

MALAYSIAN CONSUMER KNOWLEDGE AND PREFERRED INFORMATION SOURCES IN SELECTING FUNCTIONAL FOODS

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ABSTRACT

The functional food market is rapidly expanding, with manufacturers promoting the perceived health benefits of food products to specific consumer groups. Therefore, this study seeks to understand whether consumers have adequate knowledge when choosing functional foods in Malaysian food and if there is a significant difference in knowledge concerning functional foods among the Malays, Chinese and Indians. This study also explores the information sources that consumers use in developing their knowledge and choosing different types of functional food. Data was collected from 600 Malaysian consumers through a self-administered survey. Analysis of Variance and confirmatory factor analysis using Structural Equation Modelling were conducted to test two propositions of this study. The results obtained indicate that consumers have adequate knowledge of functional food; that there is a significant difference in the level of knowledge concerning functional foods among the Malay, Chinese and Indian ethnic groups. The study also identified the communication channels – personal (family, relative, experience and friends) and impersonal (mass media, salesperson, packaging, and the Internet) sources that can be used by food practitioners, government agencies and food marketers to communicate the accurate health benefits of functional food. Proper dissemination of accurate health promotional information will increase the consumption of functional foods in Malaysia's multi cultural society.

Keywords: Functional food, personal information sources, impersonal information sources, knowledge, Malaysia

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INTRODUCTION

The rapid economic and income growth, urbanisation, and globalisation have meant that the Asian market for food has never witnessed more dramatic changes in consumption pattern than in recent years (Pingali, 2007). In dealing with the changes, consumers need reliable information to evaluate and select food products from the food market. This is especially true when it involves selecting nutritious foods and those that can help control the risk of chronic diseases such heart disease, diabetes, cancer, hypertension, obesity and many other debilitating diseases. Studies have found that consumers want foods that help prevent disease, improve mental health and enhance the quality of life (Ahmad, 1996; Bech-Larsen & Grunert, 2003; Hasler, 1998; Lawrence & Germov, 1999; Milner, 1999; Poulsen, 1999). This demand for “enhanced” food has caused the food market to be filled with many foods that are enriched, fortified, fabricated, or processed in great variety and which claim to prevent or cure chronic disease. Functional food is currently one of the world’s most intensive areas of food product innovation (Bistrom & Nordstrom, 2002). The global market for functional food is growing rapidly; it was estimated at USD\$33 billion in 2000 (Hilliam, 2000; Menrad, 2003) and revalued to approximately US\$73.5 billion in 2005 (Justfood, 2006). However, the exact market size is difficult to estimate because we lack a standard definition of functional food (Weststrate, van Poppel, & Verschuren, 2002).

“Let your food be your medicine and your only medicine be your food” (Hippocrates, 460-360 BC). This 2,500-year-old quote is still relevant, even today (Bender & Bender, 1997; Hasler, 1998; Lawrence & Germov, 1999). Consumers want foods that help prevent and cure disease, improve their general health and make them feel more energetic (Lawrence & Germov, 1999). All foods, as they fulfil a basic human need and provide nutritive value, are functional. The term ‘functional food’, however, implies an additional physiological benefit beyond meeting basic nutritional needs (IOM/NAS, 1994). Although there is no universally accepted definition of functional food, the American Dietetic Association (ADA) state that functional foods include “whole foods and fortified, enriched, or enhanced foods that have a potentially beneficial effect on health when consumed as part of a varied diet on a regular basis, at effective levels” (ADA Report, 2004). In the Malaysian context, functional food can be defined as “a category of food that has health-enhancing properties, and which is not a drug, chemical or vitamin and not prescribed by doctors or other formally qualified medical practitioners” (Hassan, 2008). Food and medicine have the same origin(s) and are both intended to maintain human health; substances in functional food can have medicinal value but medicine itself is not a functional food. There is an ancient Chinese proverb saying that “medicine and food are isogenic” (Arai, 2002). Thus, functional food is the kind that can be procured like any other food but has health-enhancing properties.

The term functional food was first introduced in Japan in the mid-1980s to distinguish these products from medicine. In Japan, functional food, in addition to being nutritious, refers to processed foods containing ingredients that aid specific bodily functions (Arai, 2002). Japan is the first and only country with a specific regulatory approval process for functional foods (Arai, 2002; Hasler, 1998; Kojima, 1996). FOSHU (Foods for Specified Health Use) regulations were introduced in 1991 and are administered by the Japanese Ministry of Health and Welfare (Arai, 1996). Currently, Japan has more than 100 licensed FOSHU food products.

