

CONSUMERS' KNOWLEDGE, PERCEPTION, AND ATTITUDE TOWARDS NUTRITION AND HEALTH CLAIMS ON DAIRY PRODUCTS AND PURCHASE INTENTION IN JOHOR BAHRU

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Abstract: Nowadays the increasing prevalence of dietary disease has raised consumers' awareness of healthy diet and lifestyle. The rise in the use of nutrition and health claims to promote health benefits in food products help consumers make effective food choices. There is very limited research regarding nutrition and health claims in Malaysia. This research focused on consumers' knowledge, perception (i.e. perceived quality, perceived healthiness, perceived value, perceived importance, trust and perceived familiarity), and attitude towards nutrition and health claims on dairy products as well as their purchase intention towards the products, and examine the relationship between these variables in Johor Bahru, Johor. All responses were collected by distributing questionnaire to convenience and quota sample (n=200). Data was analysed to obtain descriptive statistics and correlation analysis. The results showed that most of the consumers (46%) had moderate knowledge of nutrition and health claims on dairy products. Consumers generally had almost positive perception and attitude towards nutrition and health claims on dairy products and positive purchase intention towards dairy products. Almost all independent variables correlated with purchase intention towards dairy products. Consumer attitude had the strongest positive relationship with purchase intention ($r=0.722$), followed by moderate positive correlation between consumer perception and purchase intention ($r=0.671$), while consumer knowledge only had low relationship with purchase intention ($r=0.299$). This study added new knowledge regarding public purchasing behaviour towards dairy products with nutrition and health claims. This research also provided valuable information for both food manufacturers and companies to help them make effective decisions to improve the presentation of nutrition and health claims for better expression of information as well as the goodness of food products in order to attract the attention of health-conscious consumers.

Keywords: Consumers' Knowledge, Consumers' Perception, Consumers' Attitude, Consumers' Purchase Intention, Nutrition and Health Claims, Dairy Products

Introduction

Nowadays, nutrition and health claims have become attractive cues for consumers as the increasing risk of dietary disease has raised consumers' awareness of healthy diet and lifestyle (Lalor *et al.*, 2011a). Consumers are growing an interest in the quality and nutritional content of food products (Ishada *et al.*, 2003; Prescott *et al.*, 2002). Health claims are used as front-of-package information which relate food items with specific health-related functions or health outcomes, whereas nutrition claims express the nutrient content in products (Lähteenmäki, 2013). These claims could help consumers make effective food choices and become an excellent marketing strategy as well as increase specific food item intake (Pravst, 2011). However, according to Nielsen (2012), half (59%) of the global consumers had a hard time understanding the nutritional facts on food packaging. Besides, 80% of them were also largely sceptical about the accuracy of these claims (Nielsen, 2012). The problem of misleading and false claims on food products has existed and this could reduce consumers' trust regarding the claims.

There is very limited research regarding nutrition and health claims in Malaysia, with research carried out only on perception and purchasing behaviour towards claims (Abdul Latiff *et al.*, 2016; Zafar *et al.*, 2016). Since consumer demands towards milk and dairy products have increased, and the claims are more often shown on dairy products (Babolian Hendijani & Abdul Karim, 2010), knowledge, perception (i.e. perceived quality, perceived healthiness, perceived value, perceived importance, trust and perceived familiarity), attitude towards nutrition and health claims on dairy products and purchase intention towards dairy products as well as relationship between these variables were studied. Johor Bahru was chosen as the sampling location because it is a developing and highly populated city. The increased number of shopping complexes and hypermarkets in Johor Bahru made it suitable for the present study (Wong & Benjamin, 2016). This study added new knowledge regarding public purchasing behaviour towards nutrition and health claims on dairy products. Furthermore, this research provided valuable information for both food manufacturers and companies to help them make effective decisions to improve the presentation of nutrition and health claims for better expression of information as well as the goodness of food

products in order to attract the attention of health-conscious consumers.

