that time. For Francis Light's view, the island that located in the middle of the trade route is an ideal location as a "convenient magazine for trade" and to reduces the development of the French and Dutch territories in Southeast Asia (Penang State Tourism Development & Culture 2008).

At the same time, the British East India Company is also looking for a naval base in this area for the maintenance of Royal Navy ships. Meanwhile, Kedah Sultanate faces threats from Siam and Burma, who known as the stronger northern rivalry with additional problem arise from the internal Bugis insurgency. With this situation in Kedah, Light takes an advantage to negotiate with Sultan Abdullah Mukarram Shah from Kedah. Light proposed the Penang acquisition to British East India Company and in exchange for providing military assistance to Kedah against their enemy.

The negotiation plan was successfully approved by Sultan Abdullah. Light officially acquired the island on 11 August 1786 on behalf of His Britannic Majesty, King George III and The British East India Company as shows in Figure 2-1 below. Later, he renamed the island as Prince of Wales Island in honor of the heir to the British throne and

established an area named as George Town at the north eastern tip of the island in honor of King George III.

Figure B-1
The acquisition of Penang Island by Captain Francis Light
Source: National Archives of Singapore, 2012

Unfortunately, Light has acted without the consent of Sultan Abdullah in India (Penang State Tourism Development & Culture 2008). Since Light did misconduct and do not follow the agreement as agreed, Sultan Abdullah attempted to reconquer this Island in 1791. However, his fight failed. In 1794, most of early occupants, including Light died cause of malaria (Hockton & Tan, 2012; Ooi, 2010).

Possession of Seberang Perai by British

In 1800, Lieutenant Governor Sir George Leith acquires a hinterland on the Malay Peninsula opposite Penang Island through an agreement between the British East India Company and Sultan Dhiauddin Mukarram Shah II. This land is named as Province Wellesley or known as Seberang Perai nowadays.

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After the acquisition, the area of Wellesley Province then gradually expanded to three times in 1831, 1869 and 1874 (National Archives of Singapore, 2012; Penang State Tourism Development & Culture 2008). The expanded of Wellesley Province area from 1800 till 1874 as shows in Figure 2-2 below. In exchange for acquisitions, annual payments to the Sultan of Kedah increased to 10,000 Spanish dollars a year. Up to today, the Malaysian government still pays Kedah, on behalf of Penang, RM 10,000 each year as a symbolic sign (Everett-Heath, 2017; Penang State Tourism Development & Culture 2008).

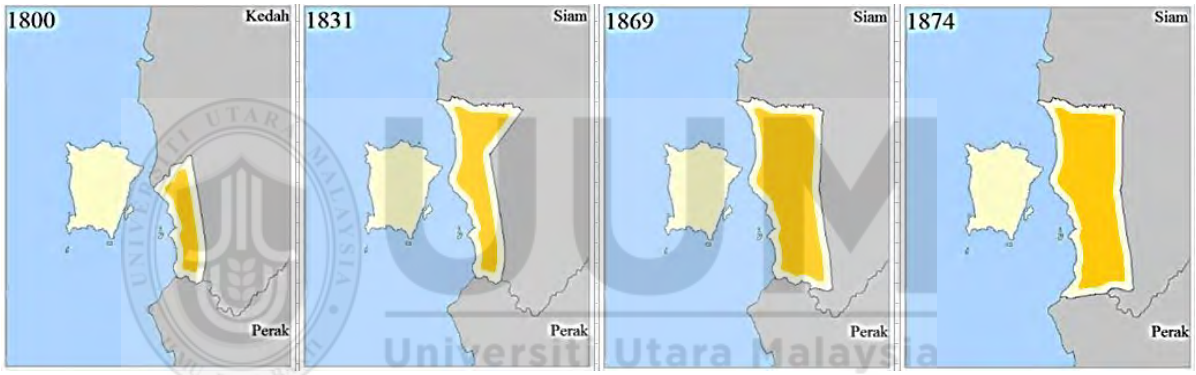

Figure B-2
The expanded of Wellesley Province area from 1800 to 1874
Source: National Archives of Singapore, 2012

The Coat of Arm of Penang

The areca nut palm is the original sign of the island name. The yellow square contains a picture of the Penang Bridge which supported by two pillars and four cables that hold the

pole. These two pillars symbolize the New Economic Policy which is the eradication of poverty and the restructuring of society. Four cables symbolize four types of races of the occupants in the state namely Malay, Chinese, Indian and others.

