

Consumers' Perception of the Definition and Quality Parameters of Functional Food: A Qualitative Study

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Abstract: Nowadays, functional food products have developed. It was due to the need for daily consumption of foods with positive health benefits. Plenty of literature has discussed functional foods. However, there has not been an established and clear definition of functional food in Indonesia. This research aims to identify the perception of functional foods' consumers regarding the definition and the quality parameters of functional foods. To achieve that objective, this study employed a qualitative research method. Data was gathered through interviews on eleven functional foods' consumers separately to ensure independence. This study used thematic analysis. It was found that eight from eleven informants did not know the term 'functional food.' 'health food' was more familiar. However, they have relatively similar definitions on the concept and the form of functional foods. They all agreed that functional foods could be both fresh and processed. Also, this research has identified 36 parameters of functional food quality from consumers' perception. The government can use this result as an input in defining functional food, creating public education program, and establishing a quality standard for functional foods aside from the objective quality parameter.

1 INTRODUCTION

People awareness of a healthy lifestyle has improved over the years (Ballestrazzi et al., 2011; Kher et al., 2013; Vukasović, 2017). This has caused diet pattern changes (Vukasović, 2017), especially the type of daily foods. People do not only care about nutrition, but also ways to improve health and to reduce the risk of diseases. In this condition, functional food has risen as a food choice.

The consumption of functional food increases every year (Kearney, 2010). It happens in all industrial countries (Kearney, 2010). The demand for foods and beverages that are physiologically beneficial is rising in many countries (Diplock et al., 1999). In addition, research related to functional foods have been widely conducted and published. Even in the food industry, functional foods became one of the most interesting research topics (Annunziata & Vecchio, 2011; Siró et al., 2008).

Unfortunately, although there has been a lot of research related to functional food, as far as the Authors concerned, studies related to consumer perceived quality of functional foods are still limited. Though this is important because the success of functional foods rely on the relationships between

consumers and products (Frewer et al., 2003). Specifically, consumers perception of functional foods quality affects consumers acceptance (Urala, 2005). Most research on functional foods focused on the technical aspect of product (e.g., Ma et al., 2019; Maeda-Yamamoto, 2017; Ramírez et al., 2011; Holdt & Kraan, 2011; Silva et al., 2018), consumer awareness (e.g., Christidis et al., 2011; Gok & Ulu 2019; Bazhan et al., 2017), purchase intention/willingness to buy (e.g., Rezai et al., 2017; Markovina et al., 2011), and consumer attitude (e.g., Markovina et al., 2011; Schnettler et al., 2016).

Another issue related to functional food is there is still no agreed-upon definition of a functional food (Vukasović, 2017; Patch et al., 2004; Krystallis et al., 2008; Veeman, 2002). Scrinis (2008) argued that there was no credible definition of functional food that can distinguish its position with other types of food. In Indonesia, there has not been an established and clear definition of functional food. The term 'functional food' has been omitted from the regulation and functional food was included in 'food with claim' category.

Based on the narration above, this research aims to identify consumers' perception of functional foods that include the definition, the form, the definition of

high-quality functional foods, and the quality parameters of functional foods. This research is a contribution for governments in converging the definition of functional foods that can be approved by stakeholders, educating the public, and formulating functional foods quality standard.

2 METHODS

This study employed a qualitative research method. Data was gathered through interviews on eleven functional foods' consumers separately to ensure independence. Informants represented five age groups, which are 17-19 years old (student age), 20-23 years old (college students age), 24-35 years old (young), 36-50 years old (middle age), and above 50 years old (senior). Each group was represented by at least two informants consisting of one female and one male informant, except for the college student group (only one female). Before each interview began, this study screened the potential informants to ensure that they consumed functional foods in the last month.

Data gathered included informants' demographic profiles, knowledge on functional foods, the definition of functional foods according to them, functional foods they consumed in the last month, the form of functional foods, the definition of high-quality functional foods, and the quality parameters of functional foods. An interview guideline was used as an instrument to guide the data-gathering process. The interviews were also recorded to assist with data analysis.

The demographic profile was analyzed using descriptive statistics. Data related to the definition of functional foods, the definition of high-quality functional foods, and the quality parameters of functional foods were analyzed using a thematic analysis method.

