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The Effect of Health Knowledge, Nutrition Label Use and Attitude towards Nutrition Label on Healthy Food Choice among Malaysian Consumer

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Abstract
This study determines the effect of health knowledge on nutrition label use and attitude, and consequently on healthy food choice among Malaysian consumer. This study adopted the positivist, deductive and quantitative approach. A sample consisted of 420 Malaysian consumers, aged at least 15 years old, which selected using systematic street-intercept sampling method. Data, which collected using a self-administered questionnaire, were analysed using descriptive statistics and structural equation modelling (SEM). The findings reveal the significant positive effect of health knowledge on attitude towards nutrition label and attitude towards nutrition label on healthy food choice. Though the findings add to the existing literature, provide useful information on how nutrition label could assist in guiding the consumer to make a healthier food choice and serve as a reference point that could stimulate and guide future researchers and other relevant parties, this study is still limited by several factors that require replication in future research.

Keywords: Nutrition Label Use, Attitude, Knowledge, Healthy Food Choice, Structural Equation Modeling (Sem), Malaysian Consumer

Introduction
Advances in food technology have resulted in an abundance of processed foods to be available in the market (Bosman, Merwe, Ellis, Jerling, & Badham, 2014). Although processed foods bring more harms than goods, given a hectic life that society is facing, avoiding from consuming processed food seems impossible (Tee, 2011). Realizing the threat from processed food consumption, the global and local policymakers have put forward the consumer's health protection as their major concern (Onete, Voinea, Filip, & Dina, 2014). In order to protect the consumer's rights, Weatherill (2013) and; Chapman and Liberman (2005) emphasize that consumer should be given the right information on the content of the food product.
As to provide the nutrition content of food products and assist the consumers to make informed decisions while purchasing a product, it was highlighted the significant role of nutrition label (Campos, Doxey, & Hammond, 2011; K. Grunert & Wills, 2007; K. G. Grunert, Wills, & Fernández-Celemín, 2010). In relation to that, the Ministry of Health Malaysia gazetted amendments to Food Regulations 1985 in 2003 (The Ministry of Health Malaysia (MOH), 2009) and made the nutrition label as compulsory in Malaysia. Due to that, the food manufacturers in Malaysia are obliged to provide the nutritional benefits of their food product (Suhor, Yusoff, Ismail, Aziz, & Razman, 2014). While the food manufacturers have made a move to provide factual, clear, and relevant information about food nutrition, which satisfy the consumers’ rights to be properly informed (Owen, 2014), it has been argued that the consumers themselves have failed to exercise their right, particularly by not using the nutrition label in making healthier food choices (Bosman, et al., 2014; Brownell et al., 2010).

In particular, it has been reported that the use of a nutrition label is still low in developing countries (Ambak et al., 2014; K. Grunert & Wills, 2007). Furthermore, it is raised that even though the customer in the emerging countries are becoming extra conscious about the food nutrition, the use of nutritional label among consumers in making purchases is minimal (Darkwa, 2014; Kumar & Ali, 2011; Norazlanshah et al., 2013; Rose, 2012). In Malaysia, there is no exception, based on the limited empirical evidence on the utilization of the nutritional label, the usage level is found poor (Azman & Sahak, 2014; Ministry of Health Malaysia, 2013). Although Malaysian consumer is aware of the importance of nutrition label, they rarely use the nutrition label even during purchasing processed food products (Azman & Sahak, 2014; Darkwa, 2014; Kumar & Ali, 2011; Ministry of Health Malaysia, 2013; Norazlanshah, et al., 2013; Rose, 2012). As to promote the nutrition label use among Malaysian consumer, the Ministry of Health Malaysia has revised the Malaysian Dietary Guidelines (MDG) in 2010 (Ministry of Health Malaysia, 2011). By doing so, the consumer is encouraged to use the nutrition label when buying and consuming processed foods (Yasin, Ahmad, Nordin, Ghazali, & Abdullah, 2015).

Up to now, much research has been conducted to investigate the role of the nutrition label since 1995 (Drichoutis, Lazaridis, & Nayga Jr, 2006; K. Grunert & Wills, 2007). Most of the studies have been focusing on the understanding of consumer behavior toward the use of nutrition label (Bosman, et al., 2014; Madhvapaty & Singh, 2014). Since 2005, more and more studies have attempted to address the effect of the nutrition label on consumer behaviors, particularly on purchase intention (Burton, Howlett, & Tangari, 2009; Godwin, Speller-Henderson, & Thompson, 2006; Norazlanshah, et al., 2013; Prathiraja & Ariyawardana, 2003). In the Malaysian context, few studies have investigated the impact of consumers’ health knowledge, use of nutrition label and attitude towards nutrition label on their healthy food choice (Ju et al., 2010; Ng et al., 2015; Norazmir, Norazlanshah, Naqeyah, & Anuar, 2012; Zheng, Xu, & Wang, 2011). Hence, this study seeks to determine the effect of health knowledge on nutrition label use and attitude towards nutrition label, and consequently on the inclination towards healthy food choice among Malaysian consumer.

**Literature Review**

**Nutrition Label**

The nutrition label is a description used to inform the consumer on the nutrition properties of food that helps the customer in purchasing and consuming nutritious food (Azman & Sahak, 2014). According to Malaysia Dietary Guidelines, nutrition label is a list of the nutrient level.
of a product displayed on the food label (The Ministry of Health, 2013). In addition, it refers to the information about the nutrition content of individual food products in order to enable the customers to choose the nutritionally appropriate food (Grunert & Wills, 2007, p. 385). Specifically, Miller and Cassady (2015) explain nutrition label as a label that contains information on calorie, portion size, and daily value from a few macronutrients, vitamins, and minerals such as fat, carbohydrate, and calcium. Hawkes (2013) highlights that nutrition label plays an important role as guidance to a better diet and a healthier life. In particular, it helps the consumers to choose healthier diets, stimulate the consumption of the healthy product, switch consumption from 'unhealthy' products toward 'healthy' products more easily, and make an informed judgement of a product's overall value (Azman & Sahak, 2014). According to Souiden, Abdelaziz and Fauconnier (2013), nutrition label is important on three main reasons, i.e. to give clear nutrition information, help consumers to make a decision on certain food and good eating habits, and avoid consumer confusion over the nutrition of food products. Besides, Department of Chemistry Malaysia (2016) stress that nutrition label is important to protect the consumer from health hazard and fraud in the preparation, selling, and usage of certain food. It also gives advantages to the local food industry in order to expand their product’s profile to the international crowd (Aschemann-Witze, de Hooge, & Normann, 2016). Taking a slightly different viewpoint, nutrition label is also important as a mechanism to to protect and safeguard the consumer interest and rights towards quality products or services (Aggrawal, 2014; Kehinde, 2016; Njuguna, 2015; O'Hara, 2013; Oko & Linus, 2013), particularly the right to be informed, and the right to get safe products and services (Campos, et al., 2011; Ministry of Domestic Trade Co-Operatives and Consumerism, 2017). In the Malaysian context, consumers rights are also protected under the Consumers’ Protection Act 1999 (APP) (Pesuruhjaya Penyemak Undang-undang, 2006). Those acts ensure consumer to have access to quality products and services (Zakuan & Yusoff, 2011). What is more, chapters V of APP 1999 outlined seven implied guarantees on good supply, in which one of them highlighted the issues pertaining to the quality standard on the good by the manufacturer (Pesuruhjaya Penyemak Undang-undang, 2006). Through the use of the label, the consumer can determine whether the nature and condition of the good are acceptable or not by taking into account the type of products, price, facts on the nutrition label, representation and other aspects stated in Section 32 (b) APP (Pesuruhjaya Penyemak Undang-undang, 2006). According to Rezai, Shamsudin, Mohamed and Sook Ann (2014), due to rapid development in Malaysia’s economy and an increase of populations, it is critically important to make sure that all processed food products are safe to consume. Moreover, a study by Abdul Latiff et al. (2016) has exposed that consumerism can protect the consumers in choosing and consuming safe food products. The findings also emphasize that the use of the nutrition label may encourage consumers to make smart decisions in purchasing healthy food products. However, the study only focuses on the effect of nutrition label use and does not look into other factors such as attitude towards nutrition label. Thus, it is vital for a new study to determine the effect of health knowledge on nutrition label use and attitude towards nutrition label, and consequently on the inclination towards healthy food choice among Malaysian consumer in order to improve the consumer awareness and exercise of their protected rights.
Health Knowledge
Health knowledge is commonly associated with an individual’s ability to use health facts (Aygen, 2012; Bosman, et al., 2014). According to Chin et al., (2011), health knowledge can be defined as an individual’s understanding regarding healthcare and are able to positively react in making health decision, while Johnston, Lorand, Shields and Suziedelyte (2015) define health knowledge as an individual’s ability in knowing health information and healthcare. Besides, health knowledge is also referred as an individual’s attitude in obtaining health information and keen on healthcare (Camerini, Schulz, & Nakamoto, 2012; Racey, Machmueller, Field, Kulak, & Newton, 2016).