The blue and white strips are the symbol of the ocean. Five strips of each color give meaning to the five principles of the National Principle and the five administrative districts in Penang (Penang State Museum, 2013).

Flag of Penang

The flag was first used in 1949 after Penang became as one of the Federation of Malaya‟s state and it was slightly modified in the 1960s (Macdonald, 2015). Penang‟s flag consists of three vertical colors and an areca nut palm at the center. The colors are light blue, white and yellow. All three colors have equal width.

The colors used for the flag are derived from the colors used on coat of arms of Penang. Light blue represents the sea that surrounds Penang Island, white represents peace and yellow for the prosperity of the state (SouthWest District and Office Penang, n.d). The areca nut palm known as *pokok pinang* in Malay is a symbolizes the tree from which Penang got its name.

Geography

Penang is one of the 13 states in Malaysia. This state located near to the northwest coast of Peninsular Malaysia. It is separated between Kedah in the north and east, Perak in the south and Melaka Strait and Indonesia in the west. Penang States consist of two parts known as the island and the mainland known as Seberang Perai.

The total area of both Penang islands and Seberang Perai is 1,031km². With this land mass, Penang is the second smallest state in Malaysia after Perlis. Both the Island and mainland are connected by the ferry service as well as two bridges, the 13.5km Penang Bridge and the 24km Sultan Abdul Halim Mu'adzam Shah Bridge (Penang State Government, n.d).