3 RESULTS

Data from the interviews were analyzed. Table 1 shows the informants demographic profile. This study involved five male informants and six female informants. They represented five age groups. The lowest education level was high-school and informants hold various jobs.

Table 2 shows the informants' knowledge on the term 'functional food', the definition of functional foods, the form of functional foods, and the functional food they ate in the last month. Based on the interviews, three out of eleven informants were familiar with the term, while the rest were not. When the interviewer mentioned several product brands which according to the interviewer were functional food products, eight informants said that those were 'health foods'.

The interview results showed that informants have their own ways to define functional foods (some informants call it health foods). However, thematically, functional foods or health foods can be defined as foods or beverages which are physiologically beneficial because they supply the nutrients needed by the body, supply beneficial compounds, promote health, or prevent diseases. Functional foods can be fresh or processed. Based on the interviews, the informants consumed various functional or health foods in the past month, foods and beverages.

Table 3 shows the definition of quality functional foods or health foods according to informants and the criteria they usually used to differentiate between low-quality functional foods and high-quality functional foods. Most of the informants explained the definitions of quality functional foods by describing their criteria or characteristics. The criteria include physical attributes (e.g., taste, texture, density, color, sugar content, calorie, and nutrition) and non-physical attributes (e.g., price, recommendation, image, and label).

Table 1: Informants profile.

Informants	Gender	Age	Education	Occupation
1	Male	17 years old	High school (ongoing)	Student
2	Female	17 years old	High school (ongoing)	Student
3	Male	19 years old	High school	Unemployed
4	Female	22 years old	Bachelor's degree (Hons)	Student
5	Male	30 years old	Bachelor's degree	Civil servant
6	Female	33 years old	Bachelor's degree (Hons)	Entrepreneur
7	Female	28 years old	College Diploma	Employee
8	Male	47 years old	Master's degree	Employee
9	Female	36 years old	Master's degree	Civil servant
10	Male	60 years old	Bachelor's degree (Hons)	Employee
11	Female	62 years old	Bachelor's degree	Retired

Table 2: The definitions of functional foods and forms of functional foods.

Informants	Knowledge of functional foods	Definitions	Forms	Functional foods are eaten in the last month
1	Didn't know, I knew about health foods	Health foods are foods that have good nutrition	Fresh and processed	Probiotic drinks
2	Didn't know, I knew about health foods	Health foods are foods that have good nutrition needed for the body	Fresh and processed	Yogurt, fruit and vegetable juice, probiotic drink, granola bar
3	I knew about functional foods	Functional foods are products that encourage us to be healthy	Fresh and processed	Yogurt, probiotic drink, cereal
4	Didn't know, I knew about health foods	Health foods are foods that are good for our body and can help prevent diseases	Fresh and processed	Fruit juice
5	I knew about functional foods	Functional foods are foods that have health benefits, nutrition, and specific targets	Fresh and processed	Yogurt, cereal, fermented drink, snack bar
6	Didn't know, I knew about health foods	Health foods are foods that do not have negative impacts for our bodies, have balanced nutrition, no MSG, organic, not too oily, not too salty or sugary, and are regarded as a part of a balanced diet	Fresh and processed	Oatmeal
7	Didn't know, I knew about health foods	Health foods are foods with the necessary nutrition, good composition (carbohydrate, protein, vitamin), and fulfil our needs with that good compositions	Fresh and processed	Oatmeal, whole-grain bread
8	Didn't know, I knew about health foods	Health foods are nutritious foods that do not cause diseases like cholesterol and diabetes	Fresh and processed	Omega-3 eggs, yogurt, granola
9	I knew about functional foods	Functional foods are foods that supply beneficial compounds needed for our body, to add compounds to the daily diet	Fresh and processed	Probiotic drink
10	Didn't know, I knew about health foods	Health foods are nutritional foods, which are good for the body	Fresh and processed	Drinks with vitamin
11	Didn't know, I knew about health foods	Health foods are foods that have complete compositions, like carbohydrate and protein needed for our body. We don't need to eat much, but complete	Fresh and processed	Drinks with collagen

Table 4 shows the quality parameters, which are the results of the thematic analysis of functional food or health food definitions, quality functional food or health food, and the distinguishing criteria based on informants' perception. In this study, the functional food quality parameters are limited to quality parameters for functional food in the form of processed food. This is in accordance with the National Agency of Drug and Food Control (BPOM)

provisions that include functional food or food with health claims in certain processed food categories.

