Factors Influencing the Basic Needs Budget Among the Middle Income Earners in Selected Major Cities in Malaysia

(Faktor-faktor yang Mempengaruhi Belanjawan Keperluan Asas dalam kalangan Kumpulan Berpendapatan Menengah di Bandar Utama Terpilih Malaysia)

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ABSTRACT

This paper investigated the main factors influencing the basic needs budget in three major cities with a high cost of living in Malaysia. The analysis of variance tests result indicated that the Federal Territory of Kuala Lumpur, the state of Penang and Johor are places with high cost of living. The result also revealed that the middle income group are those who earn an income between RM2,992.50 to RM8,999 a month and the salaries of teachers were used as a proxy for the middle income groups. The Ordinary Least Squares (OLS) regression analysis indicated that there is a difference between the basic needs budget for single-adults and one-working parent families and furthermore, the basic needs budget in the cities of Kuala Lumpur, Johor Baharu and George Town is slightly different in each town. By and large, there is a difference in the basic needs budget between single-adults in Kuala Lumpur and Johor Bahru, and between two-working parent families among the three major cities. It is however interesting to note that there is no difference in the basic needs budgets among one-working parent families in these cities. The results also revealed that the total household income, family size, age of head of household, sex ratio, number of rooms, electrical appliances usage cost, broadband subscribers and number of privately owned cars all significantly influenced the basic needs budget regardless of which cities the respondents live.

Keywords: basic needs budget; cost of living; middle income

ABSTRAK

Artikel ini telah mengenal pasti faktor-faktor utama yang mempengaruhi belanjawan keperluan asas di tiga buah bandar utama yang mempunyai kos sara hidup yang tinggi di Malaysia. Hasil keputusan analisis varian menunjukkan Kuala Lumpur, Pulau Pinang dan Johor merupakan negeri yang mempunyai kos sara hidup yang tinggi. Selain itu, kumpulan pendapatan menengah ialah mereka yang memperolehi pendapatan antara RM2,992.50 hingga RM8,999 sebulan dan kajian ini telah menggunakan guru sebagai penanda aras bagi kumpulan pendapatan menengah. Analisis regresi OLS menunjukkan terdapat perbezaan belanjawan keperluan asas di antara isi rumah bujang dewasa dan isi rumah yang salah seorang ibu atau bapa bekerja dan selanjutnya, belanjawan keperluan asas di bandar Kuala Lumpur, Johor Bahru dan George Town adalah berbeza antara satu sama lain. Secara keseluruhannya, terdapat perbezaan belanjawan keperluan asas di antara isi rumah bujang dewasa di Kuala Lumpur dan Johor Bahru, dan antara isi rumah yang kedua-dua ibu bapa yang berkerja di tiga buah bandar utama. Walau bagaimanapun, tidak terdapat perbezaan belanjawan keperluan asas di antara isi rumah yang salah seorang ibu atau bapa bekerja di tiga buah bandar dalam kajian ini. Hasil kajian juga menunjukkan keputusan yang signifikan bagi jumlah pendapatan isi rumah, saiz keluarga, umur ketua isi rumah, nisbah jantina, bilangan bilik, kos penggunaan barangan elektrik, langganan jalur lebar dan bilangan kenderaan dalam mempengaruhi belanjawan keperluan asas tanpa mengira di bandar mana responden tinggal.

Kata Kunci: belanjawan keperluan asas; kos sara hidup; pendapatan menengah

INTRODUCTION

The basic needs budget or family budget refers to the ability of families to meet their basic needs with their current level of income (Allegretto 2006) and this shows a similarity with the concept of minimum expenditure. Nicholson and Synder (2008) stated that the minimum expenditure is the expenditure needed to achieve a given

utility with limited income to maintain a safe and decent standard of living (Chien & Mistry 2013; Diamond 1990; Flanagan & Flanagan 2011; Rosewater 1921). Similarly, according to the researchers, the basic needs budget is a minimum expenditure to hold and maintain a simple standard of living. How much the working families must earn in order to meet their basic needs has been the subject of much debate and the basic needs budget is able to answer this question (Fisher & French 2014). The Joint Fiscal Office or JFO (2015) in the State of Vermont, USA, defined the basic needs budget to include the cost for essential items such as food, housing, transportation, child care, clothing, utilities expenses, health and dental care, life insurance, and savings

As the cost of living continues to rise and salaries remain at a stagnant level for a long period of time, the size of the Malaysian middle class may shrink and some may even fall off into urban poverty. Higher willingness to pay for better quality products and a higher savings rate has caused the middle income group to play an important role in the economic development of the nation (Asian Development Bank 2010; Dyck et al. 2009). Since there is no standard definition for middle income, the current authors defined the range of middle income group to be between RM2,992.50 to RM8,999 a month. This definition of a middle income group follows Birdsall et al. (2000) in which they defined the middle income group as those individuals whose income are between 75 per cent and 125 per cent of the median per capita income of society. The term 'middle income' which is commonly used in Malaysia is based on a household and income share of 40 per cent from the Household Expenditure Survey (HES) report which is around RM3,800 to RM8,999 in 2014. For this study, the authors took into account the median monthly household income and income share not only based on the HES report, but also the Household Income and Basic Amenities Survey as well as the Salaries and Wages Report median income of the education sector workers in 2014 (Department of Statistics 2012; 2013; 2014; 2015a; 2015b; 2015c; 2016) to define the middle income group. From a different perspective, a middle income household is indirectly a reflection of graduates with degree as this study used teachers as a benchmark.