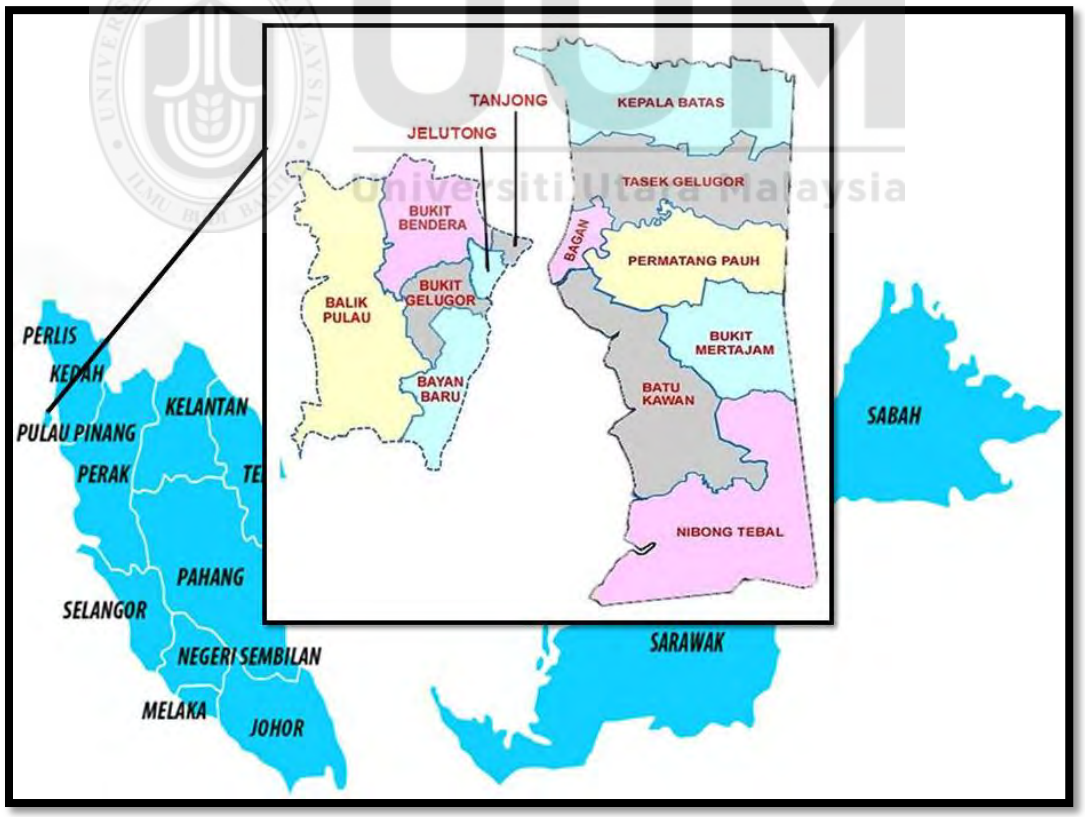

Figure B-3
The Map of Malaysia and Penang
Source: Penang State Museum, 2013

In 2005, Penang was recognized by the Federal Government as a Multimedia Super Corridor (MSC) Cyber City. Chief executive officer of Multimedia Development Corporation, Datuk Dr. Mohamed Arif Nun, said the award of cyber city to Bayan Lepas Free Industrial Zone was given due to the development of the electronics industry ("Membawa MSC ke seluruh negara," 2005). The electronic industry in Penang has started since 1970 when several American giant semiconductor companies moved their operations on the island.

Up till now, there are many well-known electronics manufacturers and other components such as Dell, Intel and AMD who have their Asia‟s headquarters in Penang. Chief Minister Tan Sri Dr Koh Tsu Koon said the inclusion of these big companies has provide more job opportunities to locals and residents of neighboring states while drive to boost Malaysia's economy ("Pulau Pinang dapat status MSC," 2005).

Channel News Asia reported that this strong base in manufacturing has led to Penang to become the "Silicon Valley of the East". Penang emphasis on the world technology through hardware manufacturing which grown into a hardware hub. The growing event has caught international attention and it has highlight Penang as Asia's next Silicon Valley ("Asia‟s next silicon valley takes shape in Penang ", 2018).

Another interesting fact is Penang forms the Malaysia's second biggest conurbation called as The Greater Penang. Conurbation means the grouping of major cities in a very large capacity. The Greater Penang Conurbation consists of the island and mainland of Penang, southern part of Kedah and northern part of Perak. It is centered in Penang's capital city, George Town which also the second most populous city in Malaysia after Kuala Lumpur

(National Higher Education Research Institute, 2010; Yow, 2010). For that reason, this conurbation also known as Georgetown Conurbation. The Georgetown conurbation has 2.5 million to 3 million inhabitants which indirectly make it as the second most populous metropolitan area after Klang Valley ("Penang as an „Entrepreneurial State"," 2015). In addition, with the concentration on manufacturing sectors, Greater Penang is one of the nation's economic powerhouses. The conurbation generated a Gross Domestic Product of US$ 13,596,418 in 2010 (Economic Planning Unit, 2015).

Penang has the highest population density and one of the most urban states in Malaysian. The urbanization level recorded by this state is 90.8% as year 2015 (Opalyn, 2016). Georgetown as the capital city of Penang is the most thriving and urbanized area of Greater Penang. The major suburban areas on Penang Island are Bayan Lepas and Balik Pulau while the other suburban area includes Batu Maung, Teluk Kumbar,Relau,Pulau Tikus,Tanjung Bungah and so on as shows in figure below (see Figure2-4). For the mainland part, Butterworth serves as the heart of Seberang Perai. The major suburban areas in Seberang Perai are Bukit Mertajam, Perai, Nibong Tebal and Kepala Batas. Other suburban areas in Seberang Perai are Alma, Juru, Permatang Pauh, Batu Kawan, Tasek Gelugur, Seberang Jaya, Simpang Empat and Sungai Jawi. All these area are included as the research area in this study.

