

Research Article

Knowledge, Attitude and Perception on Halal Dietary Supplements among Sport Students in Universities of Malaysia

Khairiah Binti Santa^{1*}, Eddy Yusuf¹, Neni Widiasmoro Binti Selamat¹

¹ Post Graduate Studies, Management and Science University, University Drive, Off Persiaran Olahraga, 40100 Shah Alam, Selangor, Malaysia; rieyasanta@gmail.com

*Corresponding author: Khairiah Binti Santa | Email: rieyasanta@gmail.com

Received: 1 February 2019; Revised: 20 February 2019; Accepted 12 March 2019; Published: 30 April 2019

Abstract: This is a cross-sectional study. It was disbursed between April 2019 and May 2019, using module and self-administered questionnaires to evaluate the Knowledge, Attitude and Perception (KAP) regarding halal supplement among sport students in public universities of Malaysia (UITM, UM and UPSI). Aim for this study is to find out the awareness level of halal dietary supplement among sport students' in three public universities. The study was conducted on a sample of n=167. Inclusion criteria was a full time students of sport school of public university in Malaysia. Data was collected through module presentation and pre-post questionnaires. Results discovered that student have a good knowledge and positive attitude and perception regarding halal supplement after intervention. Mean knowledge score out of maximum possible 8 was 0.96 ± 0.101 , mean attitude score out of maximum possible score of 50 was 4.50 ± 0.623 , while mean perception score out of maximum possible score of 75 was 4.69 ± 0.551 . Mean overall KAP score out of maximum possible score of 167 was 3.38 ± 0.365 . There was a significant, positive and fair correlation between knowledge and attitude, knowledge and perception and attitude and perception which is all $p=0.000$. Result shows that the better knowledge the students have on halal supplement, the better their perception and attitude is towards halal supplement. P value of 0.05 or less was taken as statistically significant.

Keywords : knowledge; attitude; perception; halal

1. INTRODUCTION

Department of Islamic Development Malaysia (JAKIM) is the agency that accountable for the Islamic affairs like halal certification in Malaysia. Basically, JAKIM assumes exceptionally broad job to protect Muslim buyers in Malaysia and it is reliably beens JAKIM's duty to ensure them to appear for halal things or product as encouraged by Shariah. Halal originates from the Arabic word that is halla, yahillu, hillan, wahalalan. It means allowed or permissible by the Islamic law. From the Quranic verses had imply that, not only, overwhelming halal food however conjointly consuming halal medication is vital as a result of it forms a serious half and behaviour of being a decent active Muslim. Overwhelming halal medication could be a basic right of Muslims in terms of mistreatment health care facilities and seVICES to take care of their health as recommended by faith and belief. More people has been written on the topic of halal and haram in food, however references to halal and haram issue in pharmaceutical particularly on the origin of compounds are unsupported, scanty and few. Of course the topic of halal/haram in pharmaceutical has not been given due attention up to now [1].

In further, there are many pharmaceutical like supplement are taken by our contestant which do not have any sign or emblem halal that approval by JAKIM. Athletes use supplements as to extend their energy, to keep up strength and enhance performance. It conjointly prevents nutritional deficiencies, maintain health and immune system. Actually, the increasing of dietary supplement industry was dramatically impacts athletes who are frequently seeking a competitive edge.

A "Knowledge, Attitude and Perception (KAP)" survey could be a representative study of a selected population that aims to gather knowledge on what is identified, believed and done in relation a specific topic. We conducted this survey to get a better understanding of students knowledge of current halal dietary supplement, their attitudes toward halal dietary supplement and perception of protection in Malaysia [2]. Module and questionnaires regarding halal supplement was developed to examine the knowledge, attitude and perception among sport students regarding halal dietary supplement.

2. MATERIALS AND METHODS

2.1. Study setting and design

An experimental pretest and posttest design was adopted by using structured, self-administered questionnaire and intervention module. Survey and intervention module was conducted across Malaysia on April 2019. Study setting included various public university in Malaysia which are Universiti Teknologi MARA (UITM), Universiti Pendidikan Sultan Idris (UPSI) and Universiti of Malaya (UM).

2.2. Study procedure and ethical approval

Discussion will be initiated with supervisor to explain intention of the study, the target student, study procedures, the period and requirements involved. Then, approval from Management and Science University to proceed this research. Upon receiving a positive written reply (official agreement), official ethical approval will be taken from the university involved. Once the official ethical approval is obtained, contacts will be established with the all university that selected to discuss on the meeting day, date and time to begin data collection.

