

# Natural Functional Foods Consumption Behavior Among the Malaysians with Obesity

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## ABSTRACT

Natural functional food industry is growing steadily worldwide and innovative products are being continuously launched thus making competition fierce. Successful commercialization of natural functional foods is proving to be challenging especially due to the need for a strategic approach to product development processes. The main purpose of this study was to understand how consumers who are suffering from obesity perceive natural functional foods and how likely they are willing to consume the food. Purposive sampling method was used in this study and a survey was conducted in Malaysia whereas 163 obese consumers were interviewed by using structured questionnaires. The Integrated Behavioral Model (IBM) was adopted in this study. Descriptive statistics, exploratory analysis and multiple regression were used to analyze the collected data. The results show that experiential attitude (perceived severity), instrumental attitude and personal agency (self-efficacy) influenced the obese consumer's intention to consume natural functional foods for the purpose of fighting the obesity.

**Keywords:** *Behavior, Integrated Behavioral Model (IBM), natural functional foods, obesity*

## 1. INTRODUCTION

In the last decade, consumers demand and their satisfactory level in food choice have changed considerably. Today, consumers believe that foods can contribute directly to their health. Food is the most basic needs for all human beings and in the twenty-first century, in which food is not only used to satisfy the hunger, but also to provide the necessary nutrients for human beings, to prevent disease and to improve physical and mental well-being of the consumers [1]. During the past thirty years, Malaysia has achieved an economic and political stability. This phenomenon causes a rapid change in the consumers' preference towards food choice, consumers' lifestyle, and food consumption pattern. In this fast-moving world, it is difficult to maintain a healthy and balanced diet, therefore, it is not a coincidence that Malaysia has currently become the Asia's fattest country [2]. Driven by a variety of socio-demographic characteristics, lifestyle, and food consumption changes, consumers' demand for healthy, nutritious, and safe food is steadily increasing. Functional Foods (FFs) represents one of the most interesting areas of research and innovation in the food industry [3]. However, there is no universally accepted definition for functional foods, although this industry is growing steadily worldwide [4]. In Malaysia, functional foods is defined as a category of food that has health-enhancing properties, that it does not contain drugs, chemicals, or vitamins, and it is not necessary to obtain

prescription from doctors or other formally-qualified medical practitioners [5].

Natural functional foods or traditional medicine is not a new concept to Malaysian consumers. Natural additives in functional food are derived from natural sources such as food or animal products, ranging from fruits and plants to animal lard and insects. Botanical remedies have been an important source of traditional medicine for thousands of years and have made tremendous contributions to develop some of the most widely used and effective modern supplements or drugs. Although natural functional foods have been used for centuries, but how consumers who are suffering from obesity perceive about natural functional foods and the likelihood of consumer taking recommended preventative health action, are still questionable. This study will benefit the Ministry of Health of Malaysia, NGOs, local and international food producers, food manufacturing industry, or food marketers, who are involved in promoting and educating healthy lifestyles and healthy eating to Malaysian consumers. This is because unhealthy lifestyles and eating habits are one of the risk factors leading to chronic "lifestyle-related illnesses" among the Malaysians. Organizers of health or healthy eating campaigns will be able to identify the factors based on their influence such as attitude, subjective norm, belief, knowledge, and self-efficacy. Therefore, it is important to investigate the obese consumer's intention to take recommended preventative health action by consuming natural functional foods in Klang Valley, Malaysia.

## 2. MATERIALS AND METHODS

### 2.1 Conceptual Framework

Integrated Behavioral Model (IBM) was used in this study to examine the individual healthy behavioral change and has a strong power of prediction for a wide range of consumer behavioral attributes. The IBM model postulates seven conceptually independent determinants of the obese consumer's intention to consume natural functional foods to fight for obesity: Attitude (behavioral belief towards susceptibility and severity), Subjective Norm (Injunction Norm and Descriptive Norm) and Personal Agent (Self-Efficacy and Perceived Control).

According to Fishbein & Ajzen (1975) [6], attitude can be defined as "an individual's favourableness or unfavourableness of feelings about performing the target behaviour". In this study, attitude consists of experiential attitude and instrumental attitude. Experiential attitude includes perceived susceptibility and perceived severity towards medical conditions. For experiential attitude (perceived susceptibility), it refers to individual belief of the probability of getting a disease or health condition [7]. For experiential attitude (perceived severity), it refers to an individuals' belief about the seriousness of acquiring a sickness, health condition or leaving it untreated, that embodies the evaluations of each medical and clinical consequence such as death, disability, pain and potential social consequences [8]. Instrumental attitude on the benefits of the product refers to consumers' perception on the effectiveness or outcome, if healthy behavior is reducing the risks or seriousness of impact [9]. It is logical for the consumers to adopt healthy behavior, when they believe that it will decrease the chances of acquiring a disease or illness.