This study used Ajzen's Theory of Planned Behaviour (TPB) as base theory (Ajzen, 1991). This theory used attitudes, subjective norms and perceived behavioural control to explain an individual's intention to carry out the behaviour. By using TPB, consumers' attitude and other variables (knowledge and perception) were considered as critical factors to explain the purchase intention of dairy products with nutrition and health claims. In TPB, the more favourable the attitude and toward a behaviour, the more the individual's intention to implement the behaviour under consideration (Ajzen, 1991). Peng *et al.* (2006) and Sheppard *et al.* (1998) also indicated that consumers' positive attitude towards the product category increased the intention of future purchase.

Hwang *et al.* (2016) reported that consumers' overall perceptions ($r = 0.406$; $p < 0.01$) and healthiness perceptions ($r = 0.280$; $p < 0.01$) were significantly and positively correlated to their purchase intentions. Moreover, respondents familiar with product category found the claims on products more convincing and also had a higher intention to purchase

them (Verbeke *et al.*, 2009). Bower *et al.* (2003) and Lalor *et al.* (2011b) revealed that nutrition knowledge appeared to have slight interactive effects or no correlation on purchase intention of product with claims. However, Morgan (2008) found that consumer nutrition knowledge was significantly associated with purchase intention of breakfast cereal with claims ($p < 0.001$).

Materials and Methods

Four hypermarkets in Johor Bahru, Malaysia, were selected as sampling location. Convenience sampling and quota sampling were used to sample subjects and location. 50 respondents were approached in each hypermarket ($n=200$). Convenience sampling is easy, fast, inexpensive, and the respondents are readily available (Wegner, 2010). Quota sampling is a non-probability sampling method where the total sample will consist of the same distribution of characteristics in the studied population (Babbie, 2016). Figure 1 shows the sampling framework of this research.

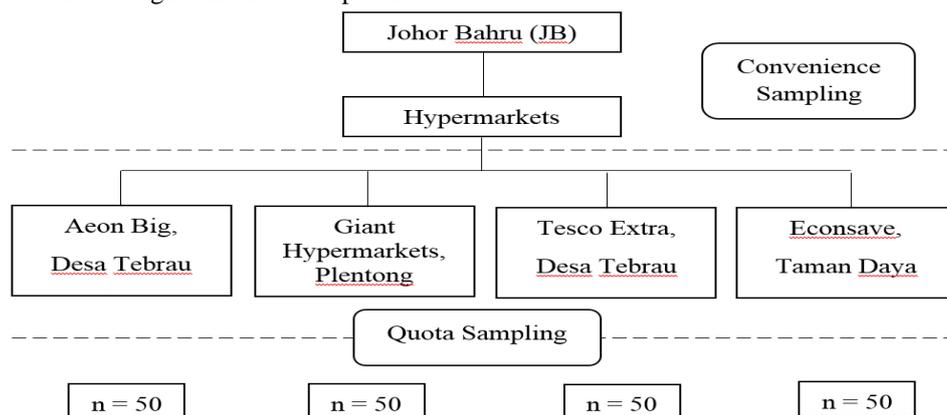


Figure 1: Sampling framework
Total respondent (n) = 200 from selected hypermarkets

The target respondents were consumers 18 years old and above. A self-administered questionnaire was distributed and the respondents were left to answer the questionnaire (Bryman, 2008). The questionnaire was divided into six sections and used the nominal scale and 5-point Likert scale. Questions regarding the respondents' demographic profile were included in section A. The questions were modified from Jaafar *et al.* (2012). Section B aimed to determine respondents' consumption of dairy products and the questions were partially adapted from Babolian Hendijani & Abdul Karim (2010). Section C determined respondents' knowledge towards nutrition and health claims on dairy products and the questions were modified from Mitić & Gligorijević (2015), MOH (2010) as well as FAO/WHO (2007). Section D, E, and F required respondents to rate

their perception and attitude towards nutrition and health claims on dairy products, and their purchase intention towards dairy products respectively. These questions were partially adapted from Vanasse (2016), Lähteenmäki (2013), Wills *et al.* (2012), Jaafar *et al.* (2012), Tudoran *et al.* (2009), and Kozup *et al.* (2003).