First, this study aims to empirically investigate whether consumers have adequate knowledge when choosing functional foods in the Malaysian food market; second, to test whether there is a significant difference in the knowledge concerning functional foods among the Malays, Chinese and Indians; and, finally, to explore the information sources that consumers use in developing the knowledge for choosing different types of functional foods, namely, traditional functional food, modernised functional food and other ethnic based functional food. Understanding how and where consumers acquired the information about functional food will provide an insight to the food industry, government agencies and food marketers to further improve their communication tools.

LITERATURE REVIEW

The trend towards healthy eating in recent years is evidence that consumers acknowledge that dietary choices have a significant effect on the state of their health, particularly in controlling the risk of chronic disease (Hassan, 2008). The changes in eating habits have significant effects on consumer attitudes towards food products. The goal of helping consumers to make a better food choice has created interest among food industry members, government agencies and food marketers, to provide consumers with better food information. Such efforts include dissemination of food product knowledge, nationwide health programmes and health policies.

The increased awareness of the food-health relationship has created a more health conscious society. This interest in healthy living has gained momentum not only in developed countries, but also in developing countries like Malaysia (Ahmad, 1996). Malaysian food manufacturers are now producing a variety of food products that claim to have direct health benefits (Malaysian Directory, 2007). The unique characteristic of Malaysia is that it consists of multi-ethnic groups (Malay, Chinese, Indian and indigenous groups), each with its own preferred functional food, most of which are available in the market. Some of the ethnic based functional foods have been patented and commercialised (Ahmad, 1996). In recent years, there is an increasing array of foods on the Malaysian health food market claiming to boost vitality, reverse ageing or cure and prevent specific diseases. Some of the popular Malay foods for boosting vitality and preventing aging, cancer, diabetes, and hypertension are *mengkudu/noni* juice (*morinda citrifolia*) (Nandhasri et al., 2005; Wang et al., 2002), *petai* (*parkia speciosa*) (Wong, Leong, & William Koh, 2006), *pegaga* (*centella asiatica*) (Mohd Ilham, Mahmud, & Azizol, 1998), and *tongkat ali* (*eurycoma longifolia*) (Hamzah & Yusof, 2003; Mohd Ilham et al., 1998). Chinese functional foods that are believed to have antioxidant effects and prevent cancer include ginseng (Yi, Yong, & Wenkui, 1999), soyabean (*Glycine max*) (Yi et al., 1999), green tea (Fujiki, Suganuma, Okabe, & Komori, 1996), mushrooms (Chang, 1996), hawthorn fruit (*Crataegus pinnatifida*) (Arai, 2002; Yi et al., 1999), and Chinese wolfberry (Yi et al., 1999). Indians, on the other hand, have entrenched beliefs concerning spices and herbs that are thought to boost energy and provide health benefits in their cooking. For example, turmeric (*Curcuma longa*) is believed to have phytochemical and antioxidant properties that help suppress multiple myeloma and blood cancer (Krishnaswamy, 1996), while cumin or *jeera* (*Cuminum cyminum*) is used in Ayurvedic medicine for the treatment of diarrhoea and jaundice (Iyer, Panchal, Poudyal, & Brown, 2009). The functional foods

in Malaysia range from being purely traditional to highly modernised foods; the major differences lie in their preparation, convenience and consumption.

In Malaysia, food products are controlled under the Food Act 1983 and Malaysian Food Regulations 1985. There are no specific regulations for health foods or functional foods (Tee, 2004), although a new regulation on nutrition labelling and claims was introduced on 31 March 2003. The Malaysian government appointed the Drug Control Authority (DCA) and the National Pharmaceutical Control Bureau to formulate a separate regulation for dietary supplements (Tee, 2004). They define dietary supplements as “products intended to supplement the diet, taken orally in forms such as pills, capsules, tablets, liquids or powders and not represented as conventional foods” (Tee, 2004).