2.3. Questionnaires development

After get information from literature review, a self-administered questionnaire was designed to conduct this study. Questionnaire according research before and will be evaluate.

- a. Scoring method for knowledge, attitude and perception (KAP)
- b. All respondents ask to choose 'yes' or 'no'. Correct answer which is 'yes' get score 1. While incorrect answer which is 'no' will get 0. The Likert scale will be used for perception and attitude statement (strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1)
- c. Hence, the minimum and maximum score for knowledge, attitude and perception could be 0 to 8, 1 to 50 and 1 to 70 respectively. However, total KAP score could be 128
- d. Language of questionnaire
- e. The entire question is in English language

The questionnaire was validated by a panel of experts which was composed of three senior academic researchers and was updated according to their recommendations. A pilot study was

conducted to evaluate the reliability of the updated questionnaire. Final modifications were made based upon the results of pilot study.

The final questionnaire consisted of four parts. The first part of the questionnaire was on respondents demographic information including age, gender, race, religion and nationality. Second part had 8 statements to evaluate the knowledge of respondents. Third part consisted of 10 statements for attitude evaluation and final part had 14 statements about the perception of respondents regarding halal dietary supplement.

2.4. Intervention module

Module 1 : Do you know what is halal and athletes ethical regarding halal supplement? This module explained halal term in Muslim perspective. It shown halal and haram categorical food. Besides, participant also know the ingredient that can be derived from many source halal and haram. Pharmaceutical and dietary supplement was explain in this module. Participant will know the form of dietary supplement and it also type of pharmaceutical. Apart of that, this module explain that nutrition knowledge is important to an athlete and also to all that involved in sport. There are ethical for athlete to take supplement. So, the aim for this module is to expose that dietary supplement also can be halal or haram due to ingredient used [3].

Module 2 : Why we should consume halal supplement? Module two explained the reason why we should consume halal supplement. There are three reasons which are clean, save for human consumption and pure. Halal supplement will undergo JAKIM procedure. The raw materials, the process, the end products, premises, etc does not permits contamination or cross contamination of the dirty elements in Islamic Law or Najs [4].

Module 3 : How to select halal supplement? This module shown how to check that product was halal and proved by JAKIM or not. First refer to halal logo. It have eight-pointed star is placed in the middle of the circle. A word halal in Arabic is placed in the middle of the star. It is then followed a "HALAL" word in Roman. The circle of the logo contains, the word "Malaysia" in Roman and Arabic. Two small five-pointed stars are placed to separate the Roman and Arabic word. Second, halal supplement can be check via application verify halal. Download the application and scan the bar code of product. The result will come out [5-7].

2.5. Statistical analysis

All data analyses were performed with Statistical Package for the Social Sciences (SPSS) version 26 and all data are reported as mean \pm standard error of the mean.

3. RESULTS AND DISCUSSION

3.1. Effectiveness of the intervention

3.1.1. Respondents demographics

Demographic characteristic of the respondents are depicted in Table 2. Mean age of the respondents was 20.19 years with standard deviation of \pm 1.845. Age ranges were from 19-30 years. Gender wise 101 (60.5%) of the respondents were male and 66 (39.5%) were female. Race wise, 138 (82.6%) were Malay, 16 (9.6%) were Chinese, 4 (2.4%) were Indians and 9 (5.4%) comprised other races which is Iban, Kadazan dusun, Bajau and Murud. Regarding the religion, 143 (85.6%) were Muslims, 7 (4.2%) were Christians, 13 (7.8%) were Buddhist, 2 (1.2%) and other were 2 (1.2%). Majority is Malaysian with total 165 (98.8%) and others is 2 (1.2%) which is Arab and Indonesia.