All data were analysed using Statistical Package for Social Sciences (SPSS) version 20.0. The pilot test was conducted to test the reliability and validity of the questionnaire. Some modifications were made to the questionnaire based on the outcome of the pilot test. The main data were analysed to obtain descriptive statistics and inferential statistics. Central Limit Theorem states that the sampling distribution of the sample means will be approximately normal if the sample size is larger than

30 (Sullivan, 2017). Since the sample size of this study was sufficiently large (n =200), parametric test was used in this analysis.

Descriptive statistic is concerned with the collection, organization, enumeration of the frequency of characteristics, summarization, and presentation of data. Respondents' demographic profiles, dairy product consumption, knowledge, perception, attitude and

purchase intention were also tabulated using frequency and percentage. The inferential statistic was used to compare groups or difference between groups by using analyses of t-test and ANOVA. Other than that, the relationship between consumers' knowledge, perception, attitude, and purchase intention was determined by using the Pearson correlation. The strength of the relationship was referred to the Guilford Rule of Thumb as shown in table 1 below.

Table 1: Guilford Rule of Thumb

R	Strength of Relationship
<0.20	Negligible of relationship
0.21 – 0.40	Low relationship
0.41 – 0.70	Moderate relationship
0.71 – 0.90	High relationship
> 0.90	Very high relationship

Source: Sekaran and Bougie (2009)

Results and Discussion
Demographic Data

A total of 200 respondents participated in this research. Table 2 shows the demographic profile of the respondents involved in the present survey

Table 2: Demographic characteristics of respondents

Demographic factors	Frequency (n=200)	Percentage (%)
Gender		
Male	68	34.0
Female	132	66.0
Races		
Malay	86	43.0
Chinese	102	51.0
Indian	10	5.0
Other	2	1.0
Age		
18-25 years old	72	36.0
26-35 years old	47	23.5
36-45 years old	41	20.5
46-55 years old	23	11.5
Above 56 years old	17	8.5
Educational Level		
Primary	9	4.5
Secondary	55	27.5
STPM/ Diploma	62	31.0
Bachelor's degree	68	34.0
Master's degree	2	1.0
PhD	1	0.5
Other	3	1.5
Employment Status		
Employed (Full time/ Part time)	137	68.5
Self-employed	14	7.0
Unemployed	23	11.5
Students	26	13.0
Monthly Household Income		
Less than RM 1,499	32	16.0
RM 1,500 – RM 2,999	54	27.0
RM 3,000 – RM 3,999	26	13.0
RM 4,000 – RM 4,999	18	9.0
RM 5,000 – RM 5,999	26	13.0
More than RM 6,000	44	22.0

Table 2 shows that majority of respondents were female and between 18-25 years old (36.0%). The highest education for most respondents was bachelor education (34.0%). The majority of respondents earned between RM1, 500-RM2, 999 monthly income (27.0%) while most respondents were employed (68.5%).

Level of Consumer Knowledge towards Nutrition and Health Claims on Dairy Products

A total of 20 questions were prepared and the total score of the answers selected by each consumer was categorized into high, medium and low knowledge. Table 3 shows the level of consumer knowledge towards nutrition and health claims on dairy products.

