



UNIVERSITI PUTRA MALAYSIA

***INTENTION TOWARDS VEGETARIAN DIET IN MALAYSIA AS A
CONCERN OF HEALTHY EATING LIFESTYLE***

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**INTENTION TOWARDS VEGETARIAN DIET IN MALAYSIA AS A
CONCERN OF HEALTHY EATING LIFESTYLE**

By

MD. JAHIRUL ISLAM

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfillment of the Requirements for the Degree of Master of Science**

March 2018

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Master of Science

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March 2018

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Human health can be described as an individual's quality of life and the impacts of such living pattern on the development of the individual's social and economic aspects. One of the most effective ways of ensuring healthy living is the adoption of vegetarian foods. Vegetarian foods play an important role in healthy eating as they offer several health benefits and provide protection against numerous diseases. Despite all the advantages, the development of green food markets and the consumers' interest in the vegetarian culture are still below the satisfactory level in Malaysia. Thus, it becomes necessary to examine the consumers' perception, attitude and intention towards vegetarian food consumption with regards to healthy eating lifestyle.

In total, 1000 respondents were interviewed via structured questionnaire. The result of the factor analysis revealed that most of the factor loadings are above 0.60 which is considered acceptable. As hypothesized in the study, the result of the first regression analysis showed that perceived health status, perceived control of health and perceived benefit of health promoting behavior have positive relationship with attitude. The perceived barrier to health promoting behavior is also positive but not significant. The result of the second regression analysis revealed that attitude, subjective norm, and perceived behavioral control have significant positive relationship with consumers' intention to consume vegetarian foods. The result of the study showed that consumers have positive perception and attitude towards vegetarian food which can be explored to improve its adoption with regards to healthy eating lifestyle. Thus, efforts need to be intensified in the form of increased campaigns by all stockholders such as the food industry, government agencies, health bodies, and consumer groups.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

NIAT MENUJU KE ARAH DIET VEGETARIAN DI MALAYSIA SEBAGAI AMALAN GAYA HIDUP SIHAT

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Secara umumnya, kesihatan manusia sering dikaitkan dengan kualiti hidup seseorang individu dan kesannya terhadap perkembangan sosial dan ekonomi masing-masing. Salah satu cara untuk menjamin kehidupan yang sihat adalah melalui pemakanan secara vegetarian. Tabiat pengambilan makanan vegetarian yang terdiri daripada makanan yang kaya dengan buah buahan, sayur sayuran dan bijirin boleh mendorong seseorang itu kearah kehidupan yang lebih sihat. Walau bagaimanapun, perkembangan terhadap pasaran hijau dan keinginan pengguna terhadap makanan vegetarian masih di bawah tahap memuaskan di Malaysia. Perubahan gaya hidup moden masa kini telah menjadi satu titik permulaan dalam peningkatan taraf kehidupan dan kesihatan manusia. Oleh itu, ia menjadi satu keperluan untuk mengkaji persepsi, sikap dan keinginan pengguna terhadap pemakanan vegetarian yang menuju ke arah pemakanan yang lebih sihat.

Seramai 1000 orang responden telah menjawab soal selidik berstruktur. Hasil analisis faktor menunjukkan bahawa indikator beban faktor adalah melebihi 0.60 dan boleh diterimapakai. Sebagaimana yang telah ditunjukkan dalam hipotesis, hasil kajian menunjukkan taraf kesihatan, kawalan kesihatan yang ditetapkan dan persepsi faedah bagi kelakuan mempromosikan kesihatan mempunyai hubungan yang positif dengan sikap/tabiat. Norma subjektif telah dibuktikan bahawa ianya adalah faktor dominan terhadap keinginan seseorang untuk mengamalkan tabiat pemakanan secara vegetarian. Kajian ini secara empirikalnya dinilai berdasarkan kesan terhadap sikap pengguna, norma subjektif, tanggapan kawalan tingkah laku ke arah keinginan seseorang untuk mengamalkan pengambilan makanan secara vegetarian. Oleh itu, persepsi masyarakat dan pandangan mereka telah dinilai untuk disesuaikan dengan model yang boleh diterima pakai serta hubungkait di antara pemboleh ubah dan keinginan. Ini merumuskan bahawa pengamal vegetarian berpendirian kukuh bahawa

tabiat pengambilan makanan vegetarian amat mempengaruhi dan meningkatkan gaya hidup yang lebih sihat. Oleh itu, usaha perlu dipergiatkan dalam bentuk peningkatan kempen oleh semua pihak berkepentingan seperti industri makanan, agensi kerajaan, badan kesihatan, dan pengguna.



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I certify that a Thesis Examination Committee has met on 30 March 2018 to conduct the final examination of Md. Jahirul Islam on his thesis entitled "Intention Towards Vegetarian Diet in Malaysia as a Concern of Healthy Eating Lifestyle" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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LIST OF ABBREVIATIONS

PCH	Perceived Control of Health
PHS	Perceived Health Status
PBHPB	Perceived Benefit of Health Promoting Behaviors
PBHPB	Perceived Barriers of Health Promoting Behaviors
SN	Subjective Norm
PBC	Perceived Behavioral Control
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behavior

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Good dietary habits, especially vegetarian diet play an important role to lead a healthy life. Daily food consumption habit is the key driver of the healthy or unhealthy life as most of the illness comes in via mouth. Now-a-days, several diseases and mortality have been reported around the world because of unhealthy diet and living styles. For instance, contemporary food consumption tendency among young Malaysians is to eat fast food which contains high cholesterol and calories (Mohamed, Terano, Yeoh, & Iiyasu, 2017). While, in the world, vegetarians are increasing, and vegetarianism has been reported popular.

There are a variety of reasons for using a vegetarian or vegan diet, including moral, ethical, spiritual, or religious reasons as well as those concerning animal rights and animal welfare, or social or environmental concerns related to intensive animal husbandry or sustainability (Fox & Ward, 2008).

It is reported by Gan et al. (2018) that mostly Buddhists and Hindus are practicing vegetarianism in Asia. This claim can be considered as a threat to Malaysia as it's a Muslim dominate country. However, according to Yin Yin Boey "even though the community of vegans in Malaysia is small, it is surely thriving" (The Malaysian Reserve, 2018). Although vegetarian diet consumption trends in Malaysia is slow but it can help those vegetarians to have lower risks of chronic diseases such as coronary heart disease, hypertension, diabetes, obesity and cancer, as well as having a longer lifespan than the non-vegetarians (Melina et al., 2016; Mhrshahi et al., 2017). Therefore, above scenario of Malaysia grew the significant interest to study about the intention of Malaysian toward vegetarian diet.

In broader term, vegetarian diet includes a variety of dietary practices. For instance, a vegetarian diet must be without meat (including fowl), seafood, and any products that have seafood and meat (Craig & Mangels, 2009). However, it is different from dairy products e.g. lacto-vegetarianism or ovo-vegetarianism that do not include all flesh, sometimes honey, egg foods, and dairy. Plant-based nutrition is preferable than vegan nutrition by the several campaigners and dominant lobby organizations. Due to having both the varied heterogeneous ranges of dietary practice and non-uniform use of terminology creates complexity of the topic (Kessler et al. 2016).

To consume a vegetarian or vegan diet, numbers of reasons considered e.g. animal rights, ethical, social, religious, animal welfare, environmental, and in general greater sustainability (Fox & Ward, 2008). Another important fact is to live healthy that could create special identities and certain types of lifestyle (Ruby et al. 2013). Therefore,

health advantages might influence the public to use a vegetarian or vegan diets. For example, research shown that health benefits influence people to consume vegetarian and vegan diets (Huang, Huang, Hu, & Chavarro, 2016).