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Figure B-4
Urban and Suburban Area in Penang
Source: World Urban Forum, 2018

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Demographic

The 2010 Population and Housing Census is the census of the fifth decade to be carried out since the establishment of Malaysia in 1963. The previous census was conducted in 1970, 1980, 1991 and 2000. This census was a large statistical project that implemented to produce useful data to planning for national development. According to the Population and Housing Census 2010, the population distribution in Penang is 1.56 million occupants after Selangor (5.64m), Johor (3.35m), Sabah (3.21m), Sarawak (2.47m), Perak (2.35m), Kedah (1,95m) and Kuala Lumpur (1.67m). The distribution of population by states in Malaysia for 2010 as shown in chart below.

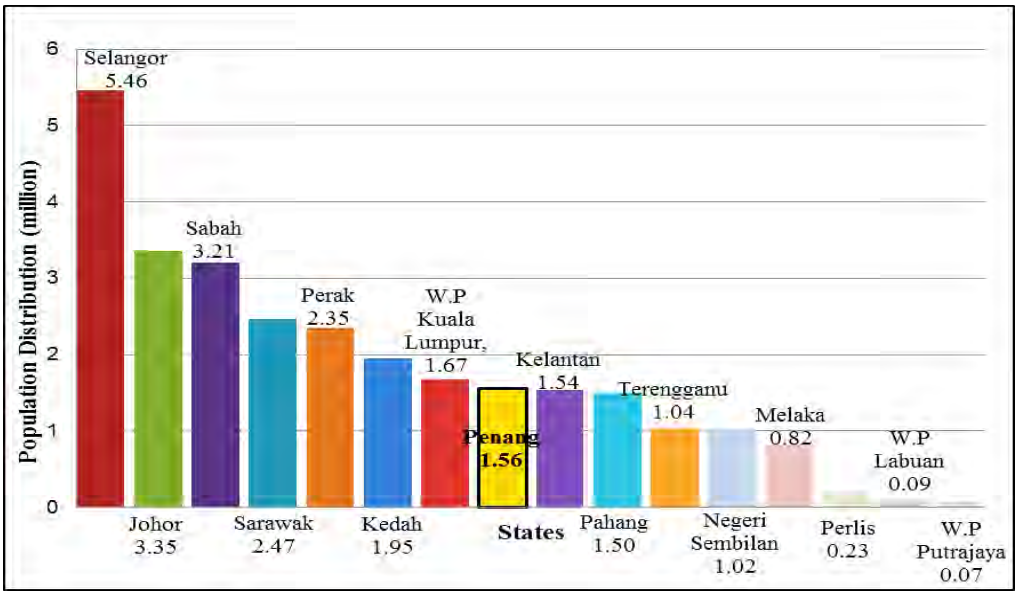

Figure B-5
The Population's Distribution by States in Malaysia for 2010
Source: Department of Statistic Malaysia, 2011

Penang's population is almost equally distributed between the island and the mainland. In 2010, Penang Island had a population of 722,384 occupants or 46.27% while the mainland, Seberang Perai had a population of 838,999 occupants or 53.73% (Department of Statistic Malaysia, 2010). The chart shows both island and mainland has nearly equal distribution of population.