Table 3: Level of consumer knowledge towards nutrition and health claims on dairy products

Level of knowledge towards nutrition and health claims on dairy products	Frequency (n=200)	Percentage (%)
High	67	33.5
Medium	92	46.0
Low	41	20.5

Note: Consumer knowledge (Scale: Yes=1 marks/ No and Not sure=0 marks) – Sum up total marks for 20 questions with min. score = 0; max. score = 20

Knowledge was categorized into 3 levels: high (14-20), medium (7-13) and low (0-6) (Nekesa, 2012)

Based on Table 3, most of the respondents (46.0%) possessed moderate knowledge of nutrition and health claims on dairy products, followed by 33.5% with high knowledge and only 20.5% respondents had low knowledge. Žeželj *et al.* (2012) was in agreement with the present results which showed that consumers had moderate level of nutrition knowledge, with 66.5% of items answered correctly. Mitic and Gligorijević (2015) stated that respondents who demonstrated higher knowledge were those who were better informed about products and therefore considered the claims as more important.

This result contrasted with Mitic and Gligorijević (2015) where they found that consumers expressed low level of knowledge, with only 3% of the respondents having more than 7 correct answers from a total of 10 questions, 25% of the respondents answering correctly on less than 5 questions (10% answered correctly on 2 or 3 questions). Most of the respondents were in the group of those with 5 or 6 correct answers (48%). Similarly, Lalor *et al.* (2011a) also reported that consumers

generally had low level of nutrition knowledge. Only 46% of respondents professed to be knowledgeable (Bower *et al.*, 2003).

Besides, the group of respondents with some chronic health problems expressed lower level of nutrition knowledge than those without chronic illness (Mitić & Gligorijević, 2015). Consumers with high nutrition knowledge were those possessing high level of education. The greater chances of consumers to be exposed to nutrition education could explain their greater nutrition knowledge (Garretson & Burton, 2000).

Consumer Perception towards Nutrition and Health Claims on Dairy products

The components of 17 perception attribute questions included perceived quality, perceived healthiness, perceived value, perceived importance, trust as well as familiarity. Table 4 shows the consumer perception towards nutrition and health claims on dairy products.

Table 4: Consumer perception towards nutrition and health claims on dairy products

No	Items	Mean	Standard deviation
1	Consumer perceived quality towards nutrition and health claims on dairy products	3.53	0.80
2	Consumer perceived healthiness towards nutrition and health claims on dairy products	3.49	0.78
3	Consumer perceived value towards nutrition and health claims on dairy products	3.31	0.74
4	Consumer perceived importance of nutrition and health claims on dairy products	3.54	0.79
5	Consumer trust of nutrition and health claims on dairy products	3.45	0.76
6	Consumer familiarity of nutrition and health claims on dairy products	3.30	0.85

Note:

Consumer perception was rated on 5-point Likert scale, from 1= Strongly disagree to 5=Strongly agree.

Table 4 shows that respondents had almost positive perception towards nutrition and health claims on dairy products. According to the mean score, consumer perceived importance, quality, healthiness, and trust of nutrition and health claims on dairy products more

positively whereas the mean score of consumer perceived value and familiarity of nutrition and health claims on dairy products were lower. A similar study by Mitić and Gligorijević (2015) showed that consumers perceived importance of nutrition and health claims on

food products as moderately positive. Higher confidence in the truthfulness of food labels and knowledge led to higher perceived importance of claims (Mitić & Gligorijević, 2015), indicating that respondents in the present study may have more trust about claims to perceive the importance of claims positively. Another study conducted in America by Sloan (2012) reported that consumers considered the presence of health claims on food labels assured the quality of food.

This result was supported by most studies where presenting health claims could increase perceived healthiness (e.g. Lähteenmäki, 2013; Saba *et al.*, 2010; Dean *et al.*, 2007; Lyly *et al.*, 2007; van Trijp & van der Lans, 2007; van Kleef *et al.*, 2005; Urala *et al.*, 2003). Consumers needed to possess positive attitudes towards products with health claims in order for them to perceive health claims positively (Dean *et al.*, 2012). This finding was also supported by Morgan (2008) who stated that in general, respondents had moderate level of trust in nutrition content claims. About half of the respondents admitted that they would trust big food companies to provide them with accurate claims (Lalor *et al.*, 2010).