Vegetarian diet might be associated with a reduction in body weight, a lower incidence of the metabolic syndrome or diabetes, improvements in blood pressure and dyslipidemia and a lower incidence and/or mortality related to ischemic heart disease (indicating particular benefits for cardiovascular outcomes) (Orlich & Fraser, 2014). Other studies also linked vegetarianism and veganism to a reduced incidence of cancer (Dinu et al. 2017); however, a vegetarian, and especially vegan diet, might also be related to health risks including nutritional deficiencies such as vitamin B12, (Pawlak, Lester & Babatunde, 2014) zinc and iron (Foster, Chu, Petocz, & Samman, 2013). Few studies have investigated the prevalence of vegetarian and vegan nutrition. The reported prevalence rates have been highly variable, ranging from 0.77% in China (Mao, Shen & Tang, 2015) to 0.79% in Italy (Ponzio et al. 2015), 2.4% to 3.3% in the US (Jaacks, Kapoor & Singh, 2016), 3% to 8% in South Australia (Worsley & Skrzypiec, 1998), 3.8% to 15.6% in Scandinavia (Larsson et al. 2001), up to 33% in South Asia (Jaacks, Kapoor, & Singh, 2016), and 36% in India (Agrawal, Millett, Dhillon, Subramanian, & Ebrahim, 2014).

Although, cultural and religious elements have substantial impacts on vegan diets and on vegetarian, methodological issues cannot be ignored. Methodological issues are how it defines and measure vegetarian diets (e.g. analyses of food frequency), and multiplicity of study population (e.g. region, financial status), and some reports lacks methodology. Jaacks, Kapoor, and Singh (2016) concerned that much of research has been done more than a decade. While plant-based forms of nutrition have great attention day by day and increasing its popularity. Therefore, these issues require further research to get recent, robust, and generalizable information to understand the commonness of vegetarian forms of nutrition.

Presently, health and well-being are now being considered among the important socio-economic factors in all civilized societies. A healthy lifestyle involves ensuring and maintaining adequate physical and mental wellbeing and encouraging environmentally friendly initiatives. According to Leonard (2012), healthy living is multidimensional and can be affected by social and environmental factors such as food habits, religion, social circumstances and risky behaviors like tobacco consumption, practicing dieting in an unhealthy way, excessive alcohol consumption, and irregular physical exercise. Human health can be described as an individual's quality of life and the impacts of such living pattern on the development of the individual's social and economic aspects (Pohjolainen, Vinnari, & Jokinen, 2015).

However, the general wellbeing and the healthy living practices are now subjected to the challenging lifestyles of this modern era. Healthy living is a complex network due to its connection with other health related drivers. For instance, healthy diet and access

to professional preventive and diagnostic care depend on an individual's surrounding and income (Roberto et al., 2015).

In the course of the last 20 years, rapid and sustainable economic growth along with political stability witnessed in Malaysia have made the country's economy one of the most promising in the Southeast Asian region. This rapid development also extends to the socio-economic sector of the country and has led to remarkable improvements especially in the populace standard of living such as their eating habits and food purchasing power. Furthermore, rising urbanization has also given more pressure on the available services such as the healthcare services in city area; thus, Malaysian consumers are now becoming more conscious and sophisticated (Hadi et al., 2013).

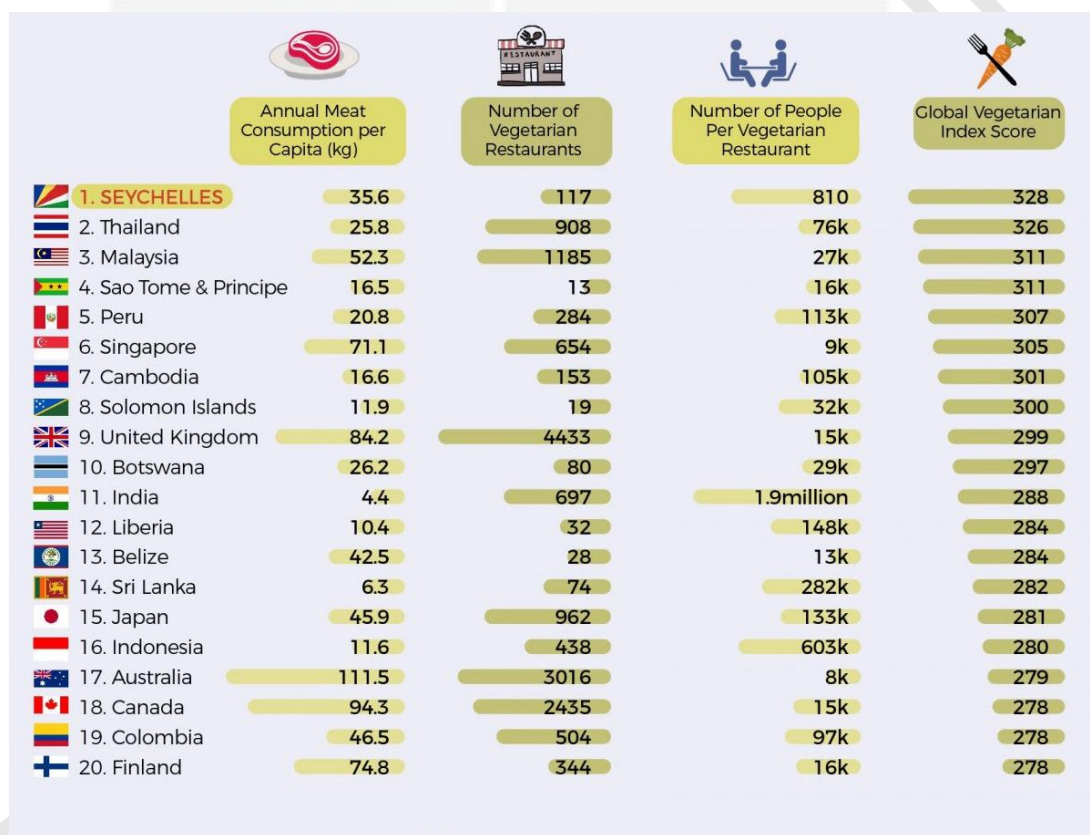


Figure 1.1 : Top 20 Vegetarian Friendly Countries
(Source: Oliver's Travels, 2017)

As shown in Figure 1.1, the African nation of Seychelles was found to be the most vegetarian-friendly nation in the world, followed by Southeast Asian destinations Thailand and Malaysia. Malaysia boasts more vegetarian joints, with 1,185. It also has more restaurants per head, but Muslim-majority Malaysia also enjoys eating meat, with 52.3kg consumed each year on average as Malaysia is considered to be vegetarian friendly nation.

The rapid changes in consumers' lifestyle and food choices will play important roles in the development food sectors in Malaysia. Additionally, these changes will also assist in reducing the food and nutrition-related problems being faced by Malaysians since the last few decades. The concepts of quality, healthy, green, and natural food and drinks are becoming prominent in the country (Rezai, 2012). Malaysia is one of the Southeast Asian countries in which the populations comprise of different ethnicity.

The population of Malaysia consists of three major ethnic groups, which are Malays, Chinese and Indian. As a result, variety of foods are available in Malaysia. Since the beginning of this century, consumers' expectations with regards to food choice have moved from common fulfillment of hunger, they are now more concerned about their wellbeing and give greater priority to the quality of food they consume. Some have chosen to consume vegetarian diet. One of the benefits of vegetarian diet is the absence of detrimental fats and cholesterol. Vegetarian food is rich in essential nutrients such as vitamins, minerals, and important phytochemicals. The consumption of vegetarian food is associated with several health benefits and also effective against chronic disease conditions such as heart diseases, digestive problem, and diabetes.

In contrary, unhealthy diet indirectly can trigger several health issues such as; coronary heart disease, hypertension, diabetes, obesity and cancer. Moreover, according to Malaysian Diabetes Association (Diabetes Malaysia, 2016), at least 6.2 million people in Malaysia have high cholesterol levels, 2.5 million are obese, and 5.8million suffer from depression. about 20% of the adult population in Malaysia suffers from pre-diabetes. Around 50% of Malaysians are facing a central or abdominal obesity problem. Approximately 15% and 30% of the Malaysian population aged 25 to 64 years old face general obesity or are overweight, respectively.