Other than the highest number of teachers in primary and secondary schools in 2014 of 412,456 (Ministry of Education 2014) that fall within the middle income group definition, the income of teachers is also more stable and has frequently been taken as a benchmark for other civil service groups in the government annual budget and by others. Teachers are also entitled to a grade 41 salary scale with a starting salary of RM1,917 and a maximum salary of RM11,864 a month at grade 54 (Department of Civil Services 2015). In addition, from the Salaries and Wages Report the highest median salary recorded by employees in the education sector in Malaysia was RM2,803 a month in 2010 and rose to RM3,990 a month in 2015 (Department

of Statistics 2012; 2016). Lim and Ooi (2013) carried out a study on goods and services tax (GST) and revealed that the middle and low income groups need to pay 3.07 per cent of their monthly income of RM2,500 as GST. Being caught in the affordable housing trap has become a big issue for the middle income groups where they cannot own a house because the acceleration in house prices has been so rapid (Economic Planning Unit 2015; Raja Ariffin et al. 2015).

For the middle income group with relatively limited purchasing power, they will feel the effects of the rising cost of living depending on their basic needs as well as spending patterns. Some middle income earners may also suffer from deficits in their budgets. Given the higher and rising cost of living in the cities over time, it has become increasingly difficult for middle income households in the cities to accommodate their basic needs budget and maintain a modest or even the same standard of living as before. From a different perspective, it is important to know how much income that the middle income should earn in order to at least maintain their standard of living as previously, and what should the government do to curb the problems of the middle income issue regarding the cost of living, particularly for those who live in the large major cities. Therefore, the aim of this study is to identify the main factors influencing the basic needs budget in the three major cities with the high cost of living in Malaysia, namely George Town, Kuala Lumpur and Johor Bahru.

LITERATURE REVIEW

Many previous studies have focused on the household expenditure rather than the basic needs budget. For example, Allegretto (2006) analysed data based on actual working family incomes and the associated basic family budget where differences in their cost of living were built into the budget calculations. Flanagan and Flanagan (2011) explored the living wage for low and fixed income families by trying to determine whether the cost of living for people with low incomes was higher than for people with higher incomes. Fisher and French (2014) researched how much working families in Iowa, USA must earn in order to meet their basic needs. For families who cannot afford to bear the most basic living expenses, the government through its public support programmes will help in meeting and fulfilling the basic needs of this group. From another perspective, Ismail (1971) studied the elasticities of household expenditure in West Malaysia based on the Engle function, and aimed to describe the influence of household income on household consumption. Deaton et al. (1980) conducted a study of the effects of household composition on household consumption patterns and the relationship between measurement of costs and the effects of children on the household budget in Spain. Moreover, Sekhampu

and Niyimbanira (2013) further analysed household expenditure patterns and identified the relationship between household expenditure and the socio-economic and demographic characteristics of the household.

Allegretto (2006) pointed out that the ability of families to meet their most basic needs is an important measure of economic stability and well-being. Furthermore, Renwick (1998) indicated basic needs as a standard greater than that required for mere physical survival but below the average consumption pattern. Renwick (1998) carried out a study of the basic needs budget for low income families using all three prototype families: a single-parent family, a family who has two pre-school children and the parent who is not employed outside the home; a family with two small children in which the parent is employed full time outside the home and must pay for child care; and a family who has two older children and a parent who works full time outside the home. All of them were assumed to live in the central city and use public transportation. Furthermore, the type of family is classified by the child's / children's age and the parental employment status. Fisher and French (2014) extended the type of families by looking at single-parent families and two-parent families with one child or two children as well as single adults in households in Iowa, USA. Fisher and French (2014) interpreted the basic needs budget as how much working families must earn in order to meet their basic needs.