In other research, health knowledge is also termed as health literation. In those studies, health knowledge is defined as the ability to understand and communicate about health (Ormshaw, Paakkari, & Kannas, 2013; Sørensen et al., 2012). According to Pleasant (2014), health knowledge refers to the ability to read and understand health materials, while Poureslami, Nimmon, Rootman and Fitzgerald (2016) relates health knowledge as the skill and efficiency of an individual to search, understand, evaluate, and use the health information. Apart from that, health knowledge can be referred to as an individual’s action to access, understand, evaluate, and use health information to gain more knowledge in health (Palumbo, 2015), or how far for an individual to have the ability to get, process, and understand the basic health information in order to make the right health decision (Knight, 2017). Accordingly, in this study, health knowledge could be defined as the individual’s ability to get, understand and use health information, including healthy eating pattern, in order to make the right health decision (Aygen, 2012; Bosman, et al., 2014; Chin, et al., 2011; Gellert, Detel, Ernsting, Oedekoven, & Kuhlme, 2016; Johnston, et al., 2015).

Nutrition Label Use
Nutrition label use can be defined as the ability of an individual to read, understand, identify and translate the information shown in the graphic a format (chart, graph, table) on the nutrition label (Rose, 2012). According to Carbone (2013), nutrition label use refers to the reading, writing, speaking, listening and calculating the information on the nutrition label. In Nutbeam model (2000), the nutrition label use includes functional health use, which refers to basic skills to understand health information, knowledge, services and systems; interactive communication use that relates to communication and social skills to discuss the health issues and critical health use, which regards to the cognitive and social skills to analyse health information and make health-based decisions (McCaffery et al., 2013; Smith & Moore, 2012). In brief, nutrition label use refers to the ability of a person to obtain, translate, and use the information on the nutrition label (Carbone, 2013; Rose, 2012).

In the Malaysia context, previous studies on the nutrition label use are scarce. To date, only two studies have been found, which are Norazlanshah et al. (2013) that study on how nutrition label use affects the attitude towards nutrition label and Norazmir et al. (2012) that investigate the extent to which nutrition label use is capable of influencing the consumers tendency in choosing healthy food. In particular, these studies reveal that the level of nutrition label use among Malaysian is still at a moderate level. Hence, it is necessary to fill the gap in past studies by conducting a new study on the effect of nutrition label use towards nutrition label attitudes and healthy food choices.
Attitude towards Nutrition Label

Attitude can be defined as a form of mental stability and brain’s nerve of the individual to give a response (positive or negative) through experience towards an object or idea (Allport, 1935). Furthermore, attitude is a form of the human inclination to consistently react towards an object or situation (Banaji & Heiphetz, 2010). According to Soleimani and Hanafi (2013), attitude is an evaluation and belief, either positive or negative, towards an object or situation. Moreover, attitude can be referred to as a reaction of feeling or impression of an individual, either happy or sad, which reflected through attitude change (Koller & Walla, 2015), or a way of thinking by an individual that is prone to give response positively or negatively towards an idea, object or situation (Roy & Kareem, 2016).

Attitude can be divided into cognitive, affective, and behavioural components (Eagly & Chaiken, 1993). Cognitive component refers to the belief formed based on the information gained from direct and indirect experience (Harreveld, Nohlen, & Schneider, 2015; Kwon & Vogt, 2010). Affective component refers to reactions to positive and negative emotional experience or preferences with an object or situation (Schamari & Schaefers, 2015). Behavioural attitudes component is defined as an individual’s overt action toward an object or situation (Amsteus, Olsson, & Paulsson, 2015). Thus, attitude can be defined as the individual’s belief, emotion and action derived from the experience towards an object or situation (Aygen, 2012; Kwon & Vogt, 2010).

With respect to the attitude towards nutrition label, Cannoosamy, Pugo-Gunsam and Jeewon (2014) define it as a form of feelings or perception of an individual towards nutrition label, while Samant, Crandall and Seo (2016) refer attitude towards nutrition label as a form of evaluation in an individual’s mind that may induce the tendency to use the nutrition label in making food selection. Hence, in this study, attitude towards nutrition label can be explained as individual feelings, perception and evaluation, either positive or negative, towards nutrition label when purchasing food products (Cannoosamy, et al., 2014; Graham & Laska, 2012; Samant, et al., 2016).

Previous studies on consumer attitudes towards nutrition label use, particularly in Malaysia, are still limited. As for now, Ng et al. (2015) and; Shah Alam and Mohamed Sayuti (2011) have researched on this issue and found that attitude plays a significant role towards customers’ decision on the food product and purchase decision. Furthermore, a study conducted by Norazlanshah et al. (2013) found that the majority of university students had a moderate level of attitudes towards the use of nutrition labels. Hence, it is necessary to fill the gap in previous research by studying the role of attitude towards the nutrition label on the consumer tendency in choosing healthy food.

Healthy Food Choice

Food choice is an automatic process and habit shown by an individual in determining either to accept or decline food products (Han, Back, & Barrett, 2009; Jacquier, Bonthoux, Baciu, & Ruffieux, 2012). Besides, food choice can be defined as a complex phenomenon, which affected by internal and external factors of an individual in order to evaluate food product (Ares, Mawad, Giménez, & Maiche, 2014). Moreover, Vabø and Hansen (2014) define food choice as an individual’s behaviour affected by multiple interaction factors, i.e. physiology, psychology, and motivation in order to make a decision on what food to consume. According to Ooi, Mohd Nasir, Barakatun Nisak and Chin (2015), food choice is a sensory, physiology,
and psychological responses of an individual towards social, environment, economy, and promotional activities done by the food industry.

With regards to healthy food choice, it is commonly defined as the reaction to an individual’s decision to consume food with the right ratio of protein, vitamins, fats, carbohydrates and mineral (Salmon, Fennis, de Ridder, Adriaanse, & De Vet, 2014). According to Kim, Lee, Gon Kim and Kim (2013) and; While, Mötteli, Keller, Siegrist, Barbey and Bucher (2016), healthy food choice is an act by an individual to consume food with less fat, less sugar, high fibre, fruits and vegetables. Hence, in this research, healthy food choice is referred to as the individual’s tendencies to consider, choose and consume a food product with the ratio of protein, vitamins, fats, carbohydrates and minerals (Kim, et al., 2013; Mötteli, et al., 2016; Salmon, et al., 2014).

Previous studies show that consumers can make better and healthier food choices through the effective use of nutrition label (Magistris, Gracia, & Barreiro-Hurlé, 2010; Miller & Cassady, 2015). However, the efforts made to address and encourage the individual to make healthy food choices is not an easy task (World Health Organization, 2012, 2015). This is because different individual tends to have different behaviours (Zheng, et al., 2011). Though little research has tackled the issue, it has been evidenced that nutrition label use and attitude can significantly influence healthy food choice (Barreiro-Hurlé, Gracia, & De-Magistris, 2010; Trendel & Werle, 2015). Further, Cooke and Papadaki (2014) reveal that the level of healthy food choices among university students, particularly in the UK, was at a moderate level. Thus, it raises the importance to study the role of nutrition label in educating and encouraging consumers in making healthy food choices (Norazlanshah, et al., 2013).

**Health Knowledge and Nutrition Label Use**

Misra (2007) reveals knowledge as an insignificant influencer of label reading behaviour. However, Campos et al., (2011) find out that individuals with lower levels of nutrition knowledge strongly associated to label non-use, which indicate that individual with greater nutrition knowledge is more likely to use nutrition label. In addition, Barreiro-Hurlé, Gracia and De-Magistris (2010) report that by possessing nutrition knowledge, the level of nutrition facts panel use might significantly increase. This highlights that the consumers who are equipped with nutrition knowledge are more likely to use their nutrition knowledge, specifically by reading the nutrition labels while shopping for food products. Furthermore, Petrovici, Fearne, Nayga Jr and Drolias (2012) reveal nutrition knowledge as a significant predictor of consumers use of Nutrition Fact Information. Along the similar line, Gracia, Loureiro and Nayga (2007) discover that consumer’s nutrition knowledge positively influence the nutrition label use when shopping. Miller and Cassady (2015) further highlight that both subjective and objective nutrition knowledge will significantly influence self–reported nutrition label use. Similarly, Cooke and Papadaki (2014) find out that nutrition knowledge significantly predicts the nutrition label use. However, the effect is negative, indicating that the higher knowledge, the lower the tendency for the consumer to use nutrition labels. Further, they argue that the relationship between knowledge and label use may remain negative unless the consumers are given proper education on the nutrition label. Once nutrition label knowledge improves, only then, its effect on the usage can be positive. Hence, it could be assumed that the effect of nutrition knowledge on nutrition label use might be significant, but the direction may be negative, particularly in societies with a low level of nutrition knowledge.
Past studies on health knowledge in Malaysia are limited. To date, only four studies have been found, which are Norazlanshah et al. (2013), Nurliyana et al. (2011), Sani and Siow (2014) and Koo, Lee, Hidayah and Hazwani (2018). Norazlanshah et al. (2013) and Nurliyana et al. (2011) studied the effect of nutrition knowledge on food purchases. Sani and Siow (2014) investigated the relationship of knowledge, attitude and practices of food handlers on food safety, while Koo, Lee, Hidayah and Hazwani (2018) examined about of knowledge, attitudes and practices of schoolchildren towards whole grains. Hence, it is necessary to fill the gap in past studies by conducting a new study on the effect of health knowledge on attitudes towards nutrition label. Up to now, it has been found that despite high nutrition knowledge, students seldom use food label during buying food product (Nurliyana, et al., 2011). Besides, Norazlanshah et al., (2013) highlight that consumers with a higher level of nutrition knowledge are more likely to read nutrition label when purchasing food. However, both studies failed to reveal a significant relationship between the level of nutrition knowledge and nutrition label use. By relating to Cooke and Papadaki (2014), it could be assumed that the results might be due to the low nutrition knowledge among Malaysian consumers. Despite the insignificant results on the relationship between the nutrition knowledge and nutrition label use in Malaysia context, provided the significant results of most of the extant studies, it worth’s to expect that health knowledge plays an important role affecting the use of nutrition label use among consumers. Therefore, the following hypothesis is suggested to be tested in this research:

H1: Consumers health knowledge has a significant effect on the nutrition label use.