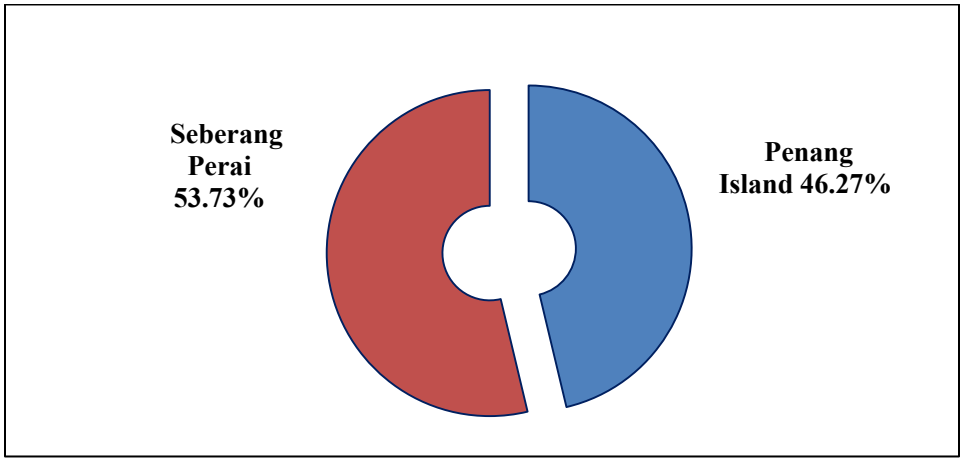

Figure B-6
Penang's population distributed between the island and the mainland
Source: Department of Statistic Malaysia, 2011

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However, the population density revealed a different picture. Population density is the total number of occupants per square unit of surface area (Department of Statistic Malaysia, n.d). The density of people per square kilometer is calculated as the ratio of the population of the geographical area given to the number of square kilometers for the same area. Its means in one square kilometer for the area, how many occupants are stays. Therefore this measure is more compatible to use and compared with other states. The calculation of population density is:

$$\frac{Number\ of\ person\ in\ given\ area}{Area\ in\ square\ kilometers\ for\ the\ same\ area}$$

The density of Malaysia's population in 2010 is 86 occupants per square kilometer. Compared to the fourth census in 2000, only 71 occupants were in square kilometers. This means, that the density of the population in Malaysia has increased.

Due to the dynamic economy, between the year 2015 to 2016, Penang is also one of the states in Malaysia that received high migration of interstate. Penang attracted around 12,000 new interstate immigrants (C. Tan, 2017). According to Migration Survey Report 2016, it‟s recorded that Penang has the highest ratio of migration effectiveness among states in Malaysia with interpretation for every 42 Malaysian migrated out of Penang, 58 Malaysians from other states moved in to Penang (Department of Statistic Malaysia, 2017c). The most three interstate immigrants who moved to Penang come from Perak with 28%, followed by Selangor 21% and Kedah with 20%. Other interstates immigrant are shown as below. Penang is estimated to have a population of 1,746,300 persons as of 2017 (Department of Statistic Malaysia, 2017b).