From previous studies, the basic needs budget is sometimes referred to as the cost of living. Thus, for this study the authors have defined the basic needs budget as the ability of families to meet their most basic needs with the current level of income as indicated by Allegretto (2006). This definition not only answered the question of how much must the working family would have to earn in order to meet its basic needs but also considered the budget limitations, preferences and how to survive with a limited income. Other than that, a number of studies ran an analysis against all groups of household expenditure. However, for this analysis and after considering the Malaysian context, the study only choose five out of 12 groups of household expenditure to represent basic needs. The decision was made based on the Household Expenditure Survey (HES) report on expenditure patterns by Malaysian households and previous studies by Renwick (1998), Allegretto (2006), and Fisher and French (2014). The five groups are expenditure on 1) food; 2) housing, water, electricity, gas and other fuels (later known as electricity and housing); 3) transport; 4) communication; and 5) education. Child care is an important variable based on previous studies however the expenditure pattern in Malaysia is likely against the odds based on the HES report, so the study will combine child care and education expenditure as a one group of household expenditure. It can be appreciated that not only child care expenditure but household expenditure on education has become a major part of household spending

patterns at the end of the 20th century and in the early 21st century (Deaton et al. 1980; Kulub Abd. Rashid et al. 2010; Sekhampu & Niyimbanira 2013).

According to Renwick (1998), Allegretto (2006), Fisher and French (2014), there are six groups of basic needs for households in the United States, namely 1) health, 2) housing, 3) food, 4) child care, 5) transportation and 6) clothing. From the perspective of household expenditure, the budget share for transportation, communication and electricity are also important items in the household expenditure. Flanagan and Flanagan (2011) argued that electricity was the second priority of household expenditure in their study and the percentage of income spent on energy was higher in low income households and as a consequence any significant increase in electricity prices would be regressive in its impact and a relatively severe burden for all low income households. Despite the above, Kulub Abd. Rashid et al. (2010) indicated that an increasing cost of living would be reflected in a higher attainment of the Gross Domestic Product (GDP) over time at the macro level as well as due to increased petroleum and commodity prices, which apparently forced the households to spend more money for supporting their families even though they had insufficient earnings.

Furthermore, Ismail (1971), Haworth and Rassmusen (1973), Benus et al. (1976) and Kulub Abd. Rashid et al. (2010) found a positive and statistically significant relationship between transportation expenditure and household expenditure. The findings by Deaton et al. (1980) contrasted with the work of other researchers where transportation expenditure was found to have a significant but negative relationship with household expenditure based on age. It would appear that a person older than 14 years old spends less on transportation expenditure. Moreover, More (1913), Allegretto (2006), Flanagan and Flanagan (2011), and Fisher and French (2014) found that housing and rent were necessary expenditures. More (1913) found out that very poor families spend as high as 30 to 35 per cent of their income only for rent. This result is consistent with the empirical results by Renwick (1998) who also found that the cost of a two-bedroom apartment has grown faster than the CPI in the central cities and sub-urban areas. Flanagan and Flanagan (2011) indicated that the cost of housing services was the largest component of the regional price index. The results also revealed a significant spending on housing where housing cost was the first priority that creates housing stress. For countries with large populations and a high density such as in Pakistan, spending on apparel and footwear was the largest component and the least was spent on house rent (Pasha & Pasha 2002).

Expenditure on food is a necessary expenditure as indicated by (More 1913) and Flanagan and Flanagan (2011) such that food would be purchased only after three or more significant costs were taken out of the income.

The researchers stated that the studies have shown a relationship between socio-economic status and access to food. Ogburn's (1919) study indicated that people tend to spend around 40 per cent of their budget on food and the rise in the price of food, clothing, fuel and certain sundries seem to be general irrespective of locality. In the United States, the federal poverty guidelines assume that food is the biggest composition of expenditure for the household but the findings have ranked the household expenditure on food in fifth place (Fisher & French 2014). From different approaches, Ismail (1971) and Sekhampu and Niyimbanira (2013) also found that rent and food were necessary expenditures. However, Deaton et al. (1980) found a negative relationship between household expenditure and expenditure on food and clothing. The older the person, the less spent on food and clothing as age was found to influence the tastes and preferences for goods and services.

Despite the above, Allegretto (2006) indicated that over 29.7 per cent of working families have income below the basic family budget levels. Fisher and French (2014) argued that the federal poverty guidelines issued by the authorities in the USA did not take into account regional differences in basic living expenses in Iowa and thus, underestimated the amount that people of Iowa should earn to accommodate their basic needs. Further, Flanagan and Flanagan (2011) summarised that the main issue would be that many people face inadequate income, where the safety net has not been effective in addressing the cumulative impact of price rises. Smaller shops often charge higher prices than larger shops for the same products. Results from a study by More (1913) indicated that the normal wage-earner's family spent every cent of its income, and nothing was saved. This meant that there would be no household savings to accommodate for their needs in the near future. Apart from that, the income level among society seems to be the main factor that determines individual consumption spending, and household expenditure and income disparity can lead to significant differences in expenses on basic needs in rural or urban locations (Kulub Abd. Rashid et al. 2010). From the same source of study, Kulub Abd. Rashid et.al (2010) revealed that the total expenditure of households varies slightly between three Malaysian states (Kelantan, Pahang and Terengganu) but most of the income was utilised for housing loans, vehicle loans and expenditure on food and education, where Kelantan had the lowest mean expenditure relative to the other two states of Pahang and Terengganu.