Based on the thematic analysis, there are 36 quality parameters of functional foods. Based on the constructs, those parameters can be categorized into nine dimensions of perceived quality, which are health benefits, nutrition, ingredients, production process, regulatory compliance, safety, sensory characteristics, information, and convenience.

Table 3: The definitions of functional foods according to informants.

Informants	Definitions of quality functional foods or health foods	Criteria
1	Quality health foods are foods that can help maintain health	Taste, package, brand, label, health benefit
2	Quality health foods are foods that have good appearance, healthy composition, and belongs to a brand that is famous for its good image	Appearance (package), texture, sugar content, physiological effect, nutrition content, density
3	Quality functional foods are the ones that have been approved by Badan Pengawas Obat dan Makanan or BPOM (National Agency of Drug and Food Control) (tested)	Taste, health benefit
4	Quality health foods are products which health benefits are intact when they reach consumers hands and consumers can feel the benefits of consuming those products, (they are also recommended)	Claim, benefits, recommendation
5	Quality functional foods are products that have been approved by BPOM (tested)	Taste, halal certificate, price, image, test results, nutrition content, package, practicality
6	Quality health foods are products that belong to a long-standing brand, products that contain the necessary nutrition, filling, and affordable.	Label, ingredients, physical appearance: freshness & color, calorie, sugar content, variation, density, naturalness, purity, taste, physiological impact, not an allergen, texture, aroma, easiness in cooking
7	Quality health foods are natural, homemade (better than processed foods) and cooked/made with healthy ways	Taste, sugar content, calorie, nutrition, protein, satiety index, naturalness, texture, ingredients, freshness, can be consumed by anybody
8	Quality health foods are healthy, do not cause any disease, low in calorie, and low in sugar	Freshness, taste, hygiene, expired date, calorie, sugar content, physiological benefit, side effects (do not cause diseases), package, texture
9	Quality functional foods are tasty and physiologically beneficial. They have health claims and data to support them	Taste, benefits, claims and data, recommendation
10	Quality health foods are foods with many vitamins and nutrition. They are tasty and their package designs are interesting and built using good materials. They give adequate information on the package and they have nice aroma	Vitamin and nutrition, taste, package (material, design, and information), aroma
11	Quality health foods are natural foods. They were not excessively processed and did not have negative effects on our body	Naturalness, health benefits (including disease prevention), conformity with self-needs, negative effects, processing (was not excessively processed)

Table 4: Functional Food Quality Parameters.

No	Quality Parameters (The food...)	Quality Dimensions
1	Has clear health benefits claim	Health benefits
2	Is supported by strong evidence/data that it has health benefits	
3	Has a proven claim	
4	Has a positive real physiological impact after consumption	
5	Contains specific functional components that have special functions to maintain health	
6	Fulfills my health need	
7	Has many vitamins and minerals	Nutrition
8	Does not have to be consumed in large quantity, but provides high nutrition	
9	Has complete nutrition	

Table 4: Functional Food Quality Parameters. (Cont.)

No	Quality Parameters (The food...)	Quality Dimensions
10	Is low in salt, sugar, and fat	Ingredients
11	Has a healthy composition	
12	Has safe materials	
13	Uses minimum artificial/chemical additives	
14	Uses many natural ingredients	
15	Has been through a healthy and hygienic production process	Production process
16	Has not been excessively processed	
17	Has official approval	Regulatory compliance
18	Has passed tests from an independent laboratory	
19	Has certification to ensure quality, safety, and halal status	
20	Does not cause an allergic reaction or negative effects	Safety
21	Has a safe package (does not endanger health and food)	
22	Is clean and hygienic	Sensory characteristics
23	Has a high satiety index and hydrating	
24	Is tasty	
25	Has many flavours	
26	Has a suitable texture	
27	Has a pleasant aroma	
28	Has an interesting and natural colour	
29	Has an interesting appearance	
30	Has an interesting and good packaging	
31	Has an appropriate picture on the package/add	Information
32	Has a complete and easy-to-understand information/label	
33	Can be consumed by anybody	Convenience
34	Is practical	
35	Is easy to find	
36	Is easy to prepare and consume	