**Health Knowledge and Attitude towards Nutrition Label**

Aertsens, Mondelaers, Verbeke, Buyse and Van Huylenbroeck, (2011) find out that objective and subjective knowledge significantly and positively influence attitude towards organic food, implying the positive effect of knowledge on attitude. Further, Marietta, Welshimer, and Anderson (1999) report a significant positive correlation between health knowledge and attitudes towards nutrition labels. Similarly, Kigaru, Loechl, Moleah, Macharia-Mutie and Ndungu (2015) reveal a significant relationship between nutrition knowledge and attitudes. Along a similar line, Acheampong and Haldeman (2013) explain that consumers with high nutrition knowledge are more likely to have positive attitudes about healthy eating. Furthermore, Baser, Ture, Abubakirova, Sanlier and Cil (2016) show that food safety knowledge significantly influences the attitude of staff working in hotels in Turkey (Baser, et al., 2016). However, a recent study by Mogre, Aryee, Stevens and Scherpber (2017) highlights that consumers nutrition-related knowledge does not correlate with their attitudes. In Malaysia’s context, Sani and Siow (2014) reveal that there is a significant positive correlation between the food safety knowledge and attitudes, indicating that food safety knowledge level of food handlers will influence their attitudes in handling food safely. Furthermore, according to Koo et al. (2018), there is a positive association between one’s knowledge and attitude towards whole grain consumption.

Thus, the previous studies reveal that both knowledge and attitudes are significantly related and, health knowledge significantly influences consumer attitude in a positive direction. Accordingly, it could be assumed that health knowledge serves as a significant determinant of consumer attitude toward nutrition label. As a result, the following hypothesis is suggested:

H2: Consumers health knowledge has a significant effect on the attitude towards nutrition label.
Nutrition Label Use on Healthy Food Choice
Graham and Laska (2012) and; Barreiro-Hurlé, Gracia and De-Magistris (2010) find out that nutrition label use significantly and positively predicts the healthy food choice among consumer. The results indicate that the higher the usage of the nutrition label, the higher the reported healthy food choice. Besides, Campos et al. (2011) show that nutrition label use may promote healthier eating. Furthermore, Cooke and Papadaki (2014) show that the use of nutrition label has a significant and negative effect towards dietary quality, indicating that nutrition label use might not be sufficient to trigger higher dietary quality among consumer. That is, nutrition label use does not induce the consumer to purchase a healthy food product. In addition, they emphasize that the effect of nutrition label use on healthy food choice will remain negative unless the consumer is well equipped the nutrition knowledge.

In the context of Malaysia, Norazmir et al. (2012) reveal that the nutrition label use is low among young adults and due to that they have less tendency to choose and purchase healthy food. Besides, a study conducted by National Health and Morbidity Survey (2015) report the low-level nutrition label use among Malaysian consumer, which trigger them to choose unhealthy food and consequently lead to bad health results. Accordingly, it could be expected the significant relationship between nutrition label use and healthy food choice. Hence, the following hypothesis is suggested:

\[ H_3: \text{The nutrition label use has a significant effect on healthy food choice.} \]

Attitude towards Nutrition Label and Healthy Food Choice
Previous studies show that consumers’ attitude is very important in making purchasing decision of food products (Harker, Gunson, & Jaeger, 2003; Magnusson & Hursti, 2002; Schifferstein, 2001). Graham and Laska (2012) also emphasize that the attitude towards preparing healthy food is significant when consuming healthy foods. Furthermore, Costell, Tárrega, & Bayarri (2010) point out that consumer attitude affects their choices of healthy food. Cooke and Papadaki (2014) support the findings by revealing that attitude plays a significant role in practising healthy diet and a positive attitude towards nutrition label induce the consumer to choose healthy food (Cooke & Papadaki, 2014). Similarly, Trendel and Werle (2015) show that attitude does have a significant influence on the consumer’s tendency to make healthy food choices.

Despite lack of previous studies on the consumers’ attitudes towards nutrition label use, particularly in Malaysia, a study by Ng et al. (2015) indicates that a poor attitude towards nutrition labels are less likely to induce healthy food choices. That is, poor attitude towards nutrition label make the consumer act irrationally and consequently lead to unhealthy food choices (Ng, et al., 2015). Similarly, Shah Alam and Mohamed Sayuti (2011) stress that attitude significantly and positively affects consumer food purchase intentions. Hence, it can be predicted that the attitude towards nutrition label may have a significant effect on the consumer tendency in choosing healthy food. It is, therefore, the following hypothesis is suggested:

\[ H_4: \text{The attitude towards nutrition label has a significant effect on healthy food choice.} \]

Methodology
This research adopts a quantitative approach and the deductive method. Data were collected at Federal Territory of Putrajaya, as it has been revealed as the with the highest overweight and obese residents (Table 1) (Survey-NHMS, 2015) and the highest mean of household...
consumption expenditure (Table 2) (Department of Statistics, 2015). This research only considers individuals aged 15 years old and above, which considered as the age category that can make rational considerations in purchasing (Euromonitor International, 2011), and the total population to account for this research is 50,059. This research involved a sample of 420 respondents, which decision were made based on the Sampling Schedule by Krejcie and Morgan (1970), the recommendation of Bartlet, Kotlik and Higgins (2001) to add 10 to 30 percent of respondents to cater the nonresponses and other constraints and the rule of thumb for the appropriate sample size for Structural Equation Modeling (J. F. Hair, Black, Babin, & Anderson, 2010). The sample for this research was selected using the systematic street-intercept method. The unit of analysis is the individual resident of Putrajaya.

Table 1: Percentage of Overweight and Obesity by State 2015

| No. | State                    | Percentage |
|-----|--------------------------|------------|
| 1.  | Federal Territory of Putrajaya | 62.8       |
| 2.  | Melaka                   | 53.7       |
| 3.  | Perlis                   | 52.5       |
| 4.  | Negeri Sembilan          | 51.2       |
| 5.  | Kedah                    | 50.6       |
| 6.  | Johor                    | 49.1       |
| 7.  | Selangor                 | 49.0       |
| 8.  | Federal Territory of Kuala Lumpur | 48.6    |
| 9.  | Sarawak                  | 48.5       |
| 10. | Terengganu               | 47.5       |
| 11. | Perak                    | 47.3       |
| 12. | Kelantan                 | 46.5       |
| 13. | Pahang                   | 46.3       |
| 14. | Pulau Pinang             | 44.4       |
| 15. | Sabah                    | 41.6       |

Source: National Health and Morbidity Survey-NHMS (2015).
Table 2: Household Consumption Expenditure 2014

| No. | State                          | Consumption Expenditure (RM) |
|-----|--------------------------------|------------------------------|
| 1.  | Federal Territory of Putrajaya | 5627                         |
| 2.  | Federal Territory of Kuala Lumpur | 5559                      |
| 3.  | Selangor                        | 4646                         |
| 4.  | Melaka                          | 3809                         |
| 5.  | Johor                           | 3808                         |
| 6.  | Pulau Pinang                    | 3505                         |
| 7.  | Federal Territory of Labuan     | 3497                         |
| 8.  | Negeri Sembilan                 | 3117                         |
| 9.  | Terengganu                      | 3088                         |
| 10. | Pahang                          | 2963                         |
| 11. | Sarawak                         | 2826                         |
| 12. | Kedah                           | 2791                         |
| 13. | Perak                           | 2760                         |
| 14. | Kelantan                        | 2578                         |
| 15. | Perlis                          | 2575                         |
| 16. | Sabah                           | 2355                         |

Source: Department of Statistics Malaysia (2015).

This research used a questionnaire as an instrument to obtain data. The items used to measure the constructs were adapted and modified from various studies. In particular, 14 items of nutrition label use were adapted from Aygen (2012), Bosman, et. al (2014), and Godwin, et al. (2006), 10 items on attitude towards nutrition label were adapted from Aygen (2012) and Bosman, et. al (2014), while six items on healthy food choice were adapted from Han, Hsu, & Lee (2009).

Prior to commencing the actual data collection, two pilot tests were conducted involving two groups of people, i.e. the experts and the potential respondents (Darusalam & Hussin, 2016; Malhotra, 2009; Shukla, 2008). The pilot test aims to ensure the content validity of the measurement items (Ibrahim, Arip, & Bistamam, 2015). Besides pilot test is also used to improve the questionnaire by identifying the time taken by the respondent to complete a questionnaire, examining the appropriateness of the questionnaire in terms of the item sequence, the wording and level of difficulty and determining the problems encountered while respondents answering to the questions (Maldaon & Hazzi, 2015; Malhotra, 2009; Saunders, Lewis, & Thornhill, 2009; Yin, 2014) and determine the validity and reliability of the scale (Darusalam & Hussin, 2016; Pa, 2014; Saunders, et al., 2009).