1.2 Problem Statement

Ministry of Health in Malaysia has been encouraging healthy dietary practices such as adequate consumption of vegetables and fruits which are necessary to ensure healthy living. But majority of Malaysians take their meals in restaurants which can be found easily at every locality in the country. Based on this, practicing vegetarianism in Malaysia is somewhat difficult as the local cuisine usually contain meat, chicken, and fish-based items. Moreover, Malaysians tend to eat fast food which contains high cholesterol and calories (Mohamed, Terano, Yeoh, & Iliyasa, 2017). These food habits indirectly increase the prevalence of many chronic diseases such as cancer and diabetes.

Many countries in the world have shown the prevalence of vegetarian but there is **no published national data** showing the percentage of vegetarians among Malaysians (Gan et al., 2018). This shows the inadequacy of the real number of the vegetarian and their perception towards vegetarian diet in Malaysia. Though, there are some studies

conducted about the vegetarian diet in Malaysia but those were either **limited to the comparison of vegetarian and non-vegetarian** food consumer, only among the Chinese community, or from the religion point of view.

For instance, recent study by Mohamed et al., (2017) studied the opinions of non-vegetarian consumers among the Chinese community in Malaysia toward vegetarian food and diets. In other study, Gan et al., (2018) focused only to the Buddhist organization to compare the nutritional status of vegetarians and non-vegetarians. Moreover, Gan et al., (2018) studied only in Kuala Lumpur with a small sample size which might **lack of accuracy** of generalize the result.

Vegetarian foods play an important role in healthy eating as they offer several health benefits and provide protection against certain diseases. Vegetarian foods have been acknowledged by several researchers, government agencies and health organization due to their numerous health benefits such as the reduction in the risk of cardiovascular diseases. In Malaysia growing prevalence rate of these diseases are reported. Vegetarian foods ensure smooth and effective digestion process and also provides the body with the necessary nutrients. The diets contain less fat and are rich in important nutrients such as fiber, complex carbohydrates, antioxidants and phytochemicals. The vegetarian eating pattern also adheres to the optimal diet guidelines which are formulated to reduce the risk of chronic diseases.

The prevalence of vegetarianism appears to be increasing in Malaysia. This practice is associated with animal welfare, environmental protection, and health concern. Majority of Malaysians take their meals in restaurants which can be found easily at every locality in the country. Based on this, practicing vegetarianism in Malaysia is somewhat difficult as the local cuisine usually contain meat, chicken, and fish-based items. Vegetarianism is also highly constrained in Malaysia due to the unavailability of sufficient vegetarian consumers and lack of adequate knowledge regarding the advantages of vegetarian foods. For instance, the consumption of vegetables in Malaysia is very low compared to the developed countries. Since dietary patterns are often not static, the dietary changes need to be explored as both vegetarians and non-vegetarian differs in their food related motivations, opinions, and practices.

Thus, gaining insights into the Malaysian consumers' attitudes towards vegetarian foods will reveal important information about their dietary beliefs which can be employed towards improving the dietary practices in the country. Improving the dietary practices will require the collective efforts of all stockholders such as the food industry, government agencies, health bodies, and consumer groups.

Above scenario shows that still in Malaysia, there is a lack of appropriate study which can reflect the intention of the Malaysian population toward the vegetarian diet. Given the potential implications of vegetarian and vegan nutrition on health and well-being, a better understanding of vegetarian and vegan diet use for health reasons is warranted.

This study therefore, aimed to identify the perception and attitudes towards vegetarian diet in Malaysia.

1.3 Research Questions and Objectives of the Study

Based on all the benefits of vegetarian foods outlined above and the small number of vegetarian consumers in Malaysia, questions and objectives of this research are as follows:

1.3.1 Research Questions

The present research consists of the following research questions:

1. What are the socio-demographic characteristics of respondents which can affect their intentions towards consumption of vegetarian foods for healthy eating lifestyle?
2. What are the factors that affect consumers' intention of consuming vegetarian foods with regards to healthy eating lifestyle?

1.3.2 General Objective

To examine consumers' intention about vegetarian diet in pursuing healthy life style in Malaysia.

1.3.3 Specific Objectives

1. To identify the socio-demographic characteristics of respondents which can affect their intentions towards consumption of vegetarian foods for healthy eating lifestyle.
2. To determine the influence of various factors towards intention of consuming of vegetarian foods with regards to healthy eating lifestyle.

1.4 Significance of the Study

This study intends to examine consumers' intention and attitude towards vegetarian foods with regards to healthy eating lifestyle. The study will contribute to the existing knowledge by providing important information about consumers' beliefs about vegetarian foods. The results of the study will give a clear and constructive picture of Malaysian consumers' perception of vegetarian foods with regards to healthy eating lifestyle and also reveal the various factors influencing vegetarian food consumption which can be adopted for future health promotion campaigns.

1.5 Summary

The chapter presents the background of the study. It outlines several benefits associated with vegetarian foods such as protection against cardiovascular diseases, obesity, and others. It also reveals some important factors limiting vegetarian food consumption and the difficulties of being a vegetarian in Malaysia such as lack of information about the advantages of vegetarian foods, insufficient vegetarian restaurants as meat, fish, and chicken-based items are important parts of the local cuisines and unavailability of sufficient vegetarian consumers. Finally, the chapter presents the research objectives, the research questions, problem statement and the significance of the study.



REFERENCES

- Agrawal, S., Millett, C. J., Dhillon, P. K., Subramanian, S. V., & Ebrahim, S. (2014). Type of vegetarian diet, obesity and diabetes in adult Indian population. *Nutrition journal*, 13(1), 89.
- Ajzen I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Process*, 50(2), 179-211.
- Ajzen, I. (1985). *From intentions to actions: A theory of planned behavior*. In *Action control*. Berlin: Springer.
- Ajzen, I. (2002). Perceived behavioral control, self- efficacy, locus of control, and the theory of planned behavior 1. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I. and Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behaviour*. Englewood Cliffs: Prentice-Hall.
- Al Mualala, A., Al-Majali, M. & Al Ziadat, M. (2012) 'The usage of internet banking services among Jordanian consumers'. *Journal of Internet Banking and Commerce*, 17(1), 1–10.
- American Dietetic Association. (2003). Position of the American Dietetic Association and Dietitians of Canada: vegetarian diets. *Journal of the Academy of Nutrition and Dietetics*, 103(6), 748.
- Anne, P. K. (1992). Lifestyle as a dimension of social movement study: A case study of the Vegetarian Movement in the United States. *University of Georgia*.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta- analytic review. *British Journal of Social Psychology*, 40(4), 471-499.
- Aschemann-Witzel, J., de Hooge, I., Amani, P., Bech-Larsen, T., & Oostindjer, M. (2015). Consumer-related food waste: causes and potential for action. *Sustainability*, 7(6), 6457-6477.
- Aune, D., Ursin, G., & Veierød, M. B. (2009). Meat consumption and the risk of type 2 diabetes: a systematic review and meta-analysis of cohort studies. *Diabetologia*, 52(11), 2277-87
- Axelsson, M. L., Brinberg, D., & Durand, J. H. (1983). Eating at a fast food restaurant a social-psychological analysis. *Journal of Nutritional Education*, 15(2), 94–98.
- Barker, M. E., Tandy, M. & Stookey, J. D. (1999). How Are Consumers of Low-Fat and High-Fat Diets Perceived by Those with Lower and Higher Fat Intake?, *Appetite*, 33(3), 309–317.