In addition, household size or family size is one of the important variables used to determine household expenditure. From the results, all the studies found a significant and positive relationship between family size and household expenditure (Benus et al. 1976; Battese & Bonyhady 1979; Kulub Abd. Rashid et al. 2010; Sekhampu & Niyimbanira 2013). The study by Battese and Bonyhady (1976) found that the expenditure of 4 out

of 5 household groups had a positive relationship with household size. Benus et al. (1976), Kulub Abd. Rashid et al. (2010) as well as Sekhampu and Niyimbanira (2013) used age, gender and marital status in their research. Sekhampu and Niyimbanira (2013) found that the gender and age of the household head had positive relationships with household expenditure but the relationships were not statistically significant (Kulub Abd. Rashid et al. 2010). Sekhampu and Niyimbanira's (2013) results indicated that marital status significantly affected household expenditure with a positive sign. The findings were in contrast with a study by Kulub Abd. Rashid et al. (2010), where marital status was found not statistically significant and had an ambiguous sign.

Other than the socio-demographics discussed above, the study introduce the sex ratio as a new indicator to capture the expenditure on basic needs. The sex ratio in a household is the ratio of the number of males to the number of females in the household. Any changes in the sex composition largely reflect the underlying socio-economic and cultural patterns of a society. The sex ratio is an important social indicator to measure the extent of the prevailing equity between males and females in a society and is likely to indirectly affect consumer behaviour and economic decisions. As indicated by Griskevicius et al. (2012), the sex ratio has pervasive effects in humans such that it could influence economic decisions. Their study proved that the sex ratio influences human decision making in ways consistent with evolutionary biological theory[1].

There is a lack of pure and solid studies concerning the basic needs budget around the globe and particularly in Malaysia. It is quite difficult to find a genuine form of academic research regarding the main factors influencing the basic needs budget. Since there are few studies that have been undertaken in the context of the basic needs budget, this study can act as a prelude to future studies in this area.

METHODOLOGY

In consumer choice theory and the household expenditure function, as rational consumers or households they will want to maximise their utility, so given a fixed amount of income to spend an individual will buy an amount of goods that fits his or her total income or budget constraints.

$$u = f(x, \theta) \qquad (1)$$

where:
x = demand for household goods and services
θ = household's taste and preferences

The optimal consumption of goods (x^*) is a function of the household income (M), the prices of goods and the household's taste and preferences parameter (θ). By

assuming the prices of goods x are stable, the optimal consumption of goods depends only on the household income (M) and the household taste and preferences (θ) as written below:

$$x^* = f(M, \theta \mid p_x) \qquad (2)$$

where:

$$x^* = p_x \hat{x}^*$$

From [2] above, the following expenditure function can be derived:

$$E_x = f(M, \theta) \qquad (3)$$

where:
E_x = household expenditure
M = total income of the household
θ = a vector of socio-demographic variables

The Permanent Income Hypothesis (PIH) indicates that the total household expenditure can also be a proxy for the total income and from this the expenditure function can be obtained. For this research, the authors treat the monthly household expenditure (E_x) as the monthly basic needs budget (BNB) that a family needs for it to secure a safe living (Allegretto, 2006). As a result, the authors have developed a model as follows:

$$BNB = f(M, \theta) \qquad (4)$$

For the basic needs budget study, this was carried out on three types of family, namely single-adult, one-working parent families and two-working parents families. Based on the previous studies, the authors selected some of the important socio-demographic variables to be included as explanatory variables in the basic needs budget model. It is expected that all of the variables that include the monthly income and socio-demographic[2] factors have positive relationships with the basic needs budget. Thus, the general BNB model has been formulated as follows:

$$BNB = f(M, FS, GH, AH, SR, NR, EAC, NCS, BB, NPC) \qquad (5)$$

where:
BNB = monthly basic needs budget of the household (RM)
M = total monthly income of the household (RM)
FS = family size (number of person)
GH = gender of household head (a dummy variable which takes on a value of 1 if male; 0 if otherwise)
AH = age of household head (years)
SR = sex ratio (number of males to females)
NR = number of rooms (units)
EAC = electrical appliances usage costs (RM)
NCS = number of cellular phone subscribers (number of person)
BB = broadband subscriber (a dummy variable which takes on a value of 1 if a subscriber; 0 otherwise)
NPC = number of private cars (units)

The electrical appliances usage costs (EAC) refer to the electrical appliances used and owned by a household and will be multiplied with the mean monthly consumption of electrical appliances for each city. Electrical energy is a basic necessity today and the energy used has a close relationship with the standard of living. According to Vimal Raj et al. (2009), the standard of living and economic growth is purely based on how much energy is produced, utilized and saved. The researchers also indicated that most people are not aware of the fact that modern electrical and electronic appliances such as televisions, computers and printers consume power for standby functions with a typical loss of electricity per appliance ranging from less than 1 watt to 25 watts.