Once a panel of three experts agreed with the content of the questionnaire, the questionnaire was tested to 100 respondents. To test the construct validity and instrument reliability, the Exploratory Factor Analysis (EFA) and Cronbach’s Alpha were performed, respectively. The EFA procedure resulted in the Kaiser-Meyer-Olkin (KMO) value exceeding the 0.6 with significant Bartlett's test, indicating that the data is sufficient to proceed with factor analysis (Huck, 2012; Zainol, Yasin, Omar, & Hashim, 2014). Next, the results of EFA had yielded in the four factors with the total explained variance of 63.597 per cent. All items loaded on its corresponding factor with a loadings greater than 0.5 (Hair et al., 2010), indicating that items
are a good measure of the factor that it is supposed to measure, which consequently proves the validity of the items (Bhattacherjee, 2012; Garson, 2013; Gaskin, 2012b; Hair, et al., 2010; Pallant, 2015). Further, the Cronbach’s alpha values for all constructs are all higher than the suggested threshold of 0.7 (Hair, et al., 2010). Thus, the reliability of the scale used is satisfactory.

Once the questionnaire items were finalized, the actual data collection was conducted. Since it is pertinent to protect the interest of the respondents, this research adopted several measures to ensure the ethical research conduct, including voluntary participation, anonymity and confidentiality (Bhattacherjee, 2012; Saunders, et al., 2009; Sekaran & Bougie, 2009). Data were analysed using descriptive statistics and structural equation modelling (SEM).

Findings

Out of 420 questionnaires distributed, only 395 responses are valid and used in further analysis. The respondent is slightly dominated by female respondents (54.5%) with an average age of 30.71 years old, which 53.8 per cent of the respondents are in the age range of 25 to 34 years old. Most of the respondents hold a Bachelor degree (57.4 %), work as technical and support staff, and reported an average monthly income of RM2897.42 per month.

Preliminary Analysis

The screening of the data reveals that all variables have no missing values. It is, therefore, the data are used for further analysis without replacement of missing responses or deletion of variables with missing data (Hair, et al., 2010). Further, three important SEM assumptions are checked, which include normality, outliers and multicollinearity.

An inspection of the skewness and kurtosis values reveals all the skewness and kurtosis values fall within the acceptable range of ± 2, after deletion of one item i.e. HK5 (Garson, 2012). Further, Mardia’s coefficient of multivariate kurtosis of 226.8 (49.82) is too large as compared to the acceptable value (Garson, 2012). Thus, the finding implies that the sample has a severe multivariate nonnormality distribution. Provided that extreme nonnormality can produce an unreliable result, standardized z scores and Mahalanobis distance values were examined for potential outliers (Gao, Mokhtarian, & Johnston, 2008). Following Gao et al. (2008), only true outliers should be deleted. This is important not only to reduce the extreme nonnormality but also to sustain the representativeness of the sample.

Examination of the standardized z scores shows six observations have a z score that falls outside the acceptable range of ± 4, indicating that six observations are the extreme cases or outliers. Accordingly, the observations (i.e. 17, 82, 187, 350, 351, 365) were deleted, leaving the remaining data 414 for further analysis (the results are too large to attach). Next, the examination of the Mahalanobis distance values using a p<0.001, 19 extreme outliers (Coakes & Steed, 2003; Kline, 2011; Tabachnick & Fidell, 2007). After removal of true outliers (19 observations), the Mardia’s coefficient drops from 226.8 to 183.4, that is by 19.14 per cent. Hence, the deletion has lowered the multivariate nonnormality. Even though the multivariate kurtosis does not reach the threshold value, the multivariate kurtosis is considered to be in the acceptable range of nonnormality (Gao, et al., 2008). That is, the data are reliable and representative of the desired population with the exclusion of the extreme outliers. Accordingly, the data is fit to be used in the subsequent analysis.
Next, the multicollinearity problem was checked by inspecting the inter-construct correlations and factor loadings. Since the correlations among constructs and factor loadings are all below 0.9, the multicollinearity problem does not appear to affect the results (Garson, 2012; Hair, et al., 2010). As no significant violation is found, the data is suitable for further analysis.

Validation of the Measurement Model
The measurement model was assessed by using confirmatory factor analyses (CFA) with maximum likelihood estimation method, particularly by examining the goodness-of-fit indices as well as the construct reliability and validity.

The results of the confirmatory factor analyses (CFA) show a significant chi-square ($\chi^2$) value of 1683.764 (df = 458, p < 0.05), the normed $\chi^2$ values of 3.676, CFI of 0.793 and RMSEA of 0.082. Both the chi-square and normed chi-square meet the acceptable threshold levels of a good fit model, but not for CFI and RMSEA values (Table 3). Accordingly, based on the overall goodness-of-fit indices, the measurement model does not adequately fit the data. Therefore, model modification is necessary to improve the goodness-of-fit.

The model modification was carried out by following three steps. The steps include checking the standardized factor loadings, standardized residual covariance matrix and modification indices. The rule of thumb of an acceptable factor loading is above 0.5 or ideally 0.7 (Hair, et al., 2010), which indicate that the value below 0.5 should be deleted to achieve satisfactory model fit. Examination of standardized regression weights shows six items with loading below 0.5 (i.e. HK6, NLU1, NLU2, NLU4, ATD1 and ATD9). Hence, six items were deleted as to improve model fit and the measurement model was respecified. After re-specification, the fit indices of the modified model have shown an improvement, but the CFI value still below the threshold. Hence, the standardized residual covariance matrix was examined. Examination of the standardized residuals shows that item NLU11 has a large residual of 7.95, which exceed the threshold of ±4 (Byrne, 2010; Garson, 2012; Groenland & Stalpers, 2012; Ho, 2006; Mohd Sobhi, 2013). Since the item potentially contributes model misfit, the item was removed and the measurement model was respecified. After re-specification, the fit indices of the modified model achieve the satisfactory fit and hence adequate with validity and reliability assessment.

| GOF statistics                | $\chi^2$ (df, p) | $\chi^2$/df | CFI | RMSEA |
|-------------------------------|------------------|------------|-----|-------|
| Initial GOF results           | 1683.764 (458, 0.000) | 3.676      | **0.793** | **0.082** |
| GOF after 1st modification    | 877.603 (293, 0.000) | 2.995      | **0.88**  | 0.071  |
| GOF after 2nd modification    | 645.066 (264, 0.000) | 2.659      | 0.910    | 0.065  |
| Acceptable value*            | Significant at $\alpha = 0.05$ | 1.5        | > 0.9    | < 0.08 |

* based on Schumacker and Lomax (2004), Reisinger and Mavondo (2007), Hair et al. (2010) Garson (2012) and Gaskin,(2012a)

Based on Table 4, the construct reliability (CR) and the average variance extracted (AVE) values are all above the threshold of 0.7 and 0.5, respectively (Hair, et al., 2010), indicating that the items used to measure their respective construct are internally consistent in their measurement. To achieve convergent validity, the AVE value for each construct should be
greater than 0.5, the standardized factor loadings higher than 0.5 or ideally 0.7 and CR value exceeds 0.7 (Hair, et al., 2010). The results show the AVE, CR and standardized factor loadings values that above the recommended threshold (Hair, et al., 2010). Therefore, the convergent validity is evidenced. As for discriminant validity, the square root of the AVE must greater than its corresponding inter-construct correlations (IC) (Chiu & Wang, 2008; Fornell & Larcker, 1981; Ramayah, Lee, & Mohamad, 2010). Given that the square root of the AVE for each construct is higher than its corresponding inter-construct correlations (IC), the discriminant validity is also supported. By achieving the model fit and demonstrating acceptable construct reliability and validity, the model is appropriate for use to test the proposed hypotheses.

Table 4: Evaluation of the Measurement Model

| Construct (Loadings) | Inter-construct Correlations (IC) | AVE | CR |
|----------------------|----------------------------------|-----|----|
|                      | HK NLU ATD HFC                   |     |    |
| Health knowledge     |                                 |     |    |
| (HK) - (0.573, 0.783, 0.82, 0.695) | 0.724<sup>b</sup> | 0.524 | 0.812 |
| Nutrition Label Use  |                                 |     |    |
| (NLU) - (0.392, 0.713, 0.836, 0.838, 0.771, 0.629) | 0.088 | 0.713 | 0.509 | 0.856 |
| Attitude Towards Nutrition Label | 0.249 | 0.091 | 0.691 | 0.500 | 0.877 |
| (ATD) - (0.509, 0.623, 0.758, 0.792, 0.742, 0.791, 0.741, 0.494) | 0.322 | 0.021 | 0.472 | 0.770 | 0.594 | 0.897 |
| Healthy Food Choice  |                                 |     |    |
| (HFC) - (0.794, 0.84, 0.846, 0.775, 0.697, 0.651) | 0.322 | 0.021 | 0.472 | 0.770 | 0.594 | 0.897 |

Note:

AVE = average variance extracted = Σ squared loadings/n,
CR = construct reliability = (Σ loading)<sup>2</sup>/[(Σ loading)<sup>2</sup> + Σ(1-factor loading<sup>2</sup>)]