Lalor *et al.* (2011a) reported that consumers perceived the value and preferred products with claims more than products with no claims. Most of the respondents over 55 years were more inclined to buy a product with health claims if the product was reduced in price (Dean *et al.*, 2012). Besides, lack of nutrition knowledge may limit the ability of consumers to assess claims and hence may decrease their perceived value and familiarity of claims (Svederberg, 2002). Once consumers were familiar with the nutrient and disease relationship, this would help them to evaluate the product with claims.

Consumer Attitude towards Nutrition and Health Claims on Dairy products

For investigating respondents' attitude towards nutrition and health claims on dairy products, 5 questions were prepared in the questionnaire. Table 5 shows consumer attitude towards nutrition and health claims on dairy products.

Table 5: Consumer attitude towards nutrition and health claims on dairy products

No	Items	Mean	Standard deviation
1	Consumers think that nutrition and health claims made on dairy products are useful.	3.57	0.86
2	Consumers think that nutrition and health claims made on dairy products are accurate.	3.26	0.84
3	Consumers think that nutrition and health claims made on dairy products are truthful.	3.25	0.81
4	Consumers think that nutrition and health claims made on dairy products are easy to understand.	3.41	0.86
5	Consumers think that nutrition and health claims made on dairy products are highly attractive.	3.46	0.83

Note: Consumer attitude was 5-point Likert scale where 1=Strongly disagree to 5=Strongly agree.

The result showed that respondents had almost positive attitude towards nutrition and health claims on dairy products. Mitić and Gligorijević (2015), Kozup *et al.* (2003) and Trolle and Thorsen (2001) also stated that consumers had a positive attitude about health claims. Žeželj *et al.* (2012) reported that nutrition knowledge, as well as trust in claims and the usage of labels were identified as the major influences on consumers' attitudes toward health claims.

According to the mean score, consumers think that nutrition and health claims made on dairy products were more useful, highly attractive and were easy to understand, while there was a lower mean score for consumers who think that nutrition and health claims made on dairy products were accurate and truthful. Williams (2005) demonstrated that consumers generally think health claims were helpful in making better-informed food choices. Vanasse (2016) reported that the presentation of health claims on product packaging could be attractive to health-conscious shoppers.

However, Nielsen (2012) reported that over two-thirds of global consumers never believed nutritional claims as they considered the claims to be mainly an advertising tool and a marketing scam from the food industry (Singer *et al.*, 2006). Mitić and Gligorijević (2015) stated that the negative attitude toward claims may be caused by a high distrust of food labels and low awareness as well as knowledge about those products.

Consumer Purchase Intention towards Dairy products with Nutrition and Health Claims

There were 4 questions in the questionnaire used to determine respondents' purchase intention towards dairy products with nutrition and health claims. Table 6 shows the consumer purchase intention towards dairy products with nutrition and health claims.

Table 6: Consumer purchase intention towards dairy products with nutrition and health claims

No	Items	Mean	Standard deviation
1	Consumers will buy dairy products with nutrition and health claims for health benefits.	3.60	0.86
2	Consumers will consider to purchase dairy products with nutrition and health claims.	3.64	0.82
3	Consumers will definitely purchase dairy products with nutrition and health claims in future.	3.53	0.77
4	Consumers willing to pay more for dairy products with nutrition and health claims.	3.30	0.87

Note: Consumer purchase intention was 5-point Likert scale where 1=Strongly disagree to 5=Strongly agree.

Based on Table 6, respondents had almost positive purchase intention towards dairy products with nutrition and health claims. This may indicate consumers will consider purchasing dairy products with nutrition and health claims for health benefits. The present finding was in line with van Trijp and van der Lans (2007) and Coleman *et al.* (2014) who showed that the presence of a health-nutrition claim and health claims increased consumer purchase intention due to consumers' positive reaction towards products with claims. The general health interest and relevance were also considered to increase the purchase intention of products with claims (Dean *et al.*, 2012). As a result, the positive purchase intention may be due to the respondents recognising the benefits of products with claims.