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- Bazzano, L. A., He, J., Ogden, L. G. (2002). Fruit and vegetable intake and risk of cardiovascular disease in US adults: the first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. *American Journal Clinical Nutrition*, 76(1) 93-9.
- Beard, L., Wyllie, A., & Caswell, S. (1989). Towards understanding eating habits in New Zealand: A Qualitative Investigation. *Department of Community Health*, University of Auckland, Auckland, New Zealand.
- Bedford, J. L., & Barr, S. I. (2005). Diets and selected lifestyle practices of self-defined adult vegetarians from a population-based sample suggest that are more ‘health conscious’. *International Journal of Behavioral Nutrition and Physical Activity*, 2(1), 4–14.
- Beilin, L. J., Burke, V. (1995). Vegetarian diet components, protein and blood pressure: which nutrients are important? *Clinical and Experimental Pharmacology and Physiology*, 22(1), 195-8.
- Bentler, P. M., & Speckart, G. (1981). Attitudes “cause” behaviors: A structural equation analysis. *Journal of Personality and Social Psychology*, 40(2), 226-238.
- Biddle, S. J., & Nigg, C. R. (2000). Theories of exercise behavior. *International Journal of Sport Psychology*. 31(1), 290-304.
- Bloch, P. (1984). The Wellness Movement: Imperatives for Health Care Marketers. *Journal of Health Care Marketing*, 4 (2), 9-16.
- Bouvard, V., Loomis, D., Guyton, K. Z., Grosse, Y., El Ghissassi, F., Benbrahim-Tallaa, L., & Straif, K. (2015). Carcinogenicity of consumption of red and processed meat. *The Lancet Oncology*, 16(16), 1599-1600.
- Buzalka, M. (2009), “Whole earth campus”. *Food Management*, 44(1), 1-16.
- Chan, K. & Tsang, L. (2011). “Promoting healthy eating among adolescents: a Hong Kong study”, *Journal of Consumer Marketing*, 28 (5), 354-362.
- Cheng, S., Lam, T., & Hsu, C. H. (2006). Negative word-of-mouth communication intention: An application of the theory of planned behavior. *Journal of Hospitality & Tourism Research*, 30(1), 95-116.
- Cho, S., & Walton, L.R. (2009). Integrating emotion and the theory of planned behavior to explain consumers’ activism in the internet web site. *Proceedings: 12th Annual International Public Relations Research Conference, Florida*.

- Chong, E. W., Simpson, J. A., Robma, L. D. (2009). "Red meat and chicken consumption and its association with age-related macular degeneration," *American Journal of Epidemiology*, 169(7), 867–876.
- Claiborne, C. B., & Sirgy, M. J. (2015). Self-image congruence as a model of consumer attitude formation and behavior: A conceptual review and guide for future research. In *Proceedings of the 1990 academy of marketing science (AMS) annual conference (pp. 1-7)*. Springer, Cham.
- Cliceri, D., Spinelli, S., Dinnella, C., Prescott, J., & Monteleone, E. (2018). The influence of psychological traits, beliefs and taste responsiveness on implicit attitudes toward plant-and animal-based dishes among vegetarians, flexitarians and omnivores. *Food Quality and Preference*, 68, 276-291.
- Coakes, S. J., Steed, L., & Dzidic, P. (2006). *SPSS version 13.0 for windows: Analysis without anguish*. Milton: John Wiley & Sons, Australia.
- Condrasky, M. D., Hegler, M., Sharp, J. L., Carter, C., & Komar, G. R. (2015). Opinions, knowledge, and current practices of culinary arts instructors and professionals in regard to healthy food techniques. *Journal of Culinary Science & Technology*, 13(4), 287-302.
- Conner, M. T. & van Dyck, L. (1993). Attitudes and beliefs of vegetarians and non-vegetarians. Paper presented to 16th Annual Scientific Meeting of Agev and European Interdisciplinary Meeting, 14-16 October 1993, Potsdam, Germany. *Agev Publication Series*, 10(1).
- Conner, M., McEachan, R., Lawton, R., & Gardner, P. (2017). Applying the reasoned action approach to understanding health protection and health risk behaviors. *Social Science & Medicine*, 195, 140-148.
- Cooper, D. R., & Schindler, P. S. (2003). *Business Research Methods*. New York: McGraw-Hill.
- Craig, W. J., Mangels, A. R., & Ada. (2009). Position of the American Dietetic Association: Vegetarian Diets. *Journal of the American Dietetic Association*, 109(1), 1266–1282. <http://doi.org/10.1016/j.jada.2009.05.027>.
- Cross, A. J., & Sinha, R. (2004). Meat- related mutagens/carcinogens in the etiology of colorectal cancer. *Environmental and Molecular Mutagenesis*, 44(1), 44-55.
- Cullum-Dugan, D., & Pawlak, R. (2015). Position of the Academy of Nutrition and Dietetics: Vegetarian Diets. *Journal of the Academy of Nutrition and Dietetics*, 115(5), 801–810. <http://doi.org/10.1016/j.jand.2015.02.033>.
- David, L. (1998). *Ethnic Groups Worldwide: A Ready Reference Handbook*. Illinois: Greenwood.

- De Bakker, E. & Dagevos, H. (2012). "Reducing meat consumption in today's consumer society: questioning the citizen-consumer gap". *Journal of Agricultural and Environmental Ethics*, 25(6), 877-894.
- De Boer, J., & Aiking, H. (2011). On the merits of plant-based proteins for global food security: Marrying macro and micro perspectives. *Ecological Economics*, 70(7), 1259-1265.
- Demoskop. (2014). Rapport, Allmänheten Om Vegetarisk Mat., Retrieved from https://issuu.com/djurensratt/docs/rapport_allmanheten_om_vegetarisk_m.
- Dinu, M., Abbate, R., Gensini, G. F., Casini, A., Sofi, F. (2017). Vegetarian, vegan diets and multiple health outcomes: a systematic review with meta-analysis of observational studies. *Critical Review of Food Science Nutrition*, 57(1), 3640-3649.
- Divine, R. L. & Lepisto, L. (2005). Analysis of the Healthy Lifestyle Consumer. *Journal of Consumer Marketing*, 22(5), 275-283.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. New York: Harcourt Brace Jovanovich College Publishers.
- Elie-Dit-Cosaque, C., Pallud, J., & Kalika, M. (2011). The influence of individual, contextual, and social factors on perceived behavioral control of information technology: A field theory approach. *Journal of Management Information Systems*, 28(3), 201-234.
- Elzerman, J. E., Hoek, A. C., van Boekel, M. A.J.S, Luning, P. A. (2011). Consumer acceptance of meat substitutes in a meal context. *Food Quality and Preference*, 22(3), 233-240.
- European Nitrogen Assessment (2014). Nitrogen on the Table: The influence of food choices on nitrogen emissions and the European environment. Retrieved from http://www.clrtap-tfrn.org/webfm_send/555 on 4th April, 2018.
- FAO (Food and Agriculture Organization of the United Nations) (2013). Edible insects: future prospects for food and feed security. <http://www.fao.org/docrep/018/i3253e/i3253e.pdf>
- FAO (Food and Agriculture Organization of the United Nations) (2014). The State of Food Insecurity in the World 2014 in Brief. [Retrieved: 17.10.2014]. <http://www.fao.org/3/a-i4037e.pdf>
- FAO (Food and Agriculture Organization of the United Nations). 2006. Livestock's long shadow. Environmental issues and options. [Retrieved: 2.5.2018]. <http://www.fao.org/docrep/010/a0701e/a0701e00.htm>