Table 1. Descriptive characteristics of respondent

Characteristic	Demographic characteristic	Frequency (%) (N=167)
Age	19	107 (64)
	20	3 (1.8)
	21	13 (7.8)
	22	28 (16.8)
	23	4 (2.4)
	24	8 (4.8)
	25	3 (1.8)
	30	1 (0.6)
	Total	167
Gender	Male	101 (60.5)
	Female	66 (39.5)
	Total	176
Race	Malay	138 (82.6)
	Chinese	16 (9.6)
	Indian	4 (2.4)
	Other	9 (5.4)
	Total	167
Religion	Muslim	143 (85.6)
	Christian	7 (4.2)
	Buddhist	13 (7.8)
	Hindu	2 (1.2)
	Other	2 (1.2)
	Total	167
Nationality	Malaysia	165 (98.8)
	Non-Malaysia	2 (1.2)
	Total	167

3.1.2. Respondents knowledge regarding halal supplement

The frequency distribution of respondents' knowledge regarding halal supplement is depicted in Table 2. Out of the maximum possible score (equal to 8), mean knowledge score was 0.96 ± 0.101 (Table 5) which shows that the study population has good knowledge regarding halal supplement. Results showed that all of the respondents were aware of the term 'halal' 167 (100%), on the other hand, 163 (97.6%) of the respondents were aware of the term 'haram' and only 4 (2.4) were unaware. Almost all 164 (98.2%) respondents knew that term halal supplement and 4 (2.4) was unaware.

The study found that 164 (98.2%) respondents were aware that non-slaughtered animal, blood, pork and alcohol are haram for Muslims to use in any form (food, supplement, etc.). Rest of the percentage (1.8%) was unaware. Almost all (90.4%) respondents knew that ingredients of some supplement are derived from porcine and non-slaughtered animal, only a negligible percentage (9.6%) was unaware. A total of 154 (92.2%) respondents had knowledge that it is ethical obligation for a practitioner to take consent from the athletes before dispensing any supplement which has any

non-halal content, however 12 (7.2%) were unaware. A total of 144 (86.2%) respondents were aware that 'halal' supplement concept is a part of the course contents in their institution.

Table 2. Respodent knowlede about halal supplement (frequency distribution) [4]

No.	Statement	Response	
		Yes N(%)	No N(%)
1	Are you aware of the term/word "Halal"?	167 (100%)	
2	Are you aware of the term/word "Haram"?	163 (97.6%)	4 (2.4%)
3	Are you aware of the term/word "Halal supplement"?	163 (97.6%)	4 (2.4%)
4	Do you know that Muslim prefers to choose <i>Halal</i> supplement?	166 (99.4%)	1 (0.6%)
5	Do you know that non-slaughtered animal, blood, pork and alcohol are Haram for Muslims to use in any form (food, supplement, etc.)?	164 (98.2%)	3 (1.8%)
6	Do you know that ingredients of some supplement are derived from porcine and non-slaughtered animal?	151 (90.4%)	16 (9.6%)
7	Do you know that it is ethical obligation for a practitioner to take consent from the athletes before dispensing any supplement which has any non- <i>halal</i> content?	154 (92.2%)	13 (7.8%)
8	Is " <i>Halal</i> supplement" concept a part of course contents in your institution?	144 (86.2%)	23 (13.8%)

3.1.3. Respondents attitude regarding halal supplement

The attitude of respondents regarding halal supplements was evaluated by using attitude questionnaire. Out of the maximum possible score (50), the mean attitude score was 4.50 ± 0.623 (Table 5). Results showed that 120 (71.9%) respondents strongly agreed while 33 (19.8%) gave their opinion as agree that they always look for a certified that halal label when use a supplement, while 7 (4.2%) remained neutral. A total of 119 (71.3%) respondents showed their response as strongly agree, 37 (22.2%) as agree and 5 (3.0%) gave neutral response that they educate themselves or athlete about halal/haram ingredients of supplement. A total of 111 (66.5%) respondents showed their response as 'strongly agree', 43 (9%) as 'agree' and 9 (5.4%) gave neutral response that they teach themselves or athlete about the sources of supplement ingredients. A total of 99 (59.3%) respondents showed their response as 'strongly agree', 57 (34.1%) as 'agree', and 6 (3.6%) gave neutral response that they teach themselves or athlete about different faiths regarding intake of supplement. A total of 101 (60.5%) respondents showed their response as 'strongly agree' while 51 (30.5%) as 'agree' that they used to explore athletes own beliefs and preferences regarding halal/haram issues while using or prescribing supplement. The study found that a total of 94 (56.3%) respondents gave their opinion as 'strongly agree' while 53 (31.7%) as 'agree' that they discuss with their friends about the supplement effectiveness and side effects of halal alternatives.