The selected electrical appliances that are included in this study are the number of kettles, water heaters, air conditioners, irons, vacuum cleaners, microwave ovens or ovens, hair dryers and washing machines in the household that have more than 1,005 average power or watts. Due to the different types of electrical appliances, a weighting and grouping system for each of the electric appliance based on the average watt are suggested (see Table 1). The average number of electrical appliances (NEA) in a household is calculated as follows:

TABLE 1. The mean monthly consumption of selected household appliances, average power (watts) and weight

Appliances	Mean Monthly Consumption (RM)			Average power (Watt)	Groups	Weight
	Kuala Lumpur	Johor Bahru	George Town			
Kettle	5.37	2.33	1.70	2125	Above 2000	5
Water heater	5.37	2.33	1.70	2000		
Air conditioner	7.51	3.10	2.12	1385		
Iron	5.37	2.33	1.70	1200		
Vacuum cleaner	5.37	2.33	1.70	1200	1000 - 1999	4
Microwave oven	5.37	2.33	1.70	1125		
Hair dryer	5.37	2.33	1.70	1125		
Washing machine	5.64	2.77	1.56	1005		

Source: Department of Statistics (2015c), Saidur, Masjuki and Jamaluddin (2007), author's calculation.

$$NEA_i = \frac{\sum_{j=1}^{n} ea_j w_j}{\sum_{j=1}^{n} w_j} \qquad (6)$$

where:

NEA_i = average number of electrical appliances of household i

ea_j = electrical appliance j

w_j = weight for electrical appliance j

Next, the NEA will be multiplied with the mean monthly consumption of electrical appliances based on the capital city that is provided by the Department of Statistics (2015c) to get the electrical appliances usage costs (EAC).

$$EAC_i = NEA_i \times Mean\ Monthly\ Consumption_i \quad (8)$$

We also apply the semi-log functional form on the right-side and as a result, the equation for the BNB is as follows:

$$\ln BNB_i = \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i + \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i$$
$$+ \delta_7 EAC_i + \delta_8 NCS_i + \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (8)$$

where:

i = index for the ith household

To compare the differences between the basic needs budget of a single-adult, one-working parent and two-working parents, the authors included two dummy variables (OWP and TWP) for the type of family into Equation [8], and single-adults (SA) was the omitted variable. If the result is significant at any level, there is a difference between SA and OWP, and/or between SA and TWP in the three major cities found by running Equation [9] as follows:

$$\ln BNB_i = \delta_0 + \lambda_1 OWP_i + \lambda_2 TWP_i + \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i$$
$$+ \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i + \delta_7 EAC_i + \delta_8 NCS_i$$
$$+ \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (9)$$

where:

OWP = 1 if one-working parent household; 0 otherwise

TWP = 1 if two-working parent household; 0 otherwise

To compare the differences in the BNB between the three major cities, the authors included two dummy variables (JB and GT) and the omitted city was Kuala Lumpur (KL). If the result is significant at any level, there is a difference between KL and JB, and/or between KL and GT found by running Equation [10] as follows:

$$\ln BNB_i = \delta_0 + \Phi_1 JB_i + \Phi_2 GT_i + \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i$$
$$+ \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i + \delta_7 EAC_i + \delta_8 NCS_i$$
$$+ \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (10)$$

where:

JB = 1 if capital city Johor Bahru (JB); 0 otherwise

GT = 1 if capital city George Town (GT); 0 otherwise

To compare the differences in BNB between single-adult households in the three major cities, the authors included two dummy variables (JBS and GTS), and single-adults in Kuala Lumpur (KLS) was the omitted variable. If the result is significant at any level, there is a difference between KLS and JBS, and/or between KLS and GTS found by running Equation [11] as follows:

$$\ln BNB_i = \delta_0 + \theta_1 JBS_i + \theta_2 GTS_i + \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i$$
$$+ \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i + \delta_7 EAC_i + \delta_8 NCS_i$$
$$+ \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (11)$$

where:

JBS = 1 if single-adult household lives in Johor Bahru city (JBS); 0 otherwise

GTS = 1 if single-adult household lives in George Town city (GTS); 0 otherwise

To compare the differences in the BNB between one-working parents in the three major cities, the authors included two dummy variables (JBO and GTO), and Kuala Lumpur (KLO) became the omitted variable. If the result is significant at any level, there is a difference between KLO and JBO, and/or between KLO and GTO found by running Equation [12] as follows:

$$\ln BNB_i = \delta_0 + \partial_1 JBO_i + \partial_2 GTO_i + \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i$$
$$+ \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i + \delta_7 EAC_i + \delta_8 NCS_i$$
$$+ \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (12)$$

where:

JBO = 1 if one-working parent household lives in Johor Bahru city (JBO), 0 otherwise

GTO = 1 if one-working parent household lives in Geogre Town city (GTO), 0 otherwise

Lastly, to compare the differences in the BNB between two-working parents in the three major cities, the authors included two dummy variables (JBT and GTT), and the omitted variable was Kuala Lumpur or KLT. If the result is significant at any level, there is a difference between KLTA and JBT, and/or between KLT and GTT found by running the Equation [13] as follows:

$$\ln BNB_i = \delta_0 + \phi_1 JBT_i + \phi_2 GTT_i + \delta_1 M_i + \delta_2 FS_i + \delta_3 GH_i$$
$$+ \delta_4 AH_i + \delta_5 SR_i + \delta_6 NR_i + \delta_7 EAC_i + \delta_8 NCS_i$$
$$+ \delta_9 BB_i + \delta_{10} NPC_i + u_i \qquad (13)$$

where:

JBT = 1 if two-working parent household lives in Johor Bahru city (JBT); 0 otherwise

GTT = 1 if two-working parent household lives in Geogre Town city (GTT); 0 otherwise

For discussion in this paper, only the best fit model from each type of analysis will be discussed and reported. This study used primary data and a survey was carried out

in September 2016 in the three cities that are considered to have a high cost of living. In order to conduct a basic needs budget study survey, an analysis of variance was run to choose states and cities with a high cost of living. From the analysis of variance test this indicated that the mean cost of living in the Malaysian states was about the same and there was no significance difference in the cost of living among the states by using monthly CPI data for period 2010 to 2014. This is because may be the computation of weights for the CPI had same weights for each state as at the national level. As a consequence, the authors used the Gross Domestic Product (GDP) per capita as a proxy for the cost of living. The GDP per capita measures the output of the country per person. It is obtained by dividing the GDP by the population[3] size (Blanciforti & Kranner 1997). A rise in the GDP per capita implies a growth in the economy. The GDP per capita also reflects the purchasing power of the people. Thus, the GDP per capita[4] is the best measure of living standards according to Ruffin and Gregory (2000), and Bloom and Canning (2008). A higher GDP per capita is a reflection of changes in the cost of living and the standard of living. Thus, the analysis of variance results indicated that the mean GDP per capita in each of the Malaysian states was significantly different.

Next, to check the sources of differences, a multiple comparison test was run using the Bonferroni method. There are 91 pairwise comparisons and hypotheses that need to be tested between the 14 Malaysian states. Based on a summary of the pairwise comparisons, Kuala Lumpur has the highest frequency of being significantly different from all states in Malaysia with a total score of 13 times and 58.2 per cent of the variance. Further, Kelantan also recorded the highest frequency of being different from all states in Malaysia with a total score of 13 times but had the lowest variance with 0.3 per cent among the Malaysian states. In conclusion, the study decided to choose Kuala Lumpur, Johor Bahru and George Town to represent the central, southern and northern regions, respectively. These three states are also eligible to enjoy the cost of living allowance (COLA) of RM300 per month based on area (Department of Civil Services 2014).

RESULTS AND DISCUSSION

As suggested by Hamburg (1974), a total of 385 respondents would be required for this study to achieve the desired degree of precision. Some 642 questionnaires were distributed in these three major cities and 473 were found suitable to be analysed. From that total, 87 or 18.4 per cent of the total sample were single-adults, 99 samples or 20.9 per cent were one-working parent families and 287 samples or 60.7 per cent were two-working parent families from the three major cities. The summary statistics for the BNB, M, FS, GH, AH, SR, NR, EAC, NCS, BB and NPC are presented in Table 2. The central tendency for the variables is positive. From the table, M has the larger dispersion or spread than the others, and GH as well as BB has the lowest value, while, the skewness denotes the existence of both positive and negative skewed influences in the variables. Lastly, the kurtosis indicated that the distribution was peaked (leptokurtic) relative to the normal for all variables in this study.

Some three out of the six estimated models suffer from a heteroscedasticity problem, namely Equation [8], Equation [9] and Equation [10]. As a remedy, the authors applied white heteroscedasticity-consistent standard errors and covariance to overcome the heteroscedasticity problem. Meanwhile, estimated Equation [11], Equation [12] and Equation [13] were found to be free from the heteroscedasticity problem.

The results in Table 3 show that there is a difference between the BNB for single-adults and one-working parent families in the three major cities in Equation [9].