- FAO (Food and Agriculture Organization of the United Nations). 2008. An Introduction to the Basic Concepts of Food Security. FAO Food Security Programme. [Retrieved: 17.10.2018].
- FAO (Food and Agriculture Organization of the United Nations). 2012 The Global forest land-use change 1990-2005. [Retrieved: 30.3.2018]. <http://www.fao.org/docrep/017/i3110e/i3110e.pdf>
- FAO. (2015). Food and Agriculture Organization of the United Nations. Statistics division. <http://faostat.fao.org/site/573/DesktopDefault.aspx?PageID=573#ancor>. Visited 12.4.2018.
- Fessler, D. M. T., Arguello, A. P., Mekdara, J. M., & Macias, R. (2003). Disgust sensitivity and meat consumption: A test of an emotivist account of moral vegetarianism. *Appetite*, 41(3), 312–341.
- Fila, S. A. & Smith, C. (2006), “Applying the theory of planned behaviour to healthy eating behaviors in urban Native American youth”. *International Journal of Behavioural Nutrition and Physical Activity*, 3(1), 11-20.
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Fornell, C. (1992). “A National Customer Satisfaction Barometer: The Swedish Experience.” *Journal of Marketing*, 56(1), 6-21.
- Foster, M., Chu, A., Petocz, P., Samman, S. (2013). Effect of vegetarian diets on zinc status: a systematic review and meta-analysis of studies in humans. *Journal of Science Food Agriculture*, 93(1), 2362-2371.
- Fox, N., & Ward, K. (2008). Health, ethics and environment: A qualitative study of vegetarian motivations. *Appetite*, 50 (1), 422–429.
- Frankfort-Nachmias, C., & Nachmias, D. (1992). *Research methods in the social sciences*. (4th ed.). New York: St. Martin's Press.
- Fraser, G. E. (1999). Associations between diet and cancer, ischemic heart disease, and all-cause mortality in non-Hispanic white California Seventh-day Adventists. *The American Journal of Clinical Nutrition*, 70(3), 532s-538s.
- Frewer, L. (2003). 10. Societal issues and public attitudes towards genetically modified foods. *Trends in Food Science & Technology*, 14(5-8), 319-332.
- Friel, S., Dangour, A. D., Garnett, T., Lock, K., Chalabi, Z., Roberts, I., & Haines, A. (2009). Public health benefits of strategies to reduce greenhouse-gas emissions: food and agriculture. *The Lancet*, 374(9706), 2016-2025.

- Fung, T. T., Hu, F. B., Pereira, M. A., Liu, S., Stampfer, M. J., Colditz, G. A., & Willett, W. C. (2002). Whole-grain intake and the risk of type 2 diabetes: a prospective study in men. *The American Journal of Clinical Nutrition*, 76(3), 535-540.
- Gan, W. Y., Boo, S., Seik, M. Y., & Khoo, H. E. (2018). Comparing the nutritional status of vegetarians and non-vegetarians from a Buddhist Organisation in Kuala Lumpur, Malaysia. *Nutritional Status, Dietary Intake and Body Composition*, 24(1), 89.
- Gatenby, S. (1996). Healthy eating: Consumer attitudes, beliefs and behaviour. *Journal of Human Nutrition and Dietetics*, 9(2), 381–385.
- Gilbert, L. C. (2000). The functional food trend: What's next and what Americans think about eggs. *Journal of the American College of Nutrition*, 19(5), 507–512.
- Hadi, A. H. I., Shamsudin, M. N., Radam, A., & Selamat, J. (2013). Consumer preference for food attributes in Malaysia: case studies on broiler and beef. *Journal of International Food & Agribusiness Marketing*, 25(1), 137-153.
- Hair, J. F., Anderson, R. E., Tatham, R. L. & W. C. Black (2010). *Multivariate Data Analysis with Readings*. (7th ed.). Englewood (New Jersey): Prentice Hall Inc.
- 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.
- Harold, H. (2013). The vegetarian conscience. Retrieved from at <http://www.hedweb.com/hillman/vegethic.htm>.
- Harrington, K. E., Robson, P. J., Kiely, M., Livingstone, M. B., Lambe, J., & Gibney, M. J. (2001). The North/South Ireland food consumption survey: Survey design and methodology. *Public Health Nutrition*, 4(2), 1037–1042.
- Hartmann, M., & Simons, J. (2015). The Farm Animal Welfare-Dilemma: Can concerted Action of the Value Chain be a solution? In *148th Seminar, November 30-December 1, 2015, The Hague, The Netherlands* (No. 229280).
- Hellemans, K. G., Sliwowska, J. H., Verma, P., & Weinberg, J. (2010). Prenatal alcohol exposure: fetal programming and later life vulnerability to stress, depression and anxiety disorders. *Neuroscience & Biobehavioral Reviews*, 34(6), 791-807.
- Hoek, A. C., Pearson, D., James, S. W., Lawrence, M. A., & Friel, S. (2017). Shrinking the food-print: A qualitative study into consumer perceptions, experiences and attitudes towards healthy and environmentally friendly food behaviours. *Appetite*, 108, 117-131.

- Holm, L. & Mohl, M. (2000). "The role of meat in everyday food culture: an analysis of an interview study in Copenhagen". *Appetite*, 34(3), 277-283.
- Hoologan, C., Berners-Lee, M., Cammack, H., Hewitt, C. (2012). The relative greenhouse gas impacts of realistic dietary choices. *Energy Policy*, 43(2), 184-190.
- Huang, R. Y., Huang, C. C., Hu, F. B., Chavarro, J. E. (2016). Vegetarian diets and weight reduction: a meta-analysis of randomized controlled trials. *Journal of General International Medicine*, 31(1), 109-116.
- Jaacks, L. M., Kapoor, D., Singh, K., Narayan, K. V., Ali, M. K., Kadir, M. M., & Prabhakaran, D. (2016). Vegetarianism and cardiometabolic disease risk factors: differences between South Asian and US adults. *Nutrition*, 32(9), 975-984.
- Jabs, J., Devine, C., & Sobal, J. (1998). Model of the process of adopting diets: health vegetarians and ethical vegetarians. *Journal of Nutrition Education*, 30(4), 196-202.
- Jacobs, R., Marquart L., & Slavin, J. (1998). Whole-grain intake and cancer: an expanded review and meta-analysis. *Nutrition and Cancer*, 30(1), 85-96.
- Janda, S. & Trocchia, P. J. (2001), "Vegetarianism: toward a greater understanding", *Psychology & Marketing*, 18(12), 1205-1240.
- Jenkins, D. J. A., Popovich, D., & Kendall. C. (1997). Effect of a diet high in vegetables, fruit, and nuts on serum lipids. *Metabolism*, 46 (1), 530-537.
- Jones, T. C., Modeste, N., Anderson, B., Lee, J., & Lim, V. J. (2007). Factors influencing the intention to quit drinking alcohol among African American/Black pregnant women. *Californian Journal of Health Promotion*, 5(3), 131-144.
- Jordbruksverket. (2013). Hållbar Köttkonsumtion - Vad Är Det? Hur När vi Dit?, Retrieved from <https://www.jordbruksverket.se/download/18.5df17f1c13c13e5bc4f800039403/En+hållbar+köttkonsumtion.pdf>.
- Joshiyura, K. J., Ascherio, A., & Manson, J. F. (1999). Fruit and vegetable intake in relation to risk of ischemic stroke. *Journal of American Medical Association*, 282(1), 1200-9.
- Kafatos, A., Diacatou A., & Voukiklaris, G. (1997). Heart disease risk-factor status and dietary changes in the cretan population over the past 30 y: the seven countries study. *American Journal of Clinical Nutrition*, 65(1), 1882-6.