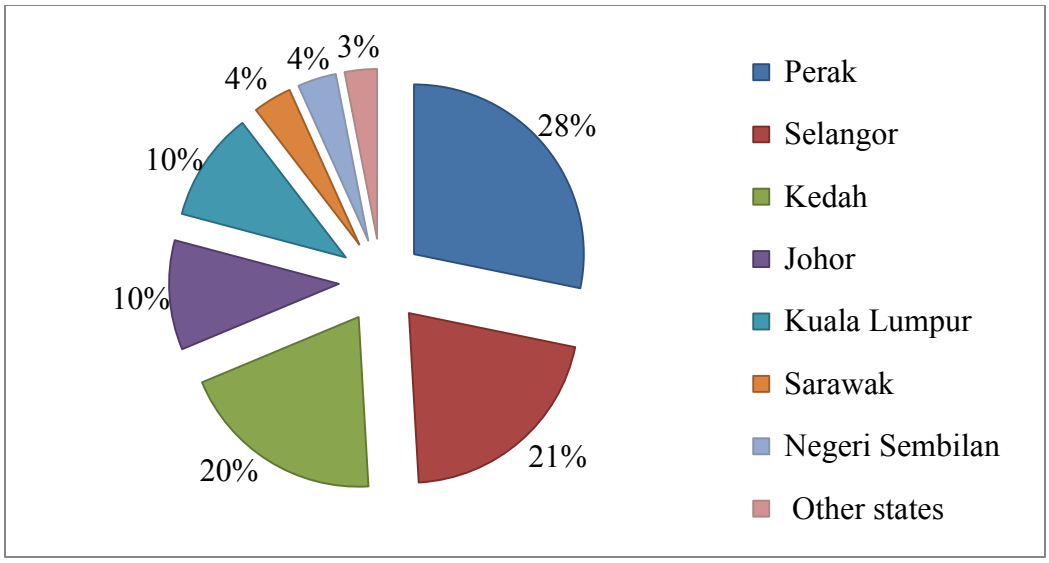

Figure B-7
Sources of interstate immigrants to Penang in 2016
Source: Department of Statistics Malaysia, 2017

Districts

Penang is divided into five administrative districts. Penang Island has two districts North East and South West. North East with a land area of 124 square kilometer is where the Georgetown, the most populous city and capital city of Penang is located. South West with 175 square kilometer has the cyber city, Bayan Lepas Free Industrial Zone and Balik Pulau. Both locations are major suburban areas in Penang Island.

Seberang Perai, the mainland of Penang has three administrative districts known as Northern Seberang Perai, Central Seberang Perai and Southern Seberang Perai. Northern Seberang Perai with an area of 267 square kilometer is bordering with south of Kedah while Southern Seberang Perai with an area of 242 square kilometer is bordering with northern Perak.

Central Seberang Perai has Butterworth, the heart city of Seberang Perai with land area of 238 square kilometer. Butterworth is under the jurisdiction of a Penang state government

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agency, Seberang Perai Municipal Council. This government agency's headquarters is located in Bukit Mertajam and it is responsible for urban planning, conservation of heritage, public health, sanitation, waste management, traffic management, environmental protection, building control, social and economic development, and general urban infrastructure maintenance.

Contrary to the Municipal Council that overseeing the provision and maintenance of urban infrastructure, each district deals with land administration and revenue. Thus, each of these districts has land and district offices controlled by a district officer. The division of districts in Penang is shown in Figure 2-8 below:

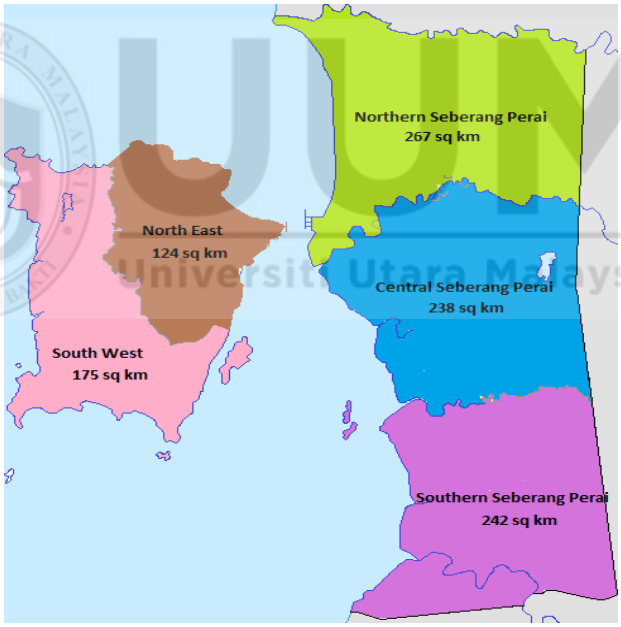

Figure B-8
Districts of Penang and Its Land area (sq. km)
Source: Penang State Government, n.d

Ethnicity

Penang is historically regarded as a country dominated by Chinese ethnic. However, Bumiputera ethnic who consists of Malays and East Malaysian indigenous natives have achieved similarities with the Chinese population in Penang recently. An estimation carry

out by the Department of Statistic Malaysia (2017b), the number of Bumiputera population are reaching 42%, Chinese population is 40% and the Indian population in Penang is 9.5% and the rest are foreigners as shows in Table 2-1 below.