TABLE 2. Descriptive statistics of the variables in the basic needs budget model in the three major cities in Malaysia

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Basic Needs Budget (BNB) in log	8.37	8.38	9.71	6.78	0.45	-0.26	3.22
Monthly Income (M)	8 126	7 620	17 923	2 222	3 463.7	0.6	2.7
Family Size (FS)	3	4	9	1	1.8	0.3	2.5
Gender of Household Head (GH)	1	1	1	0	0.4	-1.6	3.6
Age of Household Head (AH)	37	35	72	1	9.3	0.5	3.1
Sex Ratio (SR)	1	1	5	0	0.9	1.3	5.1
Number of Rooms (NR)	3	3	8	0	0.9	0.5	6.8
Electrical Appliances Usage Costs (EAC)	23.9	18.3	117.3	0	17.2	1.5	5.9
Cellular Phone Subscribers (NCS)	2	2	7	0	1.3	1.3	4.8
Broadband Subscriber (BB)	1	1	1	0	0.4	-1.9	4.8
Number of Private Cars (NPC)	2	2	4	0	0.7	0.5	3.6

TABLE 3. The best fit BNB estimated equation for 3 major cities in Malaysia

Coeff.		Eq.[8]	Eq.[9]	Eq.[10]	Eq.[11]	Eq.[12]	Eq.[13]
		White HAC Standard Errors & Covariance					
C		7.2225 (84.519)***	7.2153 (84.427)***	7.1285 (78.031)***	6.6610 (34.356)***	7.4315 (33.548)***	7.2997 (66.226)***
OWP		-	0.1886 (3.0442)***	-	-	-	-
TWP		-	0.0543 (0.8313)	-	-	-	-
JB		-	-	0.2190 (3.9959)***	-	-	-
GT		-	-	0.2143 (3.5472)***	-	-	-
JBS		-	-	-	0.1874 (1.6128)*	-	-
GTS		-	-	-	0.1548 (1.2149)	-	-
JBO		-	-	-	-	0.1464 (1.1616)	-
GTO		-	-	-	-	0.0816 (0.5983)	-
JBT		-	-	-	-	-	0.2428 (3.9077)***
GTT		-	-	-	-	-	0.2301 (3.3785)***
M		0.00002 (3.7489)***	0.00003 (3.8723)***	0.00002 (3.4216)***	0.0001 (2.3071)**	0.0001 (1.4315)*	0.00003 (3.0447)***
FS		0.0829 (7.5291)***	0.0673 (5.6131)***	0.0860 (7.8491)***	-	0.0886 (3.5660)***	0.0721 (4.9865)***
GH		-	-	-	-	-	-
AH		0.0047 (2.1994)**	0.0030 (1.2146)	0.0045 (2.1763)**	-0.0053 (-0.6049)	0.0041 (0.6900)	0.0015 (0.6004)
SR		0.0278 (1.6778)**	0.0207 (1.2861)	0.0208 (1.3127)*	-	-0.0006 (-0.0142)	0.0073 (0.4003)
NR		0.0511 (2.4528)***	0.0479 (2.3059)**	0.0262 (1.1782)	0.1031 (2.2912)**	-0.0264 (-0.6746)	0.0166 (0.6930)
EAC		0.0054 (5.9475)***	0.0049 (5.2479)***	0.0099 (6.1834)***	0.0129 (3.6666)***	0.0067 (2.1144)**	0.0090 (5.1251)***
NCS		-	-	-	-	-	-
BB		0.0663 (1.5185)*	0.0801 (1.8542)**	0.0514 (1.1987)	0.2439 (2.5197)***	-0.1249 (-1.5032)*	0.0653 (1.1223)
NPC		0.0703 (2.6054)***	0.0561 (2.1356)**	0.0438 (1.6792)**	0.0438 (0.5838)	0.0852 (1.5259)*	0.0296 (1.0110)
	-	0.5031	0.5153	0.5242	0.4498	0.3947	0.4135
	-	0.4946	0.5048	0.5139	0.3934	0.3259	0.3922
AIC	-	0.5899	0.5736	0.5551	0.7266	0.6559	0.4518
SIC	-	0.6691	0.6704	0.6518	0.9817	0.9443	0.5921
DW	-	1.9938	2.0026	2.0200	2.2899	1.8119	2.0614

Note: The number in parentheses ( ) represent the *t* value.
   ***, ** and * indicate significance at 1%, 5% and 10%, respectively

Moreover, the results in Equation [10] also show that the BNB in Kuala Lumpur, Johor Baharu and George Town are slightly different from each other. The results from Equation [11] indicate that there is a difference in the BNB for single-adults between Kuala Lumpur and Johor Bahru. Similarly with Equation [12], the results show that there is no difference in the BNB among one-working parent families in the three major cities in this study. Lastly, the results from Equation [13] indicate that there is a difference in the BNB between two-working parent families among the three major cities, namely Kuala Lumpur, Johor Bahru and George Town.