Subjective norm can be defined as pressures coming from the influence of public media such as events, advice from others, illness of family members, or government that foster the engagement with natural functional foods. Subjective norms are divided into injunctive norm and descriptive norm. Injunctive norm refers to the normative beliefs about what others think an individual should do and motivation to comply, while descriptive norm refers to the individual perceptions about what others in social or personal networks are currently doing. Examples of this include health history of the family members, advice from parents, friends and doctors who are able to influence, motivate or force the obese consumers to consume natural functional foods.

Personal agency refers to an individual's beliefs that they are capable of performing a particular behaviour [10]. Self-efficacy is an individual's belief in an individual effectiveness in performing specific tasks as well as by their actual skills. Perceived control is an individual's perceived amount of control to perform a certain behaviour [11]. There are many control factors which may facilitate or inhibit the obese consumer's intention to consume natural functional foods. For example, product attributes such as

healthy, balanced diet, and nutrition are associated with functional foods, and also the availability of functional foods in Malaysia may facilitate the intention to consume natural functional foods.

### 2.2 Research Instruments

Data was collected from consumers by using structural administered questionnaires. A seven-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" was used in this study to gauge the obese consumers' intention to consume natural functional foods in order to fight the obesity. The questionnaire survey was conducted quantitatively using survey design by trained interviews and involved 163 respondents from Klang Valley, Malaysia. This research examined the natural functional foods consumption, which have become a crucial necessity for people in all walks of life. Since there is no list of sampling frame for people in all walks of life, therefore, this research was conducted by using purposive sampling to locate all possible cases of a specific purposes, set by the researcher [12], and the targeted respondents will be the consumers who are suffering from obesity in Malaysia.

## 3. RESULTS AND DISCUSSION

In this study, the Cronbach Alpha method was used to measure the reliability of the 28 questions that were used to measure (in Likert Scale) the IBM variables. The Cronbach Alpha value was equivalent to 0.940 verifying that this model was suitable for this study.

### 3.1 Descriptive Statistic

The sample size of this study consisted of 163 respondents. The results show that 47.2 % of the respondents were female, and the majority of respondents were married (70.6 %) and 29.4 % were single. With regards to education level, the majority of respondents (64.4 %) had received at least a tertiary education and only 2.5 % had only received primary schooling. In terms of monthly income, the results show that the majority of respondent (44.2 %) earned RM3,500-RM4,499 per month, and only a smaller percentage of the respondents (1.8 %) had a monthly income between RM5,500 – RM 6,499 and RM6,500-RM7,499. The results also show that most of the respondents were between 35-44 years of age (41.7 %).

### 3.2 Exploratory Factor Analysis

Explanatory factor analysis (EFA) is carried out to identify the component matrix. Respondents replied to 28 questions on a seven-point Likert scale about their attitudes (behavioral belief towards the susceptibility and severity of obesity), Subjective Norm (Injunction Norm and

Descriptive Norm), and Personal Agent (self-Efficacy and Perceived Control), which influence the consumers' intention to consume natural functional foods to fight the obesity.

In this study, the result of KMO test for Natural Functional Foods (NFF) reached the value of at least 0.744 indicating that the sampling adequacy and exploratory factor analysis could be carried-out. The result for communalities ranged from 0.595 to 0.841. In other words, the variables that have higher communalities suggest that the variables are represented fairly by all other factors. After the varimax rotation of the consumers' responses to the 28 questions related to their intention to consume natural functional

foods to fight for obesity, the factor-loading from the principal component factor analysis was obtained and presented in Table 1. The factor analysis of 28 attitudinal statements was conducted and those factors were then ranked according to the proportion of variance explained and name was then given to each factor to reflect the latent stimuli underlying the consumers' intention to consume natural functional foods. In this study, eight latent factors which influence the consumers' intention to consume natural functional foods were identified. The total cumulative variance in this study was 71.298. Thus in this study, 71.298% of the total variance was accounted and explained by those eight factors.