Information and ideas flood the market where marketers and the mass media continually introduce products, services and ideas. The changes in food intake and eating habits have altered the demand for food and food related information. Nowadays, consumers are demanding more detailed, accurate and accessible information on nutritional content, health claims, ingredients, and food safety of the food they consume daily. Marketers and mass media have bridged societies around the world through communication channels, which play a major role in shaping consumer response. Being exposed to a multitude of information possibly influences consumer tastes and preferences as well as information seeking and purchase behaviours. One important factor that influences the acceptance and decision-making concerning functional food among consumers is knowledge about foods (Bhaskaran & Hardley, 2002; Hilliam, 1996; IFIC, 1999; Verbeke, 2005; Wansink, 2001). The current knowledge about functional food and the ability to find information will assist in choosing the right type of functional food. The knowledge of diet-health relationships has also encouraged changes in dietary attitude and habits (Bhaskaran & Hardley, 2002). However, it is not fully understood whether consumers have the necessary knowledge to make the right decision in choosing foods, particularly functional foods.

Information is widely available for consumers, from either internal or external sources (Robertson, Zielinski, & Ward, 1984; Sheth, Mittal, & Newman, 1999). Internal information is accessed from one’s memory and previous experience with certain products or information from search activities (Sheth et al., 1999), whereas external information is the acquisition of decision-relevant information from the external environment because consumers never acquired the knowledge (Blackwell, Miniard, & Engel, 2001; Pieniak, Verbeke, Vermeir, Brunso, & Ottar Olsen, 2007; Schmidt & Spreng, 1996). Information search and acquisition can be active or passive processes (Houston & Rothschild, 1978). This explains that not all information searches are active in nature. Consumers can collect information that has no immediate use in the decision-making task (Carlson, Walsh, Laczniak, & Grossbart, 1994). Information is abundant in the environment. There are three basic forms of information available to consumers: marketer-dominated communication channels, consumer dominated channels and neutral sources of information (Cox, 1967). Each of these sources of information provides different benefits to the consumer and is associated with various costs of the collection of information. In general, it appears that the type of information sought depends upon what the consumer already knows. For example, information in marketer dominated channels stem from television, salespeople, packaging and other sources under the control of the marketer. Consumers’ sources of information

include all those personal communications not under the control of the marketer and also information controlled by the marketers. Neutral sources of information are those sources that are neither consumer dominated nor marketer dominated such as consumer reports and media articles.

Consumers are actively engaged in seeking information, however, the search behaviour is dependent upon the perceived risk of the product (Lutz & Reilly, 1974). In Malaysia, consumers obtain functional food information from various sources, including formal and informal learning and impersonal sources such as mass media and advertising (Hassan, Dann, Mohd Kamal, & Nicholls, 2009). However, the knowledge concerning how and where the Malay, Chinese and Indian ethnic groups acquire, perceive and utilise the functional food information is still unknown.

In business to business marketing communication perspective most businesses use the combination of impersonal and impersonal communication sources collectively (de Run & Hassan, 2003; Webster, 1991). Study on elite managers of SMEs in Sarawak was found to rely on personal rather than impersonal sources in searching for information (de Run & Hassan, 2003). Personal information such as from friends and past experience are believed to be more reliable and important than impersonal information sources such as from salesperson.

The sources of information, either personal versus non-personal sources or marketer-controlled versus non-marketer-controlled, can directly influence consumers' acceptance and interpretation of the message. However, it is important to consider factors such as the credibility, attractiveness, and trustworthiness of the sources to consumers in understanding the effects the source has on consumer behaviour (Robertson et al., 1984). Expertise and trustworthiness are the ability of sources to make valid statements about the product's characteristics and performance (Hovland, Janis, & Kelley, 1953). Highly credible sources can alter persuasiveness by increasing a subject's message relevant thinking (Heesacker, Petty, & Cacioppo, 1983; Manfredi & Bright, 1991). The greater the perceived credibility of the sources is, the greater the likelihood that receivers will accept the message (Pornpitakpan, 2004; Watts & McGuire, 1964; Whittaker & Meade, 1968).

Consumers frequently question the trustworthiness of advertisement claims because advertisers have a vested interest in selling the brand. For instance, consumers regard consumer report magazines as neutral sources and trustworthy because the magazine has no interest in the brand or any attempt to change attitudes or influence behaviour (Assael, 1998). In addition, consumers are likely to accept product judgements of family and friends, especially from those with a particular knowledge of the product category.