- Kalof, L., Dietz, T., Stern, P. C., & Guagnano, G. A. (1999). Social psychological and structural influences on vegetarian beliefs. *Rural Sociology*, 64(3), 500-511.
- Kaluza, J., Wolk, A. and Larsson, S. C. (2012), "Red meat consumption and risk of stroke: a meta-analysis of prospective studies". *American Heart Association*, 43(10), 2556-2560.
- Kang, H., Hahn, M., Fortin, D. R., Hyun, Y. J., & Eom, Y. (2006). Effects of perceived behavioral control on the consumer usage intention of e-coupons. *Psychology & Marketing*, 23(10), 841-864.
- Kearney, J. M., & McElhone, S. (1999). Perceived barriers in trying to eat healthier—Results of a pan-EU consumer attitudinal survey. *British Journal of Nutrition*, 81(3), S133–S137.
- Kerlinger, F. N. & Lee, H. B. (2000). *Foundations of behavioral research*. (4th ed.). Fort Worth: Harcourt Brace College.
- Kessler, C. S., Holler, S., Joy, S., Dhruva, A., Michalsen, A., Dobos, G., & Cramer, H. (2016). Personality profiles, values and empathy: differences between lacto-ovo-vegetarians and vegans. *Complementary Medicine Research*, 23(2), 95-102.
- Key, T., Appleby, P. N., & Rosell, M. S. (2006). Health effects of vegetarian and vegan diets. *Proceedings of the Nutrition Society*, 65(1), 35–41.
- Kidwell, B., & Jewell, R. D. (2003). An examination of perceived behavioral control: internal and external influences on intention. *Psychology & Marketing*, 20(7), 625-642.
- Kim, E., Ham, S., Yang, I. S., & Choi, J. G. (2013). The roles of attitude, subjective norm, and perceived behavioral control in the formation of consumers' behavioral intentions to read menu labels in the restaurant industry. *International Journal of Hospitality Management*, 35(2), 203–213.
- Kim, H. J., & Houser, R. F. (1999). Two small surveys, 25 years apart, investigating motivations of dietary choice in 2 groups of vegetarians in the Boston area. *Journal of the American Dietetic Association*, 99(1), 598–601.
- Kirchhoff, S., Smyth, H., Sanderson, J., Sultanbawa, Y. & Gething, K. (2011). "Increasing vegetable consumption: a means-end chain approach". *British Food Journal*, 113(8), 1031-1044.
- Kotler, P., Keller, K. L., Koshy, A. & Jha, M. (2009). *Marketing Management- A South Asian Perspective*. (13th ed.). New Delhi: Dorling Kindersley.
- Kraft, F. B. & Goodell, P. W. (1993). Identifying the Health Conscious Consumer. *Journal of Health Care Marketing*, 13(3), 18-25.

- Kraus, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin*, 21(1), 58–75.
- Lachman, M. (2006). Perceived control over aging-related declines: Adaptive beliefs and behaviors. *Current Directions in Psychological Science*, 15(2), 282–286.
- Lanou, A. J. (2007). Demand for vegetarian dining continues to grow. *Nation's Restaurant News*, 41(26), 44.
- Lapinski, M. K., & Rimal, R. N. (2005). An explication of social norms. *Communication theory*, 15(2), 127-147.
- Larsson, C. L., Klock, K. S., Åstrøm, A. N., Haugejorden, O., & Johansson, G. (2001). Food habits of young Swedish and Norwegian vegetarians and omnivores. *Public health nutrition*, 4(5), 1005-1014.
- Larsson, S. C., & Orsini, N. (2013). Red meat and processed meat consumption and all-cause mortality: a meta-analysis. *American Journal of Epidemiology*, 179(3), 282-289.
- Latvala, T., Niva, M., Makela, J., Pouta, E., Heikkilä, J., Kotro, J. & Forsman-Hugg, S. (2012), “Diversifying meat consumption patterns: consumers’ self-reported past behaviour and intentions for change”. *Meat Science*, 92(1), 71-77.
- Lea, E., Worsley, A. and Crawford, D. (2002), “Australian adult consumers’ beliefs about vegetarian foods: a qualitative study”. *Health Education and Behavior*, 32(6), 795-808.
- Lea, E.J., Crawford, D. & Worsley, A. (2006), “Public views of the benefits and barriers to the consumption of a plant-based diet”. *European Journal of Clinical Nutrition*, 60(7), 828-837.
- Leek, S., Maddock, S., & Foxall, G. (2000). Situational determinants of fish consumption. *British Food Journal*, 102(1), 18–39.
- Leitzmann, C. (2014). Vegetarian Nutrition: Past, present, future. *American Journal of Clinical Nutrition*, 100(2), 99-109. <http://doi.org/10.3945/ajcn.113.071365>.
- Leonard, L. K. (2012). ‘Attitude influencers in c2c e-commerce: buying and selling’. *The Journal of Computer Information Systems*, 52(3), 11–17.
- Levine, M. E., Suarez, J. A., Brandhorst, S., Balasubramanian, P., Cheng, C. W., Madia, F., & Passarino, G. (2014). Low protein intake is associated with a major reduction in IGF-1, cancer, and overall mortality in the 65 and younger but not older population. *Cell metabolism*, 19(3), 407-417.
- Lewis, S. L., Brando, P. M., Phillips, O. L., van der Heijden, G. M., & Nepstad, D. (2011). The 2010 Amazon Drought. *Science*, 331(6017), 554-554.

- Lin, H., Wu, C. & Yang, J. (2011). 'A productivity review study on theory of reasoned action literature using bibliometric methodology'. *International Conference on Management and Service Science*, Singapore: IACSIT Press.
- Livsmedelsverket. (2017). Kött Och Chark - Råd, Retrieved from <https://www.livsmedelsverket.se/matvanor-halsa--miljo/kostrad-och-matvanor/rad-om-bra-mat-hittaditt-satt/kott-och-chark>.
- Maggiano, G. (2006). The Impact of Rural Microfinance: Measuring Economic, Social and Spiritual Development in Kabale. *Uganda (Doctoral dissertation)*.
- Manstead, A. S., & van Eekelen, S. A. (1998). Distinguishing between perceived behavioral control and self- efficacy in the domain of academic achievement intentions and behaviors. *Journal of Applied Social Psychology*, 28(15), 1375-1392.
- Mao, X., Shen, X., Tang, W., Zhao, Y., Wu, F., Zhu, Z., & Cai, W. (2015). Prevalence of vegetarians and vegetarian's health dietary behavior survey in Shanghai. *Journal of Hygiene Research*, 44(2), 237-241.
- Margetts, B. M., Martinez, J. A., Saba, A., Holm, L., & Kearney, M. (1997). Definitions of 'healthy' eating: a pan-EU survey of consumer attitudes to food, nutrition and health. *European Journal of Clinical Nutrition*. 51(2), 23–29.
- Marsh, K., Zeuschner, C., & Saunders, A. (2012). Health Implications of a Vegetarian Diet: A Review. *American Journal of Lifestyle Medicine*, 6(3), 250–267. <http://doi.org/10.1177/1559827611425762>.
- Matveev, A. V. (2002). The advantages of employing quantitative and qualitative methods in intercultural research: Practical implications from the study of the perceptions of intercultural communication competence by American and Russian managers. *Theory of Communication and Applied Communication*, 1(1). 59-67.
- McIntosh WA, Kubena KS, Jiang H, Utery CP, Karnei K. (1996). An application of the Health Belief Model to reductions in fat and cholesterol intake. *Journal of Wellness Perspectives*, 12(2), 98–107.
- McMichael, J., Powles, J.C., Butler, R. & Uauy, R. (2007). "Food, livestock production, energy, climate change, and health", *Lancet*, 370(9594), 1253-1263.
- Micha, R., Michas, G. & Mozaffarian, D. (2012). "Unprocessed red and processed meats and risk of coronary artery disease and type 2 diabetes – an updated review of the evidence". *Current Atherosclerosis Reports*, 14(6), 515-524.