The present study showed that consumers rated lower intention to pay more for dairy products with claims. Consumers were willing to pay more for the products with claims with the price lower than the retail

price (Bower *et al.*, 2003). Hwang *et al.* (2016) stated that consumers were probably willing to pay more for products with claims if they perceived their benefits. Generally, older female with high nutritional knowledge and high health concern sub-groups were willing to pay more for added functional benefits on claims (Bower *et al.*, 2003).

Relationship between Consumer Knowledge, Perception, Attitude and Purchase Intention towards Nutrition and Health Claims on Dairy Products

The framework used in this study was Theory of Planned Behaviour (TPB) introduced by Ajzen (1991). This theory uses three conceptually independent determinants (attitudes, subjective norms, and perceived behavioural control) to explain an individual's intention to perform the behaviour. Figure 2 illustrates the model of Theory of Planned Behaviour.

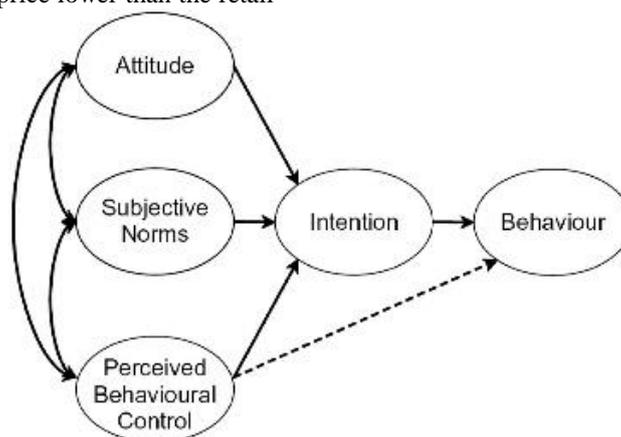


Figure 2: Theory of Planned Behaviour (Ajzen, 1991)

From TPB, individual's intention and behaviour are related to attitude towards performing the behaviour (Ajzen, 1991). By using TPB, consumers' attitude and other variables (knowledge and perception) are considered as critical factors to predict and explain the

purchase intention of dairy products with nutrition and health claims. Table 7 shows the correlation between consumer knowledge, perception, and attitude towards nutrition and health claims on dairy products and purchase intention towards the products.

Table 7: Correlation between consumer knowledge, perception, and attitude towards nutrition and health claims on dairy and purchase intention towards the products

Variables	Knowledge towards nutrition and health claims on dairy products	Perception towards nutrition and health claims on dairy products	Attitude towards nutrition and health claims on dairy products
Purchase intention towards dairy products	0.299**	0.671**	0.722**

Pearson correlation test was used.

**Correlation is significant at the 0.01 level (2-tailed)

As shown in Table 7, consumer attitude had the strongest positive relationship with purchase intention, followed by moderate positive correlation between consumer perception and purchase intention, while consumer knowledge only had a low relationship with purchase intention towards dairy products. Consumer knowledge on claims only had a significant low positive relationship with purchase intention towards dairy products ($r=0.299$, $p<0.001$). This finding indicated that consumer knowledge was not one of the critical factors which could influence their purchase intention on products with nutrition and health claims. The result was in line with Bower *et al.* (2003) who concluded that nutrition knowledge appeared to have slight interactive effects on purchase intention towards products with claims. Furthermore, no correlation between self-reported nutrition knowledge and purchase intention was observed in the findings by Lalor *et al.* (2011b).

Understanding of claims needed some prior knowledge (Mitić & Gligorijević, 2015). Although consumers who had knowledge regarding claims were able to recognise the health benefits of products with health claims, they might not necessarily be willing to purchase the products since there still existed other barriers such as price, refusal to change, taste and preference (Lappalainen *et al.*, 1998). Therefore, the research was in agreement with the present finding which showed that subjective knowledge of respondents did not necessarily increase the purchase intention of products with nutrition and health claims.