Table 3. Respondent attitude about halal supplement (frequency distribution) [1]

No.	Statement	Response				
		SA	A	N	DA	SDA
		N (%)	N (%)	N (%)	N (%)	N (%)
1	I always look for a certified halal label when I use a supplement.	120 (71.9%)	33 (19.8%)	7 (4.2%)	5 (3.0%)	2 (1.2%)
2	I educate myself/athlete regarding Halal/Haram ingredients of supplement.	119 (71.3%)	37 (22.2%)	5 (3.0%)	3 (1.8%)	3 (1.8%)
3	I educate myself/athlete about the sources of supplement ingredients.	111 (66.5%)	43 (25.7%)	9 (5.4%)	2 (1.2%)	2 (1.2%)
4	I teach myself/athlete about different faiths regarding intake of supplement	99 (59.3%)	57 (34.1%)	6 (3.6%)	3 (1.8%)	2 (1.2%)
5	I used to explore athletes own beliefs and preferences regarding Halal/Haram issues while using/prescribing supplement.	101 (60.5%)	51 (30.5%)	11 (6.6%)	3 (1.8%)	1 (0.6%)
6	I discuss with my friends the supplement effectiveness and side effects of <i>halal</i> alternatives	94 (56.3%)	53 (31.7%)	14 (8.4%)	4 (2.4%)	2 (1.2%)
7	I teach myself/athlete that it is their moral obligation to disclose the sources of non-Halal ingredients to the athlete in their practice.	95 (56.9%)	61 (36.5%)	7 (4.2%)	2 (1.2%)	2 (1.2%)
8	I teach myself/athlete to take consent about non-Halal supplement while looking into the prescriptions in their practice.	100 (59.9%)	50 (29.9%)	8 (4.8%)	5 (3.0%)	4 (2.4%)
9	I will include topics about Halal/Haram supplement if I have to develop supplement curriculum.	100 (59.9%)	51 (30.5%)	14 (8.4%)	2 (1.2%)	-
10	I consider myself to be adequately trained in the teaching area regarding Halal/Haram supplement.	104 (62.3%)	51 (30.5%)	8 (4.8%)	3 (1.8%)	1 (0.6%)

Note: The frequencies and percentages are based on observed values; missing values are excluded.

SA = strongly agree, A = agree, N = neutral, DA = disagree, SDA = strongly disagree.

A total of 95 (56.9%) respondents strongly agreed whereas 61 (36.5%) 'agreed' that they teach themselves or athlete about their is moral obligation to disclose the sources of *non*-halal ingredients to the athlete in their practice. A total of 100 (59.9%) respondents showed their response as 'strongly agree while 50 (29.9) showed theirs as 'agree' that they teach themselves or athlete to take consent about *non*-halal supplement while looking into the prescriptions in their practice. The study further found that 100 (59.9%) respondents showed their response as 'strongly agree' while 51 (30.5%) as 'agree' that they will include topics about halal/haram supplement if they have to develop supplement curriculum. It was further found that 104 (62.3%) respondents indicated their opinion as 'strongly agree' while 51 (30.5%) as 'agree' that they consider themselves to be adequately trained in the teaching area regarding halal/haram supplement.

3.1.4. Respondents perception regarding halal supplement

Tabel 4. Respondent perception about halal supplement (frequency distribution) [3]

No	Statement	Response				
		SA	A	N	DA	SDA
		N	N	N	N	N
		(%)	(%)	(%)	(%)	(%)
1	Coach professionals should be able to advise their athlete about commonly used Halal supplement.	133 (79.6)	31 (18.6)	2 (1.2)	1 (0.6)	
2	The athlete has a right to ask information about sources and ingredients of supplement.	130 (77.8)	34 (20.4)	1 (0.6)	1 (0.6)	1 (0.6)
3	Supplement manufacturers should provide prescribers with a list of their products containing animal-derived ingredients.	121 (72.5)	37 (22.2)	7 (4.2)	1 (0.6)	
4	Coach professionals should be educated about the sources of supplement.	129 (77.2)	31 (18.6)	5 (3.0)		2 (1.2)
5	Knowledge about Halal/Haram supplements is important to me as an athlete.	124 (74.3)	35 (21.0)	7 (4.2)	1 (0.6)	
6	I think supplement manufacturers should also be sensitive towards the requirements of athlete and where ever possible should produce Halal supplement.	106 (63.5)	54 (32.3)	6 (3.6)		1 (0.6)
7	I think that supplement companies should clearly mark supplement packaging with easy-to-spot Halal/non Halal labels.	122 (73.1)	40 (24.0)	2 (1.2)	2 (1.2)	1 (0.6)

Continued Table 4...