<sup>a</sup> square root of AVE (diagonal elements in bold)

**Hypotheses Testing**

The results reveal that goodness-of-fit indices for the structural model are all within the accepted thresholds. Hence, the overall model fit is adequate to test the proposed hypotheses. Based on Table 5 and Figure 1, the R<sup>2</sup> indicates health knowledge (HK) only able to explain 0.8 per cent of the total variance in nutrition label use (NLU). The effect of health knowledge (β=0.092, p<0.01) on nutrition label use is not significant. Thus, H<sub>1</sub> is not supported. Next, R<sup>2</sup> indicates that HK able to explain the variance attitude towards nutrition label (ATD) by 6.9 per cent, and the effect of HK on ATD is significant and positive (β=0.263, p<0.01). Thus, H<sub>2</sub> is supported. Finally, R<sup>2</sup> indicates that 23 per cent of the variance in healthy food choice (HFC) is explained by the NLU and ATD. Further, the effect of ATD on HFC is significant and positive (β=0.479, p<0.01), but the effect NLU on HFC is insignificant (β=-0.017, p>0.001). Thus, only H<sub>4</sub> is supported, but not H<sub>3</sub>. Thus, only two hypothesized relationships proposed i.e. H<sub>2</sub>, and H<sub>4</sub> are supported.
Table 5: Summary of the Hypotheses Testing

| Hypothesized path | Expected direction | Standardized estimate | t-value | Result       |
|-------------------|--------------------|-----------------------|---------|--------------|
| R² (NLU) = 0.008  |                    |                       |         |              |
| H₁: HK → NLU      | +                  | 0.092⁷                 | 1.536   | Not Supported|
| R² (ATD) = 0.069  |                    |                       |         |              |
| H₂: HK → ATD      | +                  | 0.263***               | 4.073   | Supported    |
| R² (HFC) = 0.23   |                    |                       |         |              |
| H₃: NLU → HFC     | +                  | -0.317⁷               | -0.327  | Not supported|
| H₄: ATD → HFC     | +                  | 0.479***               | 7.009   | Supported    |

Goodness-of-fit statistics: χ²=672.069 (df=248, p=0.000), χ²/df=2.71, CFI=0.907, RMSEA=0.066

Note:
HK – health knowledge, NLU – nutrition label use, ATD – attitude towards nutrition label, HFC – healthy food choice
Acceptable values: significant χ², χ²/df within 1-5, CFI > 0.9, RMSEA < 0.08
*** p < 0.01, ns not significant

Discussion
This study seeks to determine the effect of health knowledge on nutrition label use and attitude towards nutrition label, and consequently on the inclination towards healthy food choice among Malaysian consumer. The findings reveal that health knowledge significantly influences attitude towards nutrition label, but not nutrition label use. Accordingly, the findings indicate that consumer health knowledge will influence their attitude towards nutrition label, which supports the previous studies Baser et al. (2016) and Zhu and Xie (2015). That is, the more knowledgeable the consumer about health, the more favourable their attitude towards nutrition label. Thus, to promote positive attitudes towards the nutrition
label, it is extremely important to increase consumer awareness and knowledge about health first. The insignificant effect of health knowledge on nutrition label use seems to be inconsistent with previous studies such as Petrovici et al. (2012), Miller and Cassady (2015) and, Cooke and Papadaki (2014), but somehow supports the findings by Nurliyana et al. (2011) in the Malaysian context. Thus, it could be suggested that despite being knowledgeable about health, it may not be sufficient to drive the customer to use the nutrition label when making purchases.

In addition, the findings show that healthy food choice is significantly affected by the attitude towards nutrition label, but not by nutrition label use. The findings seem to concur with Ng et al. (2015) and; Shah Alam and Mohamed Sayuti (2011), which highlight that attitude plays a significant role on customers’ decision on the food product and purchase decision. Besides, the findings support the findings of the extant studies, which show that preference towards healthy diet (Cooke & Papadaki, 2014) and tendency towards reading nutrition label during food purchases (Graham & Laska, 2012) will induce the consumer to choose healthier products. Similar results were found in Graham and Laska (2012) suggesting that attitude towards preparing healthy food is significant on healthy food choice. Similarly, Trendel and Werle (2015) suggested that affective attitude has a significant impact on healthy food choice. Therefore, it could be concluded that favourable attitude towards nutrition label is more likely to encourage the customer to choose healthier food products. That is, the more positive the attitudes toward nutrition label, the higher the intention to choose healthy food among the Malaysian customer.

The findings seem to contradict with the previous studies, which indicate that the nutrition label use has a positive and significant effect on healthy food choice (Barreiro-Hurlé, et al., 2010; Graham & Laska, 2012) as the findings fail to reveal a significant relationship between nutrition label use and healthy food choice. However, the findings provide support to a few studies such as Cooke and Papadaki (2014) and Sacks et al. (2009), which pointed out that the nutrition label use may not lead to healthy food choice because their purchase decision is largely depended on other factors, particularly price. This is rather true in Malaysia where the consumer is rather to forego health aspects in order to buy cheaper products.

Accordingly, the nutrition label can help to educate and promote healthy food choice among Malaysian consumers. Though the nutrition label use is still low Malaysian consumer (Norazlanshah, et al., 2013), their attitude towards nutrition label is positive to the extent that it may induce the customer to choose healthier food product. Hence, to promote the customer to use the nutrition label, the consumer should be educated first about the concept and application of the nutrition label. Only then, the nutrition label use can have the significant impact on the healthy food choice (Cooke & Papadaki, 2014), and consequently, help the consumer to exercise their rights to be informed and access safe and quality food products.

In implication, the findings add to the existing literature on the significant roles of nutrition label to encourage consumers to make smart purchases over food products and serve as a reference point that could stimulate and guide future research on the nutrition label. Besides, the findings provide useful information on how nutrition label could assist in guiding the consumer to make a healthier food choice. In particular, consumers need to increase their knowledge about the nutrition label in order to improve nutrition label literacy. Consumers may upgrade nutrition label knowledge by reading books, brochures or magazines related to the nutrition label and attending nutrition label educational campaigns (Hawkes, 2013;
The consumer also needs to spend a little time to read nutrition labels before making a purchase decision (Norazmir, et al., 2012). They must embed in their mind that they must be more health conscious than price conscious. In addition, more campaigns should be held to educate the consumer on the importance of the nutrition label. Television program such as Cook It Up! that demonstrates healthy food cooking and provides guidance on how to read nutrition label easily, could be one of the best ways as a starting point. The relevant parties, such as the Ministry of Domestic Trade Cooperatives and Consumerism (KPDNKK), Muslim Consumers Association of Malaysia (PPIM), Federation of Malaysian Consumers Associations (FOMCA), and Consumers Association of Penang (CAP) should take an initiative to design effective programs in educating the consumers of the nutrition labels. KPDNKK may as well make it compulsory for the nutrition label to be written in Malay (Azani, 2017; Noor, 2017). In addition, clear and colored fonts used on the nutrition label could be more appealing to consumers to read the nutrition label (Graham & Laska, 2012). Therefore, attractive nutrition labels could enhance nutrition label knowledge in protecting consumers right and helping them choosing healthy food. The Ministry of Higher Education (MOHE) and The Ministry of Education (MOE) should also take part in organizing educational programmes pertaining to nutrition label (Survey-NHMS, 2015; E.-S. Tee, 2011). For example, modules on a balanced diet could be published and distributed to schools in Malaysia and be used during teaching and learning session.

This research is limited to several factors. First, this study is limited to the residents in Putrajaya, a territory in Malaysia with the highest overweight and obese residents. Therefore, the generalisation of the findings must be interpreted with the utmost caution and to increase the generalisation, replication of this research is suggested covering a wider area of research locations. This study only examines the effect of health knowledge, nutrition label use, and attitudes towards nutrition label on healthy food choice. There are other variables that could significantly impact healthy food choice such as demographic factors and motivation (Barreiro-Hurlé, et al., 2010; Cooke & Papadaki, 2014) have not been taken into account. Hence, future research should include these variables to determine whether these additional variables could increase the explanatory power of the framework.

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References
Latiff, A. Z. A. B., Rezai, G., Mohamed, Z., & Ayob, A. M. (2016). Food labels’ impact assessment on consumer purchasing behavior in Malaysia. *Journal of Food Products Marketing, 22*(2), 137-146. doi: 10.1080/10454446.2013.856053
Acheampong, I., & Haldeman, L. (2013). Are nutrition knowledge, attitudes, and beliefs associated with obesity among low-income Hispanic and African American women caretakers? *Journal of Obesity, 2013*(1), 1-8. doi: 10.1155/2013/123901

Aertsens, J., Mondelaers, K., Verbeke, W., Buysse, J., & Van Huylenbroeck, G. (2011). The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. *British Food Journal, 113*(11), 1353-1378.

Aggrawal, A. (2014). *International Conference on Management of Globalized Business: Emerging Perspectives*. India: Lulu.com.

Allport, G. W. (1935). *Attitudes: A Handbook of Social Psychology*, Worcester, Mass. Clark University Press. Anderson, JC, & Gerbing, DW (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411.

Ambak, R., Naidu, B. M., Omar, M. A., Zaki, N. A. M., Sallehuddin, S. M., & Aris, T. (2014). Food label reading and understanding among obese adults: a population study in Malaysia. *International Journal of Public Health Research, 4*(2), 449-456.