Another basis by which consumers evaluate the source is its attractiveness, which is determined by its liability and its similarity to consumers. Attractiveness should be less emphasised, if consumers are involved otherwise, attractiveness should be emphasised (Mazursky & Schul, 1992). In the low involvement case, consumers are not focused on the message, and the source will have more impact.

As a result, the attractiveness of the spokesperson may be effective in gaining attention. Therefore, this study presents two propositions:

- P1 : Consumers have adequate knowledge to choose functional food in the Malaysian food market.
- P2 : There is no significant difference in knowledge concerning functional foods among the Malays, Chinese and Indians in Malaysia.
- P3 : Consumers use personal and impersonal information sources to choose different types of functional foods.

METHODOLOGY

A self-administered questionnaire was designed, piloted and revised. Section One focused on the evidence of knowledge concerning preferred functional foods. Section Two focused on important sources of information concerning functional food used by the consumer in learning the benefit of the chosen functional food. A Likert scale was used in the questionnaire for this study. The Likert scale has several advantages: it is easy to construct, it offers respondents choices and it allows the researcher to explore attitudinal dimensions (Oppenheim, 1992). The scale is anchored at 1 (strongly disagree) right up to 7 (strongly agree). Demographic data was also recorded.

The questionnaire was distributed to consumers who have purchased functional food in the Klang Valley area. The sample for this study comprised 750 participants, aged above 18 years, who consumed functional food from the Malay, Chinese or Indian ethnic groups (250 participants per group). To ensure that all three major ethnic groups are represented, this study employed quota sampling where each ethnic group was targeted to represent one third of the sample.

All data collected were verified for completeness, coded, keyed into a computer data file and were analysed using Statistical Package for the Social Sciences (SPSS) software version 17 and AMOS. The analyses conducted included descriptive analysis, Analysis of Variance (ANOVA) and confirmatory factor analysis.

RESULTS

Preliminary Examination of Data

A total of 250 survey forms were distributed to each of the three ethnic groups, totalling 750. After preliminary screening, only 200 useable forms were used from each ethnic group for data input – a response rate of 80 percent. Descriptive statistics including frequency, minimum, maximum, means, range, standard deviation and variance were obtained for the interval-scaled variables. These descriptive statistics were derived to check for non-response bias such as missing values, outliers and normality in the final data set. The average calculations (Churchill Jr., 1987) were carried out on all the missing items; however, non-response bias was very minimal because only useable survey forms were used.

Demographic Characteristics

The demographic characteristics of the sample population are presented in Table 1. The sample consisted of an equal number of each ethnic group – Malay, Chinese and Indian – as this was controlled for in the sampling technique. Nevertheless, a gender bias is present as more female respondents (61.33%) responded to the survey than males (38.67%). Table 1 contains the demographic characteristics of respondents in the study for gender, age, marital status, education, income level and ethnicity.

Table 1: Respondents' Profile

	Malay	Chinese	Indian	Total	%
Gender					
Male	86	84	62	232	38.67
Female	114	116	138	368	61.33
Age					
18 - 24 years	39	19	28	86	14.3
25 - 29 years	55	49	53	157	26.2
30 - 34 years	41	54	49	144	24.0
35 - 39 years	32	34	32	98	16.3
40 - 44 years	18	17	18	53	8.8
45 - 49 years	11	11	9	31	5.2
50 - 54 years	4	9	8	21	3.5
55 - 60 years	0	4	2	6	1.0
Above 61 years	0	3	1	4	0.7
Marital status					
Single	95	83	88	266	44.3
Married	101	111	100	312	52.0
Widow/Divorced	4	6	12	22	3.7
Education					
SPM	38	21	23	82	13.7
STPM/Diploma/Matrices	55	59	77	191	31.8
Degree	91	103	85	279	46.5
Masters	15	15	12	42	7.0
PhD	1	1	2	4	0.7
Others	0	1	1	2	0.3
Income level					
Below RM1000	29	19	33	81	13.5
RM1000 - RM1999	72	30	60	162	27.0
RM2000 - RM2999	48	69	65	182	30.3
RM3000 - RM3999	30	52	32	114	19.0

Table 1 (Continued)

	Malay	Chinese	Indian	Total	%
RM4000 - RM4999	11	17	7	35	5.8
Above RM5000	10	13	3	26	4.3
Ethnicity					
Malay	200	0	0	200	33.3
Chinese	0	200	0	200	33.3
Indian	0	0	200	200	33.3
Religion					
Islam	197	1	9	207	34.5
Buddhism	0	142	2	144	24.0
Taoism	0	9	1	10	1.7
Christianity	2	43	45	90	15.0
Hindu	0	0	136	136	22.7
Non-believer	1	5	0	6	1.0
Others	0	0	7	7	1.2

The overall age of the sample is young, as more than half of the respondents are between 18 and 34 years old and only a few are older than 40. Respondents are fairly evenly distributed between married (52%) and single (44%); a few are widowed or divorced (3.7%). The educational background of the respondent set is varied; with the Chinese respondents more educated – having at least a university degree (60%) - than the Malays (53.5%) and Indians (49.5%).