8	I think that a list of the most commonly used, animal-derived supplement and their alternatives should be developed and included in the curriculum of Athletes Education.	112 (67.1)	47 (28.1)	5 (3.0)	2 (1.2)	1 (0.6)
9	I think that knowledge of Halal/Haram supplement and their sources should be included in athlete's curriculum.	118 (70.7)	43 (25.7)	5 (3.0)		1 (0.6)
10	The faculty members in health sciences need to be well prepared to teach topics related to Halal/Haram supplement	128 (76.6)	35 (21.0)	3 (1.8)	1 (0.6)	
11	Teaching about Halal/Haram should be left solely to the parents/guardians and/or religious institutions within the community.	103 (61.7)	54 (32.3)	7 (4.2)	2 (1.2)	1 (0.6)
12	Future sport teachers must consider the study of Halal/Haram supplement while performing the role of educator.	122 (73.1)	39 (23.4)	5 (3.0)		1 (0.6)
13	Clear and well explained guidelines are needed by the healthcare professionals to navigate religious conflicts.	110 (65.9)	50 (29.9)	6 (3.6)	1 (0.6)	
14	Perhaps if resources and training were made available to faculty members in Sport Schools, topics of Halal/Haram supplement could be more easily incorporated into the curriculum.	118 (70.7)	40 (24.0)	7 (4.2)	1 (0.6)	1 (0.6)

The frequency distribution of respondents' perception regarding halal supplement is depicted in Table 4. All of the respondents had scored 50% and above. Out of the maximum possible score (70), the mean perception score was 4.69 ± 0.551 (Table 5) denoting a positive perception towards halal supplement.

Results found that almost all respondents either strongly agreed (79.6%) or agreed (18.6%) that coach professionals should be able to advise their athlete about commonly used halal supplement., showing a significant association with respect to respondent's race ($p=0.000$) and religion ($p=0.000$). On the other hand, all respondents either strongly agreed (77.8%) or agreed (20.4%) that athlete has a right to ask information about sources and ingredients of supplement. This showed a significant association with respect to respondents' age, religion, and race ($p=0.000$). A total of 121 (72.5%) respondents strongly agreed, while 37 (22.2%) agreed that supplement manufacturers should provide prescribers with a list of their products containing animal-derived ingredients.

The study further found that a total of 129 (77.2%) respondents strongly agreed and 31 (18.6%) agreed that coach professionals should be educated about the sources of supplement. On the other hand, a total of 124 (74.3%) respondents strongly agreed while 35 (21.0%) agreed that knowledge about halal/haram supplement is important to an athlete. This showed a significant

association with respect to respondents' religion ($p=0.000$). A total of 106 (63.5%) respondents strongly agreed while 54 (32.3%) agreed that supplement manufacturers should also be sensitive towards the requirements of athlete and where ever possible should produce halal supplement.

Results showed that a total of 122 (73.1%) respondents showed their response as 'strongly agree' while 40 (24.0%) 'agree' that supplement companies should clearly mark supplement packaging with easy-to-spot halal/*non* halal labels. This showed a significant association with respect to respondents' race and religion are $p=0.000$. A total of 112 (67.1%) respondents showed their response as 'strongly agree' while 47 (28.1%) as 'agree' that a list of the most commonly used, animal-derived supplement and their alternatives should be developed and included in the curriculum of Athletes Education. This showed a significant association with respect to respondents' gender ($p=0.000$). However, a total of 118 (70.7%) respondents showed their response as 'strongly agree' while 43 (25.7%) as 'agree' that knowledge of halal/haram supplement and their sources should be included in athlete's curriculum.

The study further found that a total of 128 (76.6%) respondents showed their response as 'strongly agree' while 35 (21.0%) as 'agree' that the faculty members in health sciences need to be well prepared to teach topics related to halal/haram supplement showing a significant association with respect to respondents' race ($p=0.000$) and religion ($p=0.000$). Only a total of 103 (61.7%) respondents showed their response as 'strongly agree' while 54 (32.2%) as 'agree' that teaching about halal/haram should be left solely to the parents/guardians and/or religious institutions within the community, showing a significant association with respect to respondents' age ($p=0.000$), race ($p<0.001$), religion ($p<0.001$) and specialty ($p<0.001$). A total of 122 (73.1%) respondents showed their response as 'strongly agree' while 39 (23.4%) as 'agree' that future sport teachers must consider the study of halal/haram supplement while performing the role of educator. This showed a significant association with respect to respondents' race ($p=0.000$) and religion ($p=0.000$).