However, Morgan (2008) found that consumer nutrition knowledge was significantly associated with purchase intention of breakfast cereal with claims ($p<0.001$), with respondents who had low nutrition knowledge having higher purchase intention. This may be caused by the fact that bad health status was more often found in respondents with low education and nutrition knowledge, thus they might be interested in the beneficial effects claimed by the products (Mitic & Gligorijević, 2015). This result contrasted with Baglione *et al.* (2012) and Verbeke *et al.* (2009) who reported higher purchase intention in those knowledgeable about the nutrient claims on food packaging. The discrepancy of the results may be due to the fact that the nutrients and

claims chosen for their study were less common, and of a further technical nature, which contributed bigger potential to differentiate among respondents on this basis (Coleman *et al.*, 2014).

The result showed that significant moderate positive correlation existed between consumer perception and purchase intention on dairy products with nutrition and health claims ($r=0.671$, $p<0.001$). Hwang *et al.* (2016) was in line with present finding, reporting that if consumers had more positive perceptions toward the product with claims, then they were more likely to purchase the product. Hwang *et al.* (2016) proved that consumers' overall perceptions ($r = 0.406$; $p < 0.01$) and healthiness perceptions ($r = 0.280$; $p < 0.01$) were significantly and positively correlated with their purchase intentions. Consumers who perceived the products with claims highly contributed to higher hedonic expectations towards the beneficial effects claimed by the products, which could further explain their high purchase intention towards products with claims (Tudoran *et al.*, 2009).

Morgan (2008) stated that respondents who had high trust in claims would have higher breakfast cereal purchase intention than respondents with medium and low trust in claims ($p<0.001$). Perception of the credibility of claims also significantly increased consumers' purchase intention, however to a lower level (Williams *et al.*, 2008). Besides, respondents who were familiar with the product category found the claims more credible and had higher intention to purchase them in the future (Verbeke *et al.*, 2009). Therefore, Saba *et al.* (2010) reported that Italians not having familiarity with health claims may explain their negative purchase intention towards products with health claims. Consumers' intentions to purchase the products with claims were lower for those who perceived the claims as a marketing scam (Verbeke *et al.*, 2009).

Moreover, consumer attitude towards nutrition and health claims on dairy products had a significant high positive relationship with purchase intention towards dairy products with nutrition and health claims ($r=0.722$, $p<0.001$). It can be concluded that the positive attitude of consumers towards nutrition and health claims on dairy

products would contribute to higher purchase intention of products with claims. This finding was supported by Peng *et al.* (2006) who proved that consumers' positive attitude and familiarity with the product category increased the intention of future purchase. This claim was also supported by Sheppard *et al.* (1998) who stated that attitudes were highly correlated with intention and afterward behaviour. In TPB, the more favourable the attitude and toward a behaviour, the more the individual's intention to implement the behaviour under consideration (Ajzen, 1991).

Conclusion

This study revealed that most of the consumers (46%) had moderate knowledge level towards nutrition and health claims on dairy products. Consumers generally had almost positive perception and attitude towards nutrition and health claims on dairy products and positive purchase intention towards these dairy products. In examining the relationship between consumer knowledge, perception and attitude towards nutrition and

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- health claims on dairy products and purchase intention towards these dairy products, the result reported that consumer attitude had the strongest positive relationship with purchase intention ($r=0.722$), followed by moderate positive correlation between consumer perception and purchase intention ($r=0.671$), while consumer knowledge only had a low relationship with purchase intention ($r=0.299$). This study adds new knowledge regarding public purchasing behaviour towards dairy products with nutrition and health claims. Furthermore, this research provides valuable information for both food manufacturers and companies to make effective decisions to improve the presentation of nutrition and health claims for better expression of information as well as the quality of food products in order to attract the attention of health-conscious consumers.
- ## Acknowledgements
- The authors would like to thank hypermarket managers for the permission to approach customers and collect the data to complete this project.
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