The income distribution of the sample indicates that respondents come from a variety of socioeconomic backgrounds and that the Chinese (75.5%) are better off than the Indians (53.5%) and Malays (49.5%) with income level more than RM2000. The religions of the respondents are also varied. The Malays are Muslims; the other ethnic groups are mainly Christians, Buddhists and Hindus.

Consumers Have Knowledge of Functional Food

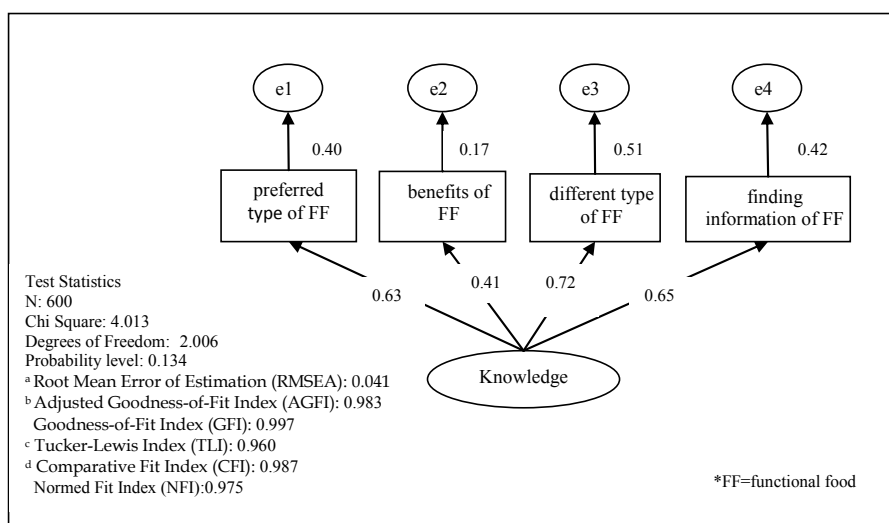
Seven questions were developed to measure consumers' knowledge of functional food. Knowledge is defined as the knowledge to choose which type of functional food to consume based on personal preference, product characteristics and information seeking behaviour. The factor was measured on a 7-point Likert scale and the reliability scale of Cronbach's α was at 0.77.

Factor analysis was conducted to test Proposition 1: Consumers have knowledge to choose functional food in the Malaysian food market. For this test only four items (Q1, Q4, Q5 and Q7) that directly measure knowledge were used. The items had moderate to strong loadings, ranging from 0.582 to 0.784, which are all above the acceptable factor loading of > 0.50 (Hair et al., 1998). The component matrix produced only one component. Table 2 summarizes the results.

Table 2: Exploratory Factor Analysis of Knowledge

	Component Matrix	Cronbach's alpha
Q1: knowledge on preferred type of functional food	.753	0.78
Q4: knowledge on benefits of functional food	.582	
Q5: knowledge on different type of functional food	.784	
Q7: knowledge on finding information of functional food	.760	

The dimension of knowledge on functional food was then analysed using confirmatory factor analysis using Structural Equation Modelling. The results are indicated in Figure 1.



Recommended ^aKline (1998); ^bHu and Bentler (1999) and Hair et al. (1998); ^{c,d} Hair et al. (1998); Source: Analysis of Survey Data.