According to the Population and Housing Census 2010 and Demography and Economy Report 2014 released by Department of Statistics Malaysia, Penang's capital city known as the cosmopolitan area, Georgetown is still dominated by Chinese ethnic. Chinese are the majority ethnic stays in the island, while the Malays now form a plurality in the mainland. Based on Table 2-1 below, Chinese population on North East of the Island in 2015 is 326.8 thousand occupants while 111.3 thousand of Malays and 2.7 thousand of other bumiputera occupants. On the other side, at the mainland, all districts at Seberang Perai have Malays ethnics as majority occupants compared to Chinese.

Penang also has a large population of expatriates. Expatriate means a person or group living in another country where it is due to his ability and contribution (MyGovernment, n.d). In simple elaboration is 'a professional worker sent overseas by their company'. Due to high professionalism or skill, this group is accepted by a country and known as expatriates. Whereas, manual laborers who move to other countries to earn more income are labeled as 'immigrants'.

Nearly 8.5% of Penang's population consists of foreigners mainly from Singapore, Japan, various Asian countries and other Commonwealth countries. This situation reflects the well establish and attractiveness of Penang among expatriates. Most expatriates live around Georgetown, Tanjung Tokong, Tanjung Bungah and Batu Ferringhi (Penang State Government, n.d).

Table B-1

Population by Districts in Penang for 2011-2015 ('000)

District	Year	Total	Total M'sian	Bumiputera		Chinese	Indian	Other	Non-Msian
				Malay	Others Bumiputera				
North East	2011	527.3	491.8	109.1	2.5	323.5	55.0	1.7	35.5
	2012	529.4	494.3	109.6	2.5	324.5	56.0	1.7	35.1
	2013	531.4	496.7	110.2	2.6	325.3	57.0	1.6	34.7
	2014	533.3	499.1	110.7	2.6	326.1	58.0	1.6	34.2
	2015	535.2	501.4	111.3	2.7	326.8	59.1	1.6	33.8
South West	2011	206.3	194.9	118.4	1.0	62.7	12.2	0.6	11.4
	2012	209.1	197.6	119.9	1.1	63.9	12.2	0.6	11.5
	2013	211.9	200.4	121.5	1.1	65.0	12.2	0.6	11.5
	2014	214.7	203.1	123.0	1.1	66.2	12.1	0.6	11.6
	2015	217.6	205.9	124.6	1.1	67.3	12.1	0.7	11.7
Northern Seberang Perai	2011	300.4	289.4	175.3	0.9	89.2	23.4	0.6	11.0
	2012	303.0	291.8	177.5	0.9	89.4	23.4	0.7	11.2
	2013	305.6	294.3	179.8	0.9	89.5	23.4	0.7	11.3
	2014	308.1	296.7	182.1	0.9	89.7	23.3	0.7	11.4
	2015	310.7	299.1	184.5	0.9	89.8	23.3	0.7	11.6
Central Seberang Perai	2011	380.3	345.9	173.7	1.5	133.8	35.8	1.1	34.3
	2012	384.0	349.3	177.1	1.5	133.8	35.7	1.2	34.7
	2013	387.7	352.7	180.5	1.5	133.8	35.7	1.2	35.0
	2014	391.4	356.0	184.0	1.6	133.7	35.6	1.2	35.4
	2015	395.1	359.4	187.6	1.6	133.5	35.5	1.2	35.7
Southern Seberang Perai	2011	179.4	170.0	70.8	0.6	66.1	32.2	0.4	9.4
	2012	185.6	175.9	74.1	0.6	67.6	33.2	0.4	9.7
	2013	191.9	181.9	77.6	0.6	69.1	34.1	0.5	10.0
	2014	198.1	187.9	81.0	0.6	70.7	35.1	0.5	10.3
	2015	204.4	193.9	84.5	0.7	72.2	36.1	0.5	10.5

Source: Department of Statistics Malaysia, 2017

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