Amsteus, M., Olsson, H., & Paulsson, R. (2015). The Scent of a Successful Venue:(In) Congruent Scent and Consumer Attitude towards a Café. *International Journal of Business and Social Science, 6*(5), 232-243.

Ares, G., Mawad, F., Giménez, A., & Maiche, A. (2014). Influence of rational and intuitive thinking styles on food choice: Preliminary evidence from an eye-tracking study with yogurt labels. *Food Quality and Preference, 31*(13), 28-37. doi: /10.1016/j.foodqual.2013.07.005

Aschemann-Witzel, J., Hooge, D. I., & Normann, A. (2016). Consumer-Related Food Waste: Role of Food Marketing and Retailers and Potential for Action. *Journal of International Food & Agribusiness Marketing, 28*(3), 271-285.

Aygen, F. G. (2012). Turkish consumers’ understanding and use of nutrition labels on packaged food products. *International Journal of Business and Social Science, 3*(6), 171-183.

Azani, M. S. (2017, 04 Februari 2017). Produk tanpa label bahasa Melayu nafi hak pengguna, *Utusan Online*. Retrieved from http://www.utusan.com.my/berita/nasional/produk-tanpa-label-bahasa-melayu-nafi-hak-pengguna-1.440178

Azman, N., & Sahak, S. Z. (2014). Nutritional Label and Consumer Buying Decision: A Preliminary Review. *Procedia - Social and Behavioral Sciences, 130*, 490-498. doi: http://dx.doi.org/10.1016/j.sbspro.2014.04.057

Banaji, M. R., & Heiphetz, L. (2010). *Attitudes*. Hoboken: John Wiley.

Barlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information technology, learning, and performance journal, 19*(1), 43.

Barreiro-Hurlé, J., Gracia, A., & De-Magistris, T. (2010). Does nutrition information on food products lead to healthier food choices? *Food Policy, 35*(3), 221-229.

Baser, F., Ture, H., Abubakirova, A., Sanlier, N., & Cil, B. (2016). Structural modeling of the relationship among food safety knowledge, attitude and behavior of hotel staff in Turkey. *Food Control, 73*(2016), 438-444. doi: 10.1016/j.foodcont.2016.08.032

Bhattacherjee, A. (2012). *Social science research: principles, methods, and practices (2nd edition ed)*. Zurich, Switzerland: Creative Commons Attribution.
Bosman, M. J., Merwe, D. V. d., Ellis, S. M., Jerling, J. C., & Badham, J. (2014). South African adult metropolitan consumers' opinions and use of health information on food labels. British Food Journal, 116(1), 30-43.

Brownell, K. D., Kersh, R., Ludwig, D. S., Post, R. C., Puhl, R. M., Schwartz, M. B., & Willett, W. C. (2010). Personal responsibility and obesity: a constructive approach to a controversial issue. Health Affairs, 29(3), 379-387.

Burton, S., Howlett, E., & Tangari, A. H. (2009). Food for Thought: How Will the Nutrition Labeling of Quick Service Restaurant Menu Items Influence Consumers' Product Evaluations, Purchase Intentions, and Choices? Journal of Retailing, 85(3), 258-273. doi: http://dx.doi.org/10.1016/j.jretai.2009.04.007

Byrne, B. M. (2010). Structural equation modeling with AMOS: basic concepts, applications, and programming (2nd edition ed.). New York: Taylor and Francis Group.

Camerini, L., Schulz, P. J., & Nakamoto, K. (2012). Differential effects of health knowledge and health empowerment over patients’ self-management and health outcomes: a cross-sectional evaluation. Patient Education and Counseling, 89(2), 337-344.

Campos, S., Doxey, J., & Hammond, D. (2011). Nutrition labels on pre-packaged foods: a systematic review. Public health nutrition, 14(08), 1496-1506. doi: 10.1017/S1368980010003290

Cannoosamy, K., Pugo-Gunson, P., & Jeewon, R. (2014). Consumer knowledge and attitudes toward nutritional labels. Journal of nutrition education and behavior, 46(5), 334-340.

Carbone, E. T. (2013). Measuring nutrition literacy: Problems and potential solutions. Nutritional Disorders & Therapy, 3(11), 1-2.

Chapman, S., & Liberman, J. (2005). Ensuring smokers are adequately informed: reflections on consumer rights, manufacturer responsibilities, and policy implications. Tobacco Control, 14(2), 8-13.

Chin, J., Morrow, D. G., Stine-Morrow, E. A., Conner-Garcia, T., Graumlich, J. F., & Murray, M. D. (2011). The process-knowledge model of health literacy: evidence from a componential analysis of two commonly used measures. Journal of health communication, 16(sup3), 222-241.

Chiu, C. M., & Wang, E. T. G. (2008). Understanding Web-based learning continuance intention: The role of subjective task value. Information & Management, 45(3), 194-201. doi: http://dx.doi.org/10.1016/j.im.2008.02.003

Coakes, S. J., & Steed, L. G. (2003). SPSS analysis without anguish: version 11.0 for windows. Queensland: John Wiley & Sons Australia Ltd.

Cooke, R., & Papadaki, A. (2014). Nutrition label use mediates the positive relationship between nutrition knowledge and attitudes towards healthy eating with dietary quality among university students in the UK. Appetite, 83(2014), 297-303. doi: 10.1016/j.appet.2014.08.039

Costell, E., Tárrega, A., & Bayarri, S. (2010). Food acceptance: the role of consumer perception and attitudes. Chemosensory Perception, 3(1), 42-50.

Darkwa, S. (2014). Knowledge of nutrition facts on food labels and their impact on food choices on consumers in Koforidua, Ghana: a case study. South African Journal of Clinical Nutrition, 27(1), 13-17.

Darusalam, G., & Hussin, S. (2016). Metodologi penyelidikan dalam pendidikan. Kuala Lumpur: Universiti Malaya.

Department of Statistics, M. (2015). Report On Household Expenditure Survey 2014.
Drichoutis, A. C., Lazaridis, P., & Nayga, J. R. M. (2006). Consumers’ Use of Nutritional Labels: A Review of Research Studies and Issues. *Academy of Marketing Science Review, 29*(9), 1-22.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*: Harcourt Brace Jovanovich College Publishers.

Euromonitor International. (2011). Consumer Lifestyles in Malaysia. Retrieved from http://www.portal.euromonitor.com.eserv.uum.edu.my/Portal/Pages/Magazine/TopicPage.aspx

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Gao, S., Mokhtarian, P. L., & Johnston, R. A. (2008). Nonnormality of data in structural equation models. *Transportation Research Record: Journal of the Transportation Research Board, 2082*(1), 116-124.

Garson, G. D. (2012). *Structural Equation Modeling*. Asheboro, NC USA: Statistical Associates Publishing.

Grunert, K. G., Wills, J. M., & Fernández-Celemín, L. (2010). Nutrition knowledge, and use and understanding of nutrition information on food labels among consumers in the UK. *Appetite, 55*(2), 177-189.

Hair, Joseph, F., William, C., Black, B. J., Babin, Rolph, E., Anderson, & Tatham, R. L. (2010). *Multivariate data analysis: A global perspective (7th Eds.)*. New York Person Education Inc.
Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A global perspective* (7th edition ed.). Upper Saddle River, New Jersey: Pearson Education Inc.

Han, H., Back, K. J., & Barrett, B. (2009). Influencing factors on restaurant customers’ revisit intention: The roles of emotions and switching barriers. *International Journal of Hospitality Management, 28*(4), 563-572. doi: 10.1016/j.ijhm.2009.03.005

Han, H., Hsu, L. T. J., & Lee, J. S. (2009). Empirical investigation of the roles of attitudes toward green behaviors, overall image, gender, and age in hotel customers’ eco-friendly decision-making process. *International Journal of Hospitality Management, 28*(4), 519-528.

Harker, F. R., Gunson, F. A., & Jaeger, S. R. (2003). The case for fruit quality: an interpretive review of consumer attitudes, and preferences for apples. *Postharvest Biology and Technology, 28*(3), 333-347.

Harreveld, F., Nohlen, H., & Schneider, I. (2015). The ABC of ambivalence: Affective, Behavioral, and Cognitive consequences of attitudinal conflict. *Advances in experimental social psychology, 52*(2015), 285-324.

Hawkes, C. (2013). Promoting healthy diets through nutrition education and changes in the food environment: an international review of actions and their effectiveness. Rome, Italy: Food and Agriculture Organization of the United Nations.

Ho, R. (2006). *Handbook of univariate and multivariate data analysis and interpretation with SPSS*. Boca Raton, Florida: Chapman & Hall/CRC (Taylor & Francis Group).

Huck, S. W. (2012). *Reading statistics and research: 6th edition*. Boston, MA: Person Education, Inc.

Ibrahim, N. L. M., Arip, M. A. S. M., & Bistamam, M. N. (2015). Terjemahan, Kesahan dan Kebolehpercayan Career Thoughts Inventory. *Sains Humanika, 7*(1).

Kimia, J. M. (2016). Perlabelan makanan. Retrieved from http://www.kimia.gov.my/fungsi-bahagian/kesihatan-alam-kesihatan/sekseyen-makanan/141.html

Jacquier, C., Bonthoux, F., Baciu, M., & Ruffieux, B. (2012). Improving the effectiveness of nutritional information policies: assessment of unconscious pleasure mechanisms involved in food-choice decisions. *Nutrition Reviews, 70*(2), 118-131.