Figure 1: Structural Equation Model of Knowledge on Functional Food

The results demonstrate that the model indicated in Figure 1 is acceptable with test statistics all above the desired level. The factor loadings indicate that apart from knowledge on the benefit of functional food, all dimensions contribute to the variance in the respondents' knowledge for functional food. In all cases other than knowledge on the benefit of functional food, the squared multiple correlations are greater than 0.30, which is the minimum acceptable level for inferring that the variance in the model is explained by that factor (Sharma, 1996). Knowledge on different type of functional food makes the strongest contribution to the variance with a factor loading of 0.72 and a squared multiple correlation of 0.61. The factor loadings indicate that all dimensions contribute in the preference toward functional food. Whilst factors with loading close to 1 are desirable, factors of over 0.50 are practically (if not statistically) significant (Hair et

al., 1998). Consequently, while little of the variance in the model is determined by benefit of functional food knowledge, it should not be discarded entirely. Hence, the results show that Proposition One is supported. Consumers have adequate knowledge to choose functional food in the Malaysian food market although the knowledge concerning benefits of functional food is not the strongest contributor.

Ethnic-Based Differentiation on Knowledge of Functional Food

ANOVA was conducted to test Proposition Two which states that there is no significant difference in knowledge concerning functional foods among the Malays, Chinese and Indians in Malaysia. The results are shown in Table 3.

Table 3: Statistical Means and Analysis of Variance (ANOVA)

Items	Malay	Chinese	Indian	F value
Q1: knowledge on type of functional food to consume.	4.79	5.09	5.27	8.532**
Q2: personal preferred type of functional food.	4.96	5.09	5.17	1.564
Q3: consult someone before I consume functional food.	5.14	5.10	5.14	.060
Q4: knowledge on the benefits of functional food.	4.81	5.19	5.44	11.859**
Q5: knowledge on a lot of different types of functional foods.	4.20	4.41	4.79	8.761**
Q6: price is an indicator of quality of functional food product.	4.36	4.29	4.39	.197
Q7: knowledge on finding information on the functional food.	4.94	5.21	5.28	4.556*

* $p < 0.05$, ** $p < 0.01$

The results indicate that a consumer's knowledge plays an important role in influencing the preference towards functional food. Items Q1, Q4, Q5 and Q7 are significant with $p < 0.05$, which reject the proposition. The results show that there is a significant difference in the knowledge toward functional food. Therefore, proposition P2 is not supported. The level of knowledge influencing the ethnic group was not always the same for Q1, Q4, Q5 and Q7, hence, indicating that one ethnic group is more knowledgeable than the other ethnic group on type of functional food to consume, benefit of functional food, different types of functional food and finding information on functional food.

Post hoc tests, using Tukey's tests, were performed to see which ethnic group means were significantly different. The post hoc multiple comparisons show that the means for the Malays were significantly different compared to the means for the Chinese and Indian ethnic groups (Table 4).

Table 4: Tukey HSD Multiple Comparisons Analysis for Significant Factors

Dependent Variable	(I) Ethnicity	(J) Ethnicity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Q1	Malay	Chinese	-.30500(*)	.11761	.026	-.5813	-.0287
		Indian	-.48000(*)	.11761	.000	-.7563	-.2037
	Chinese	Malay	.30500(*)	.11761	.026	.0287	.5813
		Indian	-.17500	.11761	.297	-.4513	.1013
	Indian	Malay	.48000(*)	.11761	.000	.2037	.7563
		Chinese	.17500	.11761	.297	-.1013	.4513
Q4	Malay	Chinese	-.38500(*)	.13042	.009	-.6914	-.0786
		Indian	-.63000(*)	.13042	.000	-.9364	-.3236
	Chinese	Malay	.38500(*)	.13042	.009	.0786	.6914
		Indian	-.24500	.13042	.146	-.5514	.0614
	Indian	Malay	.63000(*)	.13042	.000	.3236	.9364
		Chinese	.24500	.13042	.146	-.0614	.5514
Q5	Malay	Chinese	-.21000	.14418	.313	-.5488	.1288
		Indian	-.59500(*)	.14418	.000	-.9338	-.2562
	Chinese	Malay	.21000	.14418	.313	-.1288	.5488
		Indian	-.38500(*)	.14418	.021	-.7238	-.0462
	Indian	Malay	.59500(*)	.14418	.000	.2562	.9338
		Chinese	.38500(*)	.14418	.021	.0462	.7238
Q7	Malay	Chinese	-.27000	.11896	.061	-.5495	.0095
		Indian	-.34000(*)	.11896	.012	-.6195	-.0605
	Chinese	Malay	.27000	.11896	.061	-.0095	.5495
		Indian	-.07000	.11896	.826	-.3495	.2095
	Indian	Malay	.34000(*)	.11896	.012	.0605	.6195
		Chinese	.07000	.11896	.826	-.2095	.3495

* The mean difference is significant at the .05 level.