The results show that all the variables, namely M, FS, AH, SR, NR, EAC, BB and NPC have positive relationships with the BNB, the coefficients have the correct sign and are statistically significant. The estimated coefficient of total households income (M) or δ_1 indicates that if M increases by RM1,000, the BNB will rise from 2 to 10 per cent a month, *ceteris paribus*. The BNB will increase from 7 to 9 per cent a month if there is a new member of the family of at least 1 person. However, if the age of the head of the household increases by 1 year, the BNB will be affected and increase approximately by 0.5 per cent as shown in Equation [8] and Equation [10]. Too great a number of males compared to the number of females in the household can also contribute to an increase in the BNB from 2 to 3 per cent in the three major cities in Malaysia. Owning a house becomes a priority for a new family but if a household owns or rents a house that has more than three rooms, for each additional room, the BNB will increase from 5 to 10 per cent. More air conditioners, a washing machine and other electrical appliance units in the house, will increase the BNB approximately from 0.5 to 1 per cent for each RM 1 increase in the usage cost of electrical appliances.

The burden of the household basic needs budget will also increase by 7 to 20 per cent if the household subscribes to broadband services. Not only that, if the ownership of a new private car increases by 1 unit this will cause a rise in the BNB from 4 to 9 per cent in the three major cities in Malaysia. In conclusion, from the OLS analysis the best fit model or estimated equation that can help to explain the 'BNB on average' results is Equation [8]. From the analysis it is indicated that the gender of the Head of the Household and the number of cellular phone network subscribers are not significant and are not part of the equations. Lastly, it can be concluded that M, FS, AH, SR, NR, EAC, BB and NPC are the significant factors influencing the basic needs budget in Kuala Lumpur, Johor Bahru and George Town.

CONCLUSION

Generally, the basic needs budget is a minimum expenditure to hold in order to maintain a standard of living as previously. In this paper, the basic needs budget is defined as a monthly expenditure that includes the cost of food, housing and electricity, transportation, child care and education and communication. The middle income were determined to be in the range of RM2,992.50 to RM8,999 a month and teachers were used as a benchmark for the middle income groups. To run a basic needs budget survey, Kuala Lumpur, Johor Bahru and George Town were chosen to represent the central, southern and northern regions, respectively, based on analysis of variance results.

The OLS regression analysis indicates that there is a difference between the BNB for single-adults and one-working parent families. Further, the results also show that the BNB in Kuala Lumpur, Johor Baharu and George Town are slightly different from each other. Lastly, there is a difference in the BNB for single-adults between Kuala Lumpur and Johor Bahru, and between two-working parent families among the three major cities. However, there is no difference in the BNB among one-working parent families in the three major cities in this study. The results also conclude that the total household income (M), family size (FS), age of Head of Household (AH), sex ratio (SR), number of rooms (NR), electrical appliances usage cost (EAC), broadband subscribers (BB) and number of private cars (NPC) are the significant factors influencing the basic needs budget in the three major cities in Malaysia.

As the cost of access to goods and services is getting higher in the major cities, this will create catastrophic spending when the households face the problem of paying higher prices for items considered as necessities. Insufficient income does not mean suffering from a budget deficit but insufficient income in order to accommodate living expenses due to the increase in the retail prices and other factors. Thus, the increase in the cost of living should be minimised in order to restore the standard of living as previously. For example, if there is an increase of 1 point in the cost of living index, the real wage or COLA must be increased by 0.002 points or RM500 a month[5]. As another option, the government may need to revise the salary of civil servants due to the rising cost of living.

Fundamentally, Malaysia must have the ability to provide goods and services at lower cost and affordable prices. Affordable housing prices are the key to how to reduce the impact or minimise the rising cost of living or insufficient income. To achieve this aim, the government should regulate the housing prices, not the supply or demand for housing. The demand is already there and has existed for a long time but the problem that most families face is the housing prices that continue to escalate. The house price relative to income is very high especially for middle income groups and this leads to a decrease in the proportion of people able to buy a house, even medium cost housing, in the large major cities. Therefore, government intervention is definitely needed in terms of price regulation. It is also suggested that the

authorities must have control of housing rent by taking into consideration the location, the number of rooms and the percentage of profit at a reasonable or permitted rate. Other than that, creating wealth through the property market should be taxed and the government could use the tax revenue to regulate the housing prices. It is also suggested to the policy makers to abolished road tax for certain types of car and motorcycles below 2000 cc, to reduce the import duty for imported cars and provide tax exemptions for people buying a local car.

NOTES

[1] How the ratio of men to women in a population can influence behaviour originates from the evolutionary approaches to animal behaviour.

[2] The socio-demographic of this study includes household, employment, income and commonly known as socio-economic status.

[3] An increase in income shifts the budget constraint outwards raising demand and implies a positive relationship between this variable and the cost of living (Blanciforti & Kranner, 1997).

[4] People who live in countries with a high per capita GDP are, on average, better off materially, powered by improvements in technology and capital accumulation that increases the output available to each person (Ruffin & Gregory, 2000, p.488).

[5] $RM500 = \dfrac{1}{0.002}$

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