Johnston, D. W., Lordan, G., Shields, M. A., & Suziedelyte, A. (2015). Education and health knowledge: evidence from UK compulsory schooling reform. *Social Science & Medicine, 127*, 92-100.

Ju, L. C., Shahar, S., Yahya, H. M., Ching, T. S., Nor, N. S. M., Chuo, L. H., . . . Muk, N. (2010). Tahap pengetahuan pemakanan dan kesedaran kesihatan di kalangan pesakit diabetes mellitus di Klinik Kesihatan, Cheras, Kuala Lumpur, Malaysia. *Sains Malaysian*, 39(3), 505-511.

Kehinde, O. (2016). Consumerism and its influence on food and drug marketing in Nigeria. *Multidisciplinary Journal of Research Development (NARD), 8*(5), 53-67.

Kigaru, D. M. D., Loechl, C., Moleah, T., Macharia-Mutie, C., & Ndungu, Z. W. (2015). Nutrition knowledge, attitude and practices among urban primary school children in Nairobi City, Kenya: a KAP study. *BMC Nutrition, 1*(44), 2-8. doi: 10.1186/s40795-015-0040-8

Kim, M. J., Lee, C. K., Kim, G. W ., & Kim, J. M. (2013). Relationships between lifestyle of health and sustainability and healthy food choices for seniors. *International Journal of Contemporary Hospitality Management, 25*(4), 558-576.
Kimura, A. H. (2011). Food education as food literacy: privatized and gendered food knowledge in contemporary Japan. *Agriculture and Human Values, 28*(4), 465-482. doi: http://dx.doi.org/10.1007/s10460-010-9286-6

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd edition ed.). New York: The Guilford Press.

Knight, G. D. (2017). *Health Literacy: An Essential Ingredient for Better Health Outcomes—Overview of Health Literacy Theoretical Concepts*. United States: IGI Global.

Koller, M., & Walla, P. (2015). Towards alternative ways to measure attitudes related to consumption: Introducing startle reflex modulation. *Journal of Agricultural & Food Industrial Organization, 13*(1), 83-88.

Koo, H., Lee, C., Hidayah, A. N., & Hazwani, A. N. (2018). Knowledge, attitudes and practices of schoolchildren toward whole grains and nutritional outcomes in Malaysia. *Appetite, 123*(1), 256-263. doi: 10.1016/j.appet.2018.01.002

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educ psychol meas*.

Kumar, S., & Ali, J. (2011). *Assessing Consumer Awareness and Usage of Food Labels and Influences on Food Buying Behavior*. Paper presented at the Prepared for presentation at 21st Annual IFAMA World Forum and Symposium on the Road to.

Kwon, J., & Vogt, C. A. (2010). Identifying the role of cognitive, affective, and behavioral components in understanding residents’ attitudes toward place marketing. *Journal of Travel Research, 49*(4), 423-435.

Madhvapaty, H., & Singh, N. (2014). A Study of Awareness Level of Food Nutrition Labelling in India. *International Journal of Applied Services Marketing Perspectives, 3*(4), 1313.

Magistris, T. D., Gracia, A., & Barreiro-Hurlé, J. (2010). Effects of the nutritional labels use on healthy eating habits in Spain. *Agricultural Economics (Zemědělská ekonomika), 56*(11), 540-551.

Magnusson, M. K., & Hursti, U. K. K. (2002). Consumer attitudes towards genetically modified foods. *Appetite, 39*(1), 9-24.

Maldaon, I., & Hazzi, O. (2015). A Pilot Study: Vital Methodological Issues. *Verslas: teorija ir praktika*(1), 53-62.

Malhotra, N. K. (Ed.). (2009). *Basic Marketing Research: A decision making approach* (3rd edition ed.). New Jersey: Prentice Hall.

Marietta, A. B., Welshimer, K. J., & Anderson, S. L. (1999). Knowledge, attitudes, and behaviors of college students regarding the 1990 Nutrition Labeling Education Act food labels. *Journal of the American Dietetic Association, 99*(4), 445-449.

McCaffery, K. J., Holmes-Rovner, M., Smith, S. K., Rovner, D., Nutbeam, D., Clayman, M. L., . . . Sheridan, S. L. (2013). Addressing health literacy in patient decision aids. *BMC medical informatics and decision making, 13*(9), 10-23.

Miller, L. M. S., & Cassady, D. L. (2015). The effects of nutrition knowledge on food label use: a review of the literature. *Appetite, 92*(1), 207–216. doi: 10.1016/j.appet.2015.05.029

Ministry of Domestic Trade Co-Operatives and Consumerism, M. (2017). *Consumer rights*. Retrieved from http://www.kpdnkk.gov.my/index.php/my/pengguna/hp.

Ministry of Health Malaysia. (2011). Guide to nutrition labelling and claims (as at December 2010), from
Ministry of Health Malaysia. (2013). *Malaysian Dietary Guidelines: Make effective use of nutrition information on food labels.* Retrieved from http://www2.moh.gov.my/images/gallery/Garispanduan/diet/km14.pdf.

Misra, R. (2007). Knowledge, attitudes, and label use among college students. *Journal of the American Dietetic Association, 107*(12), 2130-2134.

Mogre, V., Aryee, P. A., Stevens, F. C., & Scherpber, A. J. A. (2017). Future Doctors’ Nutrition-Related Knowledge, Attitudes and Self-Efficacy Regarding Nutrition Care in the General Practice Setting: A Cross-Sectional Survey. *Medical Science Educator, 27*(3), 1-8. doi: 10.1007/s40670-017-0413-5

Sobhi, M. I. (2013). *Part C: Mediating, Moderating & Control Variable.* Workshop SEM Siri 1/2013. Workshop Handout. Universiti Utara Malaysia. Kedah, Malaysia.

Mötteli, S., Keller, C., Siegrist, M., Barbey, J., & Bucher, T. (2016). Consumers’ practical understanding of healthy food choices: a fake food experiment. *British Journal of Nutrition, 116*(03), 559-566.

Ng, S. H., Kelly B., Se C. H., Sahathevan S., Chinna K., . . . T., K. (2015). Reading the mind of children in response to food advertising: a cross-sectional study of Malaysian schoolchildren’s attitudes towards food and beverages advertising on television. *BMC public health, 15*(1), 1047. doi: 10.1186/s12889-015-2392-z

Njuguna, P. M. (2015). A comparison of consumerism activity amongst urban household consumers in Nakuru County, Kenya. *European Journal of Business and Management 7*(29), 1-7.

Noor, M. H. M. (2017, 10 Februari 2017). Denda pengeluar, peniaga tak guna label bahasa Melayu, *Utusan Online*. Retrieved from http://www.utusan.com.my/berita/nasional/denda-pengeluar-peniaga-tak-guna-label-bahasa-melayu-1.442758

Norazlanshah, H., Muhammad, I., Hasmina, M. D., Mashita, M., Norfazilah, M. R., & MF, F. N. (2013). The use of nutrition label on food purchasing decision among university students in Kuantan, Malaysia. *Health and the Environment Journal, 4*(1), 1-10.

Norazmir, M., Norazlanshah, H., Naqieyah, N., & Anuar, M. K. (2012). Understanding and use of food package nutrition label among educated young adults. *Pakistan Journal of Nutrition, 11*(10), 836-842.

Nurliyana, G., Norazmir, M., & Anuar, M. K. (2011). Knowledge, attitude and practices of university students regarding the use of nutritional information and food labels. *Asian Journal of Clinical Nutrition, 3*(3), 79-91.

O'Hara, G. (2013). The Complexities of ‘Consumerism’: Choice, Collectivism and Participation within Britain’s National Health Service, c. 1961–c. 1979. *Social history of medicine, 26*(2), 288-304.

Oko, A. N., & Linus, O. (2013). Consumerism, the Nigeria Experience: Study of the Food and Drink Industries 1980-2012. *Business and Management Horizons, 1*(2), 18-46.

Onete, B. C., Voinea, L., Filip, A., & Dina, R. (2014). Researching The Gap Between Foodstuff’s Attractiveness And Real Nutritional Profile - Prerequisite For Strengthening Nutrition Education And Consumer Rights Protection. *Amfiteatru Economic, 16*(36), 470-482.
Ooi, S., Nasir, M. M., Barakatun Nisak, M., & Chin, Y. (2015). Validation of a Food Choice Questionnaire among Adolescents in Penang, Malaysia. *Malaysian journal of nutrition*, 21(1), 25-35.

Ormshaw, M. J., Paakkari, L. T., & Kannas, L. K. (2013). Measuring child and adolescent health literacy: a systematic review of literature. *Health Education*, 113(5), 433-455.

Owen, D. (2014). *Products Liability Law, 3d (Hornbook Series)*. United States of America: West Academic.

Pa, N. A. N. (2014). *Penghasilan disertasi berkualiti dalam pendidikan matematik*. Kuala Lumpur: Universiti Malaya.

Pallant, J. (2015). *SPSS survival manual: a step guide to data analysis using SPSS 6th edition*. Australia: Publish Allen & Unwin.