Tukey's test on Q1 and Q4 shows that the Malay means is significantly different from the means for the other two ethnic groups. The Malay mean on Q5 is only significantly different from the Indian mean. Likewise, the Chinese mean is only significantly different from the Indian mean. For Q7, the Malay mean is only significantly different from the Indian mean. The overall results indicate that the Malay ethnic group response means tend to be significantly different from those of the other two ethnic groups.

Sources of Information on Functional Food

The third proposition of this study is to explore the information sources that consumers use in developing the knowledge and choosing different types of functional foods, namely, traditional functional food, modernised functional food and other ethnic based functional food. Eight personal information sources and ten impersonal information sources were used to measure the important sources of information (personal versus impersonal)

applied by consumers for traditional, modernised and other ethnic functional foods. Table 5 contains the results.

Table 5: Descriptive Statistics for the Important Information Sources

Items	Traditional Functional Food		Modernised Functional Food		Other Ethnic Culturally-Based Functional Food	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Personal sources of information						
Friends/Work colleagues	4.78	1.54	5.30	1.16	5.27	1.28
Oral tradition	5.72	1.26	3.68	1.77	3.52	1.81
Family	5.75	1.05	4.99	1.33	3.95	1.77
Relatives	5.46	1.13	5.00	1.27	4.20	1.73
Neighbours	4.87	1.44	4.90	1.44	4.81	1.55
Experience	5.07	1.49	5.00	1.44	4.45	1.72
Health club/gym	3.29	1.83	4.05	1.88	3.70	1.88
Doctor	3.65	1.96	4.40	1.83	3.82	1.91
Impersonal source of information						
TV	4.46	1.74	5.49	1.12	5.09	1.42
Radio	4.21	1.76	5.14	1.37	4.67	1.70
Magazine	4.86	1.43	5.32	1.22	4.91	1.44
Newspaper	4.64	1.55	5.23	1.27	4.92	1.42
Pharmacist	3.58	1.92	4.50	1.76	3.78	1.90
Packaging	4.09	1.74	4.89	1.46	4.59	1.57
In store information	4.33	1.66	4.97	1.47	4.58	1.59
Salesperson	4.55	1.72	4.97	1.47	4.59	1.60
Brochure	4.49	1.52	5.23	1.30	4.91	1.47
Internet	4.88	1.57	5.26	1.50	4.95	1.62

The most important sources of information for respondents for traditional functional food are word of mouth from family (5.75), oral tradition (5.72), relatives (5.46) and also consumers' own experience (5.07). All these sources of information can be classified as personal information sources. Health club and gym (3.29), pharmacist (3.58) and doctor (3.65) score as the least used sources of information.

Respondents obtain information on modernised functional food from impersonal and personal sources of information. Television (5.49) scored the highest means followed by magazine (5.32), friends/work colleagues (5.30), Internet (5.26), newspaper (5.23), brochure (5.23), radio (5.14) and consumer's own experience (5.00), respectively. Oral tradition (3.68) scores as the least used information for modernised functional food, which is in direct contrast to its importance for traditional functional food information. The most

important sources of information for other types of ethnic and culturally based functional food are friends/work colleagues (5.27) and television (5.09). The least likely sources of information are oral tradition (3.52), health club and gym (3.70), pharmacist (3.78), doctor (3.82) and family members (3.95). The mean scores for all these sources of information are below 4. These low scoring items fall under the personal sources of information. The results show that consumers use personal and impersonal information sources to choose different types of functional foods.

DISCUSSION

The results provide several interesting features that can be discussed. Consumers have knowledge concerning functional food and this knowledge plays an important role in influencing preference towards functional food, although the level of knowledge among the three ethnic groups is different. The knowledge comes from personal (family, relative, experience and peer groups) and impersonal (mass media, salesperson, packaging, and the Internet) sources. It may not always be correct or true knowledge, but it is the knowledge acquired by the consumers. Nevertheless, it seems that this knowledge is passively, rather than actively, acquired. In other words, consumers are not likely to ask about functional food, even though they have multiple avenues of doing so, especially from personal sources of knowledge. This might be due to a lack of understanding of the importance of functional food as a health food that can be used to improve the consumer's wellbeing.