Results further showed that a total of 110 (65.9%) respondents showed their response as 'strongly agree' while 50 (29.9%) as 'agree' that clear and well explained guidelines are needed by the healthcare professionals to navigate religious conflicts. This showed a significant association with respect to respondents' race ($p=0.000$). Also, a big percentage of respondents 118 (70.7%) showed their response as 'strongly agree' and 40 (24%) as 'agree' if resources and training were made available to faculty members in Sport Schools, topics of halal/haram supplement could be more easily incorporated into the curriculum. This showed a significant association with respect to respondents' race ($p<0.001$) and religion ($p<0.001$).

Table 5 show the significant value of pre and post result. The result very significant which is there are difference score of KAP before and after intervention.

Table 5. Mean score of respondents knowledge, attitude, perception and significant value of KAP about halal supplement

Variable	Mean±SD	Z	Wilcoxon Signed Ranks Test
Knowledge	0.96±0.101	-7.841 ^b	.000
Attitude	4.50±0.623	-9.321 ^b	.000
Perception	4.69±0.551	-9.285 ^b	.000

Table 6. Corelation between knowledge, attitude and perception

Variable	No. of respondents (n)	P value	Correlation (r)
Knowledge - perception	167	0.000	0.449
Knowledge - attitude	167	0.000	0.495
Attitude - perception	167	0.000	0.555

A significant, positive and fair correlation was found between knowledge and perception, knowledge and attitude, and attitude and perception in this study. This means that if the respondents have better knowledge on halal supplement, they will have better perception and attitude towards halal supplements [1-2].

4. CONCLUSION

To summarize this discussion, it can be said that this study is an indicator that the knowledge, attitude and practice regarding halal/haram status of supplement were good. A large percentage (< 88%) of the respondents scored 50% and above in each domain. Significant, positive correlations were found between knowledge and attitude, attitude and perception, and knowledge and perception.

Acknowledgement : In the name of Allah, the Most Gracious and the Most Merciful. Firstly, I praise to the Allah STW for giving me the strength and patience to complete this research project. I would like to express my sincere gratitude to my supervisor Prof. Eddy Yusuf and Dr. Neni Widiasmoro Binti Selamat for the continuous support of my master study and related research, for his patience, motivation, and immense knowledge. I take this opportunity to express gratitude to all university that involved because helping me to complete my data collection. I also thank my parents for the unceasing encouragement, support and also attention. I also place on record, my sense of gratitude to one and all, which directly or indirectly, have let their hand in this venture. This paper has been presented at the 8th APPEN Conference and 2nd HPC Conference on 8 – 9 October 2019, Universitas Airlangga, Surabaya, Indonesia”

Reference

1. Saleha S, Azmi S, Imran M and Maryam F. Knowledge, Attitude and Perception regarding Halal Pharmaceuticals, among Academicians in Various Universities of Malaysia. *International Journal of Educational Research and Development*. 2013, 2(8): 191-202
2. Zahedi L, Sizemore E, Malcolm S, Grossniklaus E, Nwosu O. Knowledge, Attitudes and Practices regarding Cervical Cancer and Screening among Haitian Health Care Workers. *International Journal of Environment Research and Public Health*. 2014, 11: 11542-11552
3. Rezai G, Mohamed Z and Shamsudin MN. “Can Halal be Sustainable? Study on Malaysian Consumers Perspective”. *Journal of Food Products Marketing*. 2015, 21(6): 654-666
4. Tieman M, Van der Vorst JG and Ghazali MC. Principles of Halal Supply Chain Management. *Journal of Islamic Marketing*. 2012, 3(3): 217-243
5. Talib MSA and Hamid ABA. Halal Logistics in Malaysia: a SWOT Analysis. *Journal of Islamic Marketing*. 2014, 5(3): 322-343

6. Jabatan Kemajuan Islam. Manual Procedure for Malaysia Halal Certification (Third Version). Available online : <http://www.halal.gov.my/v4/> (accessed on September 2018)
7. Zailani S, Kanapathy K, Iranmanesh M and Tieman M. Drivers of Halal Orientation Strategy among Halal Food Firms. *British Food Journal*. 2015, 117(8): 2143-2160



© 2019 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).