Palumbo, R. (2015). Discussing the effects of poor health literacy on patients facing HIV: a narrative literature review. *International journal of health policy and management*, 4(7), 417.

Pesuruhjaya Penyemak Undang-undang, M. (2006). *Akta Perlindungan Pengguna 1999*. Pesuruhjaya Penyemak Undang-undang, Malaysia Retrieved from https://ttpm.kpdnkk.gov.my/portal/images/ttpm/akta%20perlindungan%20penguna.pdf.

Petrovici, D., Fearne, A., Nayga Jr, R. M., & Drolias, D. (2012). Nutritional knowledge, nutritional labels, and health claims on food: A study of supermarket shoppers in the South East of England. *British Food Journal*, 114(6), 768-783.

Pleasant, A. (2014). Advancing health literacy measurement: a pathway to better health and health system performance. *Journal of health communication*, 19(12), 1481-1496.

Poureslami, I., Nimmon, L., Rootman, I., & Fitzgerald, M. J. (2016). Health literacy and chronic disease management: drawing from expert knowledge to set an agenda. *Health promotion international*, daw003.

Prathiraja, P., & Ariyawardana, A. (2003). Impact of nutritional labeling on consumer buying behavior. *Sri Lankan Journal of Agricultural Economics*, 5(1), 35-46.

Racey, M., Machmueller, D., Field, D., Kulak, V., & Newton, G. S. (2016). Perceptions and use of sources of health knowledge by young adolescents. *International journal of adolescent medicine and health*.

Ramayah, T., Lee, J. W. C., & Mohamad, O. (2010). Green product purchase intention: Some insights from a developing country. *Resources, Conservation and Recycling*, 54(12), 1419-1427. doi: http://dx.doi.org/10.1016/j.resconrec.2010.06.007

Reisinger, Y., & Mavondo, F. (2007). Structural Equation Modeling. *Journal of Travel & Tourism Marketing*, 21(4), 41-71. doi: 10.1300/J073v21n04_05

Rezai, G., Shamsudin, M. N., Mohamed, Z., & Sook Ann, C. (2014). Quality-labeled vegetable consumption in Malaysia: Factors affecting attitude and purchase intent. *Journal of Food Products Marketing*, 20(1), 1-12. doi: 10.1080/10454446.2014.921871

Rose, L. D. (2012). Consumers’ Use and Understanding of Food Label Information and Effect on their Purchasing Decision in Ghana; A Case Study of Kumasi Metropolis. *Asian Journal of Agriculture and Rural Development*, 2(3), 351.

Roy, A., & Kareem, J. (2016). Attitude of Public towards Higher Education: Conceptual Analysis. *Scholedge International Journal of Multidisciplinary & Allied Studies ISSN 2394-336X*, 2(12), 19-28.
Sacks, G., Rayner, M., & Swinburn, B. (2009). Impact of front-of-pack ‘traffic-light’ nutrition labelling on consumer food purchases in the UK. *Health promotion international, 24*(4), 344-352.

Salmon, S. J., Fennis, B. M., de Ridder, D. T., Adriaanse, M. A., & De Vet, E. (2014). Health on impulse: when low self-control promotes healthy food choices. *Health Psychology, 33*(2), 103–109.

Samant, S. S., Crandall, P. G., & Seo, H.-S. (2016). The effect of varying educational intervention on consumers’ understanding and attitude toward sustainability and process-related labels found on chicken meat products. *Food Quality and Preference, 48*(3), 146-155. doi: 10.1016/j.foodqual.2015.09.005

Sani, N. A., & Siow, O. N. (2014). Knowledge, attitudes and practices of food handlers on food safety in food service operations at the Universiti Kebangsaan Malaysia. *Food Control, 37*, 210-217.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th edition ed.). Essex: Pearson Education Limited.

Schamari, J., & Schaefer, T. (2015). Leaving the home turf: How brands can use webcare on consumer-generated platforms to increase positive consumer engagement. *Journal of Interactive Marketing, 30*(3), 20-33. doi: 10.1016/j.intmar.2014.12.001

Schifferstein, H. N. (2001). *Effects of product beliefs on product perception and liking*. New York: Springer.

Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner’s Guide to Structural Equation Modeling* (Second edition ed.): Lawrence Erlbaum Associates.

Sekaran, U., & Bougie, R. (2009). *Research Methods for Business: A Skill Building Approach* (5th edition ed.). West Sussex, UK: John Wiley & Sons Ltd.

Alam, S. S., & Sayuti, M. N. (2011). Applying the Theory of Planned Behavior (TPB) in halal food purchasing. *International Journal of Commerce and Management, 21*(1), 8-20. doi: 10.1108/10569211111111676

Shukla, P. (2008). Essentials of Marketing Research Retrieved from www.bookboon.com

Smith, S. A., & Moore, E. J. (2012). Health literacy and depression in the context of home visitation. *Maternal and child health journal, 16*(7), 1500-1508.

Soleimani, H., & Hanafi, S. (2013). Iranian medical students’ attitudes towards English language learning. *International Research Journal of Applied and Basic Sciences, 4*(12), 3816-3823.

Souiden, N., Abdelaziz, F. B., & Fauconnier, A. (2013). Nutrition labelling: Employing consumer segmentation to enhance usefulness. *Journal of Brand Management, 20*(4), 267-282. doi: http://dx.doi.org/10.1057/bm.2012.14

Suhor, S., Yusoff, S. S., Ismail, R., Aziz, A. A., & Razman, M. R. (2014). Kesihatan dan Keselamatan Makanan: Kesedaran Pengguna dan Peruntukan Perundangan. *Jurnal Kanun, 26*(2), 236-253.

Survey-NHMS, N. H. A. M. (2015). Alarming trend of overweight and obesity among Malaysia adults. Retrieved from http://www.iku.gov.my/index.php/research-eng/list-of-research-eng/iku-eng/nhms-eng/nhms-2015

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th edition ed.). Boston, MA: Pearson Education. Inc.
Tee, E. S. (2011). Development and promotion of Malaysian dietary guidelines. *Asia Pacific journal of clinical nutrition, 20*(3), 455-461.

Tee, E. S. (2011, June 6, 2011). Thumbs up for labels, *The Star*. Retrieved from http://www.thestar.com.my/story/?file=%2F2011%2F6%2F6%2Flifeliving%2F8825980

The Ministry of Health. (2013). Malaysian Dietary Guidelines: Make effective use of nutrition information on food labels. Retrieved from http://www2.moh.gov.my/images/gallery/Garispanduan/diet/km14.pdf

The Ministry of Health Malaysia. (MOH). (2009). Malaysian Dietary Guidelines. Retrieved from http://www2.moh.gov.my/images/gallery/Garispanduan/diet/km14.pdf

Morbiditi, T. K. K. D. N. (2015). Alarming trend of overweight and obesity among Malaysia adults. Retrieved from http://www.iku.gov.my/index.php/research-eng/list-of-research-eng/iku-eng/nhms-eng/nhms-2015

Trendel, O., & Werle, C. O. (2015). Distinguishing the affective and cognitive bases of implicit attitudes to improve prediction of food choices. *Appetite, 104*(2015), 33-43. doi: 10.1016/j.appet.2015.10.005

Vabø, M., & Hansen, H. (2014). The relationship between food preferences and food choice: a theoretical discussion. *International Journal of Business and Social Science, 5*(7).

Weatherill, S. (2013). *EU consumer law and policy*. United Kingdom: Edward Elgar Publishing.

World Health Organization. (2012). Population-based approaches to childhood obesity prevention. Retrieved from http://www.who.int/dietphysicalactivity/childhood/WHO_new_childhoodobesity_PREVENTION_27nov_HR_PRINT_OK.pdf

World Health Organization. (2015). Obesity and overweight. Retrieved from http://www.who.int/mediacentre/factsheets/fs311/en/

Yasin, N. H., Ahmad, N. A., Nordin, N., Ghazali, M. S., & Abdullah, N. H. (2015). Promosi panduan diet Malaysia 2010: tahap pemahaman komuniti bandar dan luar bandar. *Proceedings of The 4th International Seminar on Entrepreneurship and Business 12*, 548-558.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). United States of America: Sage publications.

Zainol, Z., Yasin, N. M., Omar, N. A., & Hashim, N. M. H. N. (2014). Determining the Key Factors of Customer-Brand Relationship Investments’ Dimensions: Insights from Malaysian Mobile Phone User. *Journal of Relationship Marketing, 13*(4), 1-25. doi: 10.1080/15332667.2014.965649

Zakuan, Z. Z. M., & Yusoff, S. S. A. (2011). Gerenti Tersirat di Bawah Akta Pelindungan Pengguna 1999: Penambahbaikan kepada Syarat Tersirat di Bawah Akta Jualan Barang 1957? *Jurnal Undang-Undang Dan Masyarakat, 15*(2015), 95-108.

Zheng, S., Xu, P., & Wang, Z. (2011). Are nutrition labels useful for the purchase of a familiar food? Evidence from Chinese consumers' purchase of rice. *Frontiers of Business Research in China, 5*(3), 402-421. doi: http://dx.doi.org/10.1007/s11782-011-0137-0

Zhu, X., & Xie, X. (2015). Effects of knowledge on attitude formation and change toward genetically modified foods. *Risk Analysis, 35*(5), 790-810. doi: 10.1111/risa.12319