- Mohamed, Z., Terano, R., Yeoh, S. J., & Iliyasu, A. (2017). Opinions of Non-Vegetarian Consumers Among the Chinese Community in Malaysia Toward Vegetarian Food and Diets. *Journal of food products marketing*, 23(1), 80-98.
- Montano, D. E., & Kasprzyk, D. (2008). *Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. Health Behavior and Health Education: Theory, Research and Practice*, 67–96.
- Morgan, R. M. & S. D. Hunt (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, 58(2), 20-38.
- Mullee, A., Vermeire, L., Vanaelst, B., Mullie, P., Deriemaeker, P., Leenaert, T., ... & Huybrechts, I. (2017). Vegetarianism and meat consumption: A comparison of attitudes and beliefs between vegetarian, semi-vegetarian, and omnivorous subjects in Belgium. *Appetite*, 114, 299-305.
- Muzaffar, H., Chapman-Novakofski, K., Castelli, D. M., & Scherer, J. A. (2014). The HOT (Healthy Outcome for Teens) project. Using a web-based medium to influence attitude, subjective norm, perceived behavioral control and intention for obesity and type 2 diabetes prevention. *Appetite*, 72(1), 82-89.
- Norman, P., Armitage, C. J., & Quigley, C. (2007). The Theory of Planned Behavior and binge drinking: assessing the impact of binge drinker prototypes. *Addictive Behaviors Journal*, 32(9), 1753-1768.
- Norman. P., & Conner, M. (2006). The Theory of Planned Behaviour and binge drinking: Assessing the moderating role of past behaviour within the Theory of Planned Behaviour. *British Journal of Health Psychology*, 11(1), 55-70.
- Nunnally. J. C., & Bernstein. I. H. (1994). *Psychometric Theory (McGraw-Hill Series in Psychology)*. New York: McGraw-Hill.
- Oakes, M., & Slotterback, C. (2004). Prejudgments of Those Who Eat A ‘healthy’ versus an ‘unhealthy’ food for Breakfast. *Current Psychology*, 23(4), 267–278.
- Okun, M. A., Karoly, P., & Lutz, R. (2002). Clarifying the contribution of subjective norm to predicting leisure-time exercise. *American Journal of Health Behavior*, 26(4), 296-305.
- Oliver, J. E., & Silman, A. J. (2006). Risk factors for the development of rheumatoid arthritis. *Scandinavian Journal of Rheumatology*, 35(3), 169-174.
- Olsen, S. O. (2001). Consumer involvement in seafood as family meals in Norway: An application of the expectancy-value approach. *Appetite*, 36(2), 173–186.
- Orlich, M. J., Fraser G. E. (2014). Vegetarian diets in The Adventist Health Study 2: a review of initial published findings. *American Journal of Clinical Nutrition*, 100(1), 353S-358S.

- Orlich, M.J., Singh, P.N., Sabaté, J., Jaceldo-Siegl, K., Fan, J., Knutsen, S., Beeson, W.L. & Fraser, G. E. (2013). "Vegetarian dietary patterns and mortality in Adventist health study 2". *JAMA Internal Medicine*, 173(13), 1230-1238.
- Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS for windows*. Crows Nest: Allen & Unwin.
- Pawlak, R., Lester, S. E., Babatunde, T. (2014). The prevalence of cobalamin deficiency among vegetarians assessed by serum vitamin B12: a review of literature. *European Journal of Clinical Nutrition*, 68(1), 541-548.
- Pender, N.J. (1982). *Health Promotion in Nursing Practice*. Norwalk, CT: Appleton-Crofts.
- Perlik, A. (2010), "Meatless mains", Restaurants & Institutions. Retrieved from www.caterersearch.com/Articles/2010/04/05/332877/Meatless-mains-US-food-trends.htm.
- Perry, C. L., McGuire, M. T., Neumark-Sztainer, D., & Story, M. (2001). Characteristics of vegetarian adolescents in a multiethnic urban population. *Journal of Adolescent Health*, 29(1), 406-416.
- Pilis, W., Stec, K., Zych, M., & Pilis, A. (2014). Health benefits and risk associated with adopting a vegetarian diet. *Annals of the National Institute of Hygiene*, 65(1), 9–14.
- Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2013). Social cognitive theories used to explain physical activity behavior in adolescents: a systematic review and meta-analysis. *Preventive Medicine*, 56(5), 245-253.
- Pohjolainen, P., Vinnari, M., & Jokinen, P. (2015). Consumers' perceived barriers to following a plant-based diet. *British Food Journal*, 117(3), 1150-1167.
- Ponzio, E., Mazzarini, G., Gasperi, G., Bottoni, M. C., Vallorani, S. (2015). The vegetarian habit in Italy: prevalence and characteristics of consumers. *Ecological Food Nutrition*, 54(1), 370-379.
- Povey, R., Wellens, B. and Conner, M. (2001), "Attitudes towards following meat, vegetarian and vegan diets: an examination of the role of ambivalence", *Appetite*, 37(1), 15-26.
- Power, T.G., Bindler, R.C., Goetz, S. & Daratha, K.B. (2010), "Obesity prevention in early adolescence: student, parent, and teacher views". *The Journal of School Health*, 80(1), 13-19.
- Prendergast, G., Tsang, A. & Lo, Y. (2008) 'Antecedents of the intention to seek samples'. *European Journal of Marketing*, 42(11), 1162–1169.

- Raine, K. D. (2005). Determinants of healthy eating in Canada: An overview and synthesis. *Canadian Journal of Public Health, 96*(2), 122-131.
- Rajaram, S., & Sabaté, J. (2000). Health benefits of a vegetarian diet. *Nutrition, 16*(7), 531-533.
- Ramayah, T., Nasurdin, A. M., Noor, M. N., & Sin, Q. B. (2004). The Relationships between belief, attitude, subjective norm, and behavior towards infant food formula selection: the views of the Malaysian mothers. *Gadjah Mada International Journal of Business, 6*(3), 405-418.
- Rezai, G. (2012). Consumers' awareness and consumption intention towards green foods. *African Journal of Business Management, 6*(12), 1-13. <http://doi.org/10.5897/AJBM11.1414>.
- Roberto, C. A., Swinburn, B., Hawkes, C., Huang, T. T., Costa, S. A., Ashe, M., & Brownell, K. D. (2015). Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *The Lancet, 385*(9985), 2400-2409.
- Roininen, K. (2001). Evaluation of Food Choice Behavior: Development and Validation of Health and Taste Attitude Scales. *University of Helsinki*.
- Rosenstock, I. M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly, 83*(4), 1-32.
- Rosman, M., Rachminov, Segal, O. & Segal, G. (2015). Prolonged patients' In-Hospital Waiting Period after discharge eligibility is associated with increased risk of infection, morbidity and mortality: a retrospective cohort analysis. *BMC Health Services Research, 15*(1), 246.
- Ruby, M. B., Heine, S. J., Kamble, S., Cheng, T. K., Waddar, M. (2013). Compassion and contamination: cultural differences in vegetarianism. *Appetite, 71*(1), 340-348.
- Ruby, M.B. (2012), "Vegetarianism. A blossoming field of study". *Appetite, 58* (1), 141-150.
- Ryu, K., Han H., & Kim, T. (2007). The relationships among overall quick-casual restaurant image, perceived value, customer satisfaction, and behavioral intentions. *International Journal of Hospitality Management, 27*(3), 459-469.
- Saba, A., & DiNatale, R. (1998). Attitudes, intention and habit: Their role in predicting actual consumption of fats and oils. *Journal of Human Nutrition and Dietetics, 10*(2), 10-20.
- Salonen, A.O. & Helne, T.T. (2012), "Vegetarian diets: a way towards a sustainable society", *Journal of Sustainable Development, 5*(6), 10-24.