In general, respondents are knowledgeable about the functional foods they consume. However, the Malay means is significantly different from the means of the other two ethnic groups. This means that at the micro level, the knowledge of each ethnic group is not equal. This might be because each ethnic group consumes specific functional food that has cultural inclination to their eating habits or they are not familiar with the specific benefits of the functional food they are consuming.

In the analysis, it shows that the personal sources knowledge comes from their initial socialisation process, which is with their own family and friends when they are young up to the present time. The knowledge is likely to be reinforced by experience. Although some knowledge may be lost, early food experiences can last a lifetime. For example, oral tradition is one of the important sources for acquiring knowledge concerning traditional functional food for each ethnic group. This finding is also confirmed by the previous proposition that respondents' oral tradition inherited from the previous generation influences functional food consumption (Hassan et al., 2009). This is because oral tradition is a valuable source of learning and understanding of one's own ethnic culture. Consumers can potentially utilise several sources of information from their environment. The analysis indicates that overall, respondents utilise both personal and impersonal sources of information in choosing functional food.

Although there are many sources of information available to consumers, its utilization depends on whether the food is traditional, modernised or other ethnic and culturally based functional food. For traditional functional food, particularly, respondents tend to rely on their personal sources of information such as oral tradition and words of mouth

from family and relatives, which are their personal sources that result from their social interaction. The respondents' own experience is also one of the important sources of information for traditional functional food. Personal experience has been found to be instrumental in purchase decisions as it is seen to be the most reliable and unbiased source of information available to a consumer (Maute & Forrester, 1991).

Respondents use marketer-dominated and non-marketer dominated communication channels for modernised functional food. Results show that the most influential marketer-dominated sources that respondents use to obtain information are from the impersonal sources of television, radio, magazine, newspaper, brochures and the Internet. These impersonal commercial sources of information are readily available and usually easily recognised as advertising and selling. The non-marketer dominated information sources that are also important consist of friends, work colleagues, and consumers' own experience, respectively. These sources of information can be said to directly or indirectly influence consumers' acceptance and interpretation of the information or message conveyed to them concerning functional food.

For other ethnic and culturally based functional food, friends or work colleagues and television are seen as important information sources. Regardless of their ethnicity, consumers in multicultural communities share their knowledge of functional food through socialization with friends and work colleagues. These information sources are informal in nature and may be easier to access (Arndt, 1967; Cox, 1967). Television is an example of an important impersonal information source that is used by many functional food producers and marketers to introduce ethnic based functional food, be it Malay, Chinese or Indian. Most of the advertisements stress the importance of some of the functional foods in controlling and preventing chronic diseases such as diabetes, high blood pressure, heart problems, cancer and also for boosting energy and restoring youthfulness.

CONCLUSIONS AND RECOMMENDATIONS

Knowledge plays an important role in educating consumers. Consumers use functional food knowledge to link diet and health in changing their eating habits. In the context of functional foods, this study has strengthened the understanding of the role of consumers' knowledge and the importance of information sources that consumers use to find information about different types of functional foods in the multicultural Malaysian food market. It is important for marketers to be aware of how information on functional foods is communicated to consumers since they are found to rely on both impersonal and personal sources of information for functional foods. In this way, accurate health promotion information will reach consumers at large and induce behavioural changes that favour the marketing of functional foods in multicultural societies like Malaysia.

Studies on the public's understanding of health messages must be done constantly, providing a rational basis for improving the reliable and accurate transfer of health information from the scientific community to the community at large. Once this is achieved, the education and motivation necessary for the adoption of healthy living practices stands a chance of being successful.

The information on the scientifically-based evidence of the benefits of functional foods, as well as the education of the public about their role towards having a healthy diet that could reduce the burden of lifestyle disease and rising medical costs should be contained in the communication strategies. Marketers could integrate all this information in their marketing campaigns to improve the consumers' understanding of the importance of functional foods. Research into functional foods will not improve public health unless the benefits of the foods are effectively communicated to the consumer and, more importantly, the public are successfully convinced. Hence, by encouraging their belief and acceptance of those functional foods, the public will be willing to believe and consume those functional foods.

Given the importance of the topic for academics, government agencies and food industrial practitioners, this study should be a valuable starting point for a more in-depth and broad-based study. Future studies should address some of the limitations inherent in this study, such as the relatively small and selective samples in a developing country. Extensions to other target groups in another country may further refine these insights.

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