**Table 1.** The Results of Exploratory Factor Analysis

	Factor-Loading							
	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>
<b>Attitude (Instrumental Attitude)</b>								
I believe that consuming NFF can maintain a balanced diet.	0.856							
I believe that consuming NFF can prevent the risk of specific health conditions.	0.812							
I believe that consuming NFF is a preventive measure for certain ailments.	0.790							
I believe by consuming NFF, I can improve my health.	0.736							
<b>Variance (percent of explained)</b>	<b>12.124</b>							
<b>Personal Agency (Perceived Control)</b>								
I don't like the smell of NFF.		0.791						
I don't like the taste of NFF.		0.788						
I am unsure about the dosage for NFF.		0.760						
NFF can be harmful to health if being used excessively.		0.750						
I am unsure about the effects of NFF.		0.679						
<b>Variance (percent of explained)</b>		<b>10.879</b>						
<b>Intention to Consume</b>								
I consume NFF, because I don't trust other foods.			0.800					
I intend to consume NFF, because it protects me from being diagnosed with any disease.			0.752					
I intend to consume NFF, because it improves my skin condition.			0.692					
I consider consuming NFF to have a balanced diet.			0.688					
<b>Variance (percent of explained)</b>			<b>10.161</b>					

	Factor-Loading							
	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>
<b>Subjective Norm (Injunction Norm)</b>								
My doctor thinks that I should consume NFF.				0.806				
The media encouragements make me think that the best way to become healthy is by consuming NFF.				0.805				
My friends/colleagues think that I should consume NFF.				0.738				
<b>Variance (percent of explained)</b>				<b>8.802</b>				
<b>Experiential Attitude (Perceived Severity)</b>								
If I am diagnosed with a medical condition, it would change my life.					0.881			
If I am diagnosed with a medical condition, it would limit my daily activities.					0.810			
If I am diagnosed with a medical condition, my studies or career would be endangered.					0.687			
<b>Variance (percent of explained)</b>					<b>7.994</b>			
<b>Experiential Attitude (Perceived Susceptibility)</b>								
If I don't have a healthy and balanced diet, my chances of being diagnosed with a medical condition are high.						0.823		
If I don't consume enough vitamins and nutrients, I feel that I am particularly susceptible to illness or disease.						0.812		
My physical health makes me more likely to face a medical condition.						0.726		
<b>Variance (percent of explained)</b>						<b>7.529</b>		
<b>Personal Agency (Self-Efficacy)</b>								
It would be easier for me to purchase functional foods, if I know the exact place that sells those foods.							0.861	
I am confident that I could purchase functional foods, if I could afford to buy them.							0.708	
Whether or not to purchase functional foods, is completely up to me.							0.602	
<b>Variance (percent of explained)</b>							<b>7.059</b>	
<b>Subjective Norm (Descriptive Norm)</b>								
Family advice about my eating habit is important to me.								0.841
Advice from friends and colleagues is important to me.								0.643
Advice from my doctor is important to me.								0.607
<b>Variance (percent of explained)</b>								<b>6.750</b>
<b>Total Variance (percent of explained)</b>								<b>71.298</b>

\*NFF= Natural Functional Foods

### 3.3 Multiple Regression Analysis

Multiple regression was used in this study to explain the dependent variable (Y) such as the obese consumer's intention to consume natural functional foods to fight for obesity that was estimated from several independent variables (X) such as attitude, subjective norm, and personal

agent. As shows in Table 2, the adjusted R<sup>2</sup> value is 0.294 which indicates that the seven factors contributed as much as 29.4% of the variation in "the intention to consume natural functional foods". The assumption of the independence had almost certainly been met, since the value of Durbin-Watson was 1.893, which is very close to 2. Therefore, there was no first order linear auto-correlation in the data. The regression model was statistically sufficient

with F-value of 10.625 (p-value = 0.000). It indicates that all seven independent variables were simultaneously significant to the dependent variable. Each factor was tested in different dimensions and without any multi-collinearity, with the tolerance-rate greater than 0.1 [13] and the Variance Inflation Factor (VIF) less than 10 [14].

As shown in Table 2, the results show that out of the seven constructs, only experiential attitude (perceived severity) was significant at 95% (p-value < 0.05). The other two variables such as attitude (instrumental attitude) and personal agency (self-efficacy) were significant at a 99% level (p-value < 0.01). Attitude (Instrumental attitude) has a much larger regression coefficient ( $\beta = 0.332$ ) than those of Personal Agency (Self-efficacy) ( $\beta = 0.289$ ) and Experiential Attitude (Perceived Severity) ( $\beta = 0.160$ ). This indicates that Attitude (Instrumental attitude) was the main predicting construct in the model. Surprisingly, the path of subjective norm (Injunction norm and Descriptive norm) (for example, doctor, media, friends and family) did not have any effect on the consumers' intention to consume natural functional foods to fight for obesity. Similar result was shown by a research which was conducted in New South Wales, Australia by Patch et al., (2005) [15] concluding that normative beliefs were not a significant determinant of the consumers' intention to consume omega-3 enriched novel foods.