- Santos, M. L. S. & Booth, D. A. (1996). Influences on meat avoidance among British Students. *Appetite*, 27(2), 197-205.
- Santos, M. L. S. & Booth, D. A. (1996). Influences on meat avoidance among British Students. *Appetite*, 27(2), 197-205.
- Scholderer, J., & Grunert, K. G. (2001). Does generic advertising work? A systematic evaluation of the Danish campaign for fresh fish. *Aquaculture Economics and Management*, 5(5/6), 253–271.
- Schryver, T, J. (2005). Attitudes, Beliefs, and Behaviors of Soy Consumers and Non-consumers in Mainstream and Natural Foods Grocery Stores in Minnesota. *The University of Minnesota*.
- Sekaran, U. & Bougie, R. (2010). *Research methods for business: A skill building approach*. (5th ed.). New Jersey: John Wiley & Sons Ltd.
- Sekaran, U. (2003). *Research method for business: A skill building approach* (4th Ed.). New York: John Wiley & Sons, Inc.
- Sentosa, I., & Mat, N. K. N. (2012). Examining a theory of planned behavior (TPB) and technology acceptance model (TAM) in internet purchasing using structural equation modeling. *Researchers World*, 3(2), 60-62.
- Shani, A., & DiPietro, R. B. (2007). Vegetarians: a typology for foodservice menu development. *Hospitality Review*, 25(2), 1-15.
- Shepherd, R. (1985). Dietary salt intake. *Nutrition and Food Science*, 96(1), 10–11.
- Shepherd, R. (1988). Belief structure in relation to low-fat milk consumption. *Journal of Human nutrition and dietetics*, 1(6), 421–428.
- Shepherd, R. (1989). *Factors affecting food preferences and choice*. In R. Shepherd (Ed.), *Handbook of the psychophysiology of human eating*. New York: Wiley.
- Shepherd, R. (1989). *Factors affecting food preferences and choice*: In R. Shepherd (Ed.), *Handbook of the psychophysiology of human eating*. New York: Wiley.
- Shepherd, R., & Sparks, P. (1994). Modelling food choice. In H. J. H. MacFie, & D. M. H. Thompson (Eds.), *Measurement of food preferences*. London: Blackie Academic & Professional.
- Shin, Y. H., & Hancer, M. (2016). The role of attitude, subjective norm, perceived behavioral control, and moral norm in the intention to purchase local food products. *Journal of Foodservice Business Research*, 19(4), 338-351.
- Singh, P. N., Sabate, J., & Fraser, G. E. (2003). Does low meat consumption increase life expectancy in humans?. *The American Journal of Clinical Nutrition*, 78(3), 526S-532S.

- Snowdon, D. A. & Phillips, R. L. (1985). Does a vegetarian diet reduce the occurrence of diabetes? *Journal of Public Health*, 75(1), 507-512.
- Spence, M., Stancu, V., Elliott, C. T., & Dean, M. (2018). Exploring consumer purchase intentions towards traceable minced beef and beef steak using the theory of planned behavior. *Food Control*, 91, 138-147.
- Steinmetz, H., Davidov, E., & Schmidt, P. (2011). Three approaches to estimate latent interaction effects: Intention and perceived behavioral control in the theory of planned behavior. *Methodological Innovations*, 6 (1), 95-110.
- Steinmetz, K. A., & Potter, J. D. (1996). Vegetables, fruit, and cancer prevention: A review. *Journal of the American Dietetic Association*, 96(10), 1027-1039. [http://doi.org/10.1016/S0002-8223\(96\)00273-8](http://doi.org/10.1016/S0002-8223(96)00273-8).
- Stranieri, S., Ricci, E., & Banterle, A. (2016). The Theory of Planned Behaviour and Food Choices: The Case of Sustainable pre-packed Salad. *Proceedings in Food System Dynamics*, 209-212.
- Susan I. Barr and Gwen E. Chapman (2002). Perceptions and practices of self-defined current vegetarian, former vegetarian, and non-vegetarian women. *Journal of the American Dietetic Association*, 102(3), 354-360.
- Szeto, Y. T., Kwok, T. C., & Benzie, I. F. (2004). Effects of a long-term vegetarian diet on biomarkers of antioxidant status and cardiovascular disease risk. *Nutrition*, 20(10), 863-866.
- Tan, C. S., Ooi, H. Y., & Goh, Y. N. (2017). A moral extension of the theory of planned behavior to predict consumers' purchase intention for energy-efficient household appliances in Malaysia. *Energy Policy*, 107, 459-471.
- Tan, G., Sim, J., Ooi, K. and Phusavat, K. (2012) 'Determinants of mobile learning adoption: an empirical analysis'. *The Journal of Computer Information Systems*, 52 (3), 82-91.
- Taylor, J.P., Evers, S. and McKenna, M. (2005), "Determinants of healthy eating in children and youth", *Canadian Journal of Public Health*, 96(3), 20-26.
- Teixeira, P. J., Patrick, H., & Mata, J. (2011). Why we eat what we eat: The role of autonomous motivation in eating behaviour regulation. *Nutrition Bulletin*, 36(1), 102-107. <http://doi.org/10.1111/j.1467-3010.2010.01876.x>.
- Teng, V, P, K., Rezai, G., Mohamed, Z., Shamsuddin, M, N. (2011). Consumers' Intention to Purchase Green Foods in Malaysia. *International Conference on Innovation, Management and Service*, 14(2), 112-118.
- Thomas, M. A. (2016). Are vegans the same as vegetarians? The effect of diet on perceptions of masculinity. *Appetite*, 97, 79-86.

- Thorogood M, Carter R. (1987). Plasma lipids and lipoprotein cholesterol concentrations in people with different diets in Britain. *British Medical Journal*, 295(2): 351-363.
- Tuorila, H. (1987). Selection of milks with varying fat contents and related overall liking, attitudes, norms and intentions. *Appetite*, 8(1), 1–14.
- Vartanian, L. R. (2015). Impression Management and Food Intake. Current Directions in Research, *Appetite*, 86(2), 74–80.
- Veal, A. J. (2017). *Research methods for leisure and tourism*. London: Pearson UK.
- Verain, M. C. D., Sijtsema, S. J., & Antonides, G. (2016). Consumer segmentation based on food-category attribute importance: The relation with healthiness and sustainability perceptions. *Food Quality and Preference*, 48(2), 99–106.
- Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of personality and social psychology*, 82(3), 434.
- Vinnari, M., Mustonen, P. & Rasanen, P. (2010). “Tracking down trends in non-meat consumption in Finnish households, 1966-2006”. *British Food Journal*, 112(8), 836-852.
- Wang, X. (2012). The role of attitude functions and self-monitoring in predicting intentions to register as organ donors and to discuss organ donation with family. *Communication Research*, 39(1), 26-47.
- Warshaw, P. R., & Davis, F. D. (1985). Disentangling behavioral intention and behavioral expectation. *Journal of experimental social psychology*, 21(3), 213-228.
- Whorton, J. (1994). Historical development of vegetarianism. *American Journal of Clinical Nutrition*, 59(1), 1103–1109.
- Wieliczki, S, E. (2012). Identification of College Students' Perceived Barriers to and Applied Knowledge about Following a Vegetarian. *D'Youville College*.
- Wilson, S. M., Weatherall, A., & Butler, C. (2004). A rhetorical approach to discussions about health and vegetarianism. *Journal of Health Psychology*, 9(1), 567–581.
- Wong, Y. S., Shalini, S., Farah Liana, M. R., Wan Nurul Amara, W. M. S., Mohd Naquiddin, M. Y., Norhazlina, A. W., & Zaleha, M. I. (2013). Nutrient intake pattern of vegetarians and non-vegetarians in Kuala Lumpur, Malaysia. *Pakistan Journal of Nutrition*, 12(4), 371–376. <http://doi.org/10.3923/pjn.2013.371.376>.

- Worsley, A., & Skrzypiec, G. (1998). Teenage vegetarianism. Prevalence, social and cognitive contexts. *Appetite*, 30(2), 151–170.
- Wyker, B. A. & Davidson, K. K. (2010), “Behavioral change theories can inform the prediction of young adults’ adoption of a plant-based diet”. *Journal of Nutritional Education and Behavior*, 42(3), 168-177.
- Wyker, B.A. and Davidson, K.K. (2010), “Behavioral change theories can inform the prediction of young adults’ adoption of a plant-based diet”. *Journal of Nutritional Education and Behavior*, 42(3), 168-177.
- Yadav, R., & Pathak, G. S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. *Journal of Cleaner Production*, 135, 732-739.
- Yee, L. (2004). “Meatless manifesto”. *Restaurants & Institutions*, 20(2), 31-34.
- Zunft, H. J. F., Friebe, D., Seppelt, B., de Graaf, C., Margetts, B., Schmitt, A. & Gibney, M. J. (1997). Perceived benefits of healthy eating among a European Union. *European Journal of Clinical Nutrition*, 51(2), 41–46.