The main predictor of this study was the attitude (instrumental attitude) ( $\beta = 0.332$ ,  $p = 0.01$ ) of natural functional foods. The likelihood of the obese consumer to consume natural functional foods will increase, if they understand and believe the outcome of it such as consuming it is a convenient way of meeting the recommended daily intake of food, maintaining a balanced diet, improving overall health, and preventing or reducing the risk of specific health conditions. The result was similar with the research conducted by Marcia and Rafael (2011) [16], in which they found that the reward from consuming functional foods is the strongest factor, and it is linked to

the benefits of wellness and health provided by those foods. Several studies have reported the same results whereas the consumers who are more interested in preserving their health condition are more likely to consume functional foods [17].

Personal agency (self-efficacy) had positive influence towards the obese consumers' intention ( $\beta = 0.289$ ,  $p = 0.000$ ). It means that consumers are more likely to consume natural functional foods to fight for obesity, if they think that there are fewer barriers for them to consume those foods such as the availability and affordability. According to a research conducted by Jacob (1999) [18] in Denmark, consumers' belief such as perceived convenience to purchase functional foods, perceived nature of functional foods, and perceived positive health effect by consuming functional foods, influenced the consumers' intention to purchase those foods.

In Table 2, the attitude (perceived seriousness) ( $\beta = 0.160$ ,  $p = 0.018$ ) of consumers had a positive influence on consumers' intention to consume natural functional foods to fight the obesity. This result was different from the research conducted in Southwestern University, Texas, in which they found that perceived seriousness and vulnerability were not significant in predicting the consumers' behavior towards functional foods [19]. This might be due to the different lifestyle, culture, and target respondents, whereas this study focused on the obese consumers in Malaysia. Malaysian government and NGOs have done various obesity or healthy campaigns in order to gain consumer awareness on the seriousness of obesity. This is because obesity is the underlying factor for chronic disease such as diabetes in Malaysia. Malaysia was ranked the sixth in the Asia-Pacific region for obesity and on the top-list in South-East Asian for both obesity and diabetes diseases [20]. There were about three million obese Malaysians and the number is increasing, whereas five million individuals are currently suffering from various degrees of diabetes [21].

**Table 2.** Hypotheses Associated with Natural Functional Foods

	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
(Constant)	0.808	0.586		1.378	0.170		
Experiential Attitude (Perceived Severity)	0.160	0.067	0.173	2.382	0.018**	0.829	1.207
Experiential Attitude (Perceived Susceptibility)	0.119	0.075	0.116	1.591	0.114	0.817	1.223
Instrumental Attitude	0.332	0.082	0.305	4.061	0.000** *	0.773	1.294
Injunction Norm	-0.136	0.092	-0.119	-1.476	0.142	0.669	1.495
Descriptive Norm	-0.009	0.089	-0.008	-0.104	0.917	0.670	1.493
Self-Efficacy	0.289	0.080	0.270	3.605	0.000** *	0.778	1.286
Perceived Control	-0.047	0.086	-0.043	-0.550	0.583	0.716	1.397
R <sup>2</sup>	0.324			Durbin Watson		1.893	
Adjusted R <sup>2</sup>	0.294			F-Test		10.625***	

\*\*\*Significant at 0.01 \*\*Significant at 0.05

#### 4. CONCLUSION

Many companies in Malaysia have seen the enormous potential for the success in the natural functional food market. The number of companies that are showing greater interest in the functional food market is increasing due to the positive performance and favorable prospects for development that is being offered by such market. This study benefits Malaysian local or international food producers, manufacturers, and food marketers by gaining more information and better understanding of the key factors which influence the intentions of the obese consumers in choosing natural functional foods. They can strengthen their marketing plans with the best strategies to reach their target consumers, so that they can maximize the consumer utility and diversify their services. Thus, it is hoped that this study will help the local food manufacturers in functional food industry in order to gain greater market share and compete with their peers in the globally expanding functional food market and provide valuable feedback to promote these products in the local market.

To increase the likelihood of consuming natural functional foods to fight for obesity, the government or institutions can carry-out more effective product awareness programs at exhibitions, trade shows, campaigns, and seminars to introduce the benefits of consuming these foods to the markets. Frequent campaigns or seminars can help establish positive perceptions of the consumers towards natural functional foods. Public relations and advertisements such as magazines, newspapers, direct brochures, television, radio, newsletters, websites, and campaigns can increase the consumer knowledge and understanding on the benefit of consuming natural functional foods. To tackle the public health issues, it is suggested that the government and private-sector should create some basic and applied research programs and educate the consumers on nutritional science. Future study is needed to examine how the marketers develop their marketing and communication strategies in order to deliver the advantages and benefits of natural functional foods to consumers, and how these strategies influence the consumers' purchase decisions.

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