4 DISCUSSION

Most informants who engaged in this study were not familiar with the term ‘functional foods’. To them, those foods were ‘health foods’. Informants unfamiliarity might be because the term ‘functional food’ is not used in the current regulation, so the public was not aware of it.

In this study, the informants defined functional foods (or health foods) in various ways. Various definitions of functional food are also found in the literature (Vukasović, 2017; Patch et al., 2004; Krystallis et al., 2008; Veeman, 2002). Based on thematic analysis, functional foods (or health foods) according to informants are foods which offer health benefits by fulfilling nutritional needs or other beneficial compounds, promoting health, and preventing diseases. Furthermore, all informants in this study agreed that both fresh and processed foods could be functional (or health) foods. Regardless of its suitability with the concept of functional food in the literature, this study provides a definition of

functional food based on the perception of 11 functional food consumers.

Regarding the quality of functional foods, there were similarities and differences among the informants when they were asked about criteria to evaluate the quality of functional foods. According to the literature on consumer behavior, perceived quality is subjective. Personal factors also influenced consumers (Oude Ophuis & Van Trijp, 1995). Therefore, it is very likely that opinion among informants would be different. It might be because they have different needs and concerns regarding food products. For example, for Informants 1, 3, 5, 6, 7, 8, 9, dan 10, the taste was one of the criteria to evaluate the quality of functional foods. On the other hand, Informants 2, 4, and 11 did not consider it as a quality measure. The first informant group liked tasty foods. Therefore, “taste” became an important quality criterion. The second group did not consider taste as an important factor. They could still tolerate the trade-off between taste with other attributes (for example, health benefits, nutritional needs, etc.).

Quality parameters gathered have been categorized into nine functional foods quality dimensions, which are health benefits, nutrition, ingredients, production process, regulatory compliance, safety, sensory characteristics, information, and convenience.

The dimension "health benefits" measures to what extent functional foods can provide real physiological benefits that match their claims. The dimension "nutrition" evaluates the extent to which the completeness of nutrition, compound, and component of the functional food or health food needed by our body. The third dimension, "ingredients," represents the goodness of content/ingredients of functional or health foods, seen from the level and nature/characteristics. "Production process" evaluates the extent to which the functional food production process can maintain the quality of the product so that it matches its claims. The dimension "regulation" explains to what extent the functional food product complies with the regulation or food standard. "Safety" refers to how safe the food to consume while the "sensory characteristics" dimension illustrates the extent to which functional food is acceptable to human senses or in accordance with the preferences of human senses. The dimension "information" evaluates the completeness, clarity, and suitability of functional food product information provides in its packaging. Finally, the "convenience" dimension assesses how easy the functional food products can be obtained and consumed.

4.1 Theoretical Implication

This study fills gaps in the literature related to the perceived quality of functional foods by providing a definition of functional food according to consumer perception. The definition was formed based on consumers' knowledge of functional food. It is still rarely done by previous research.

In addition, this research also identifies 36 quality parameters of functional food based on consumers' perception and grouping them into nine dimensions. The quality dimensions of functional foods according to consumer perceptions are similar to the quality dimensions of food mentioned by previous studies with more emphasis on the existence of health claims and the proof or the real physiological benefits felt as claimed. For example, health, safety, and sensory attributes were used to measure quality of shellfish by Wang & Somogyi (2018); safety, sensory, convenience, and nutrition were used to measure quality of Kale (*Brassica oleracea* O.) by Lagerkvist et al. (2012); safety, nutrition, and sensory were

quality dimensions of organic and conventional pork according to Grebitus et al. (2011); process quality was a measure of meat products quality in a research by Paustian et al. (2016); ingredients and processing was used to measure quality of specialty food by Calvo-Porrall & Lévy-Mangin (2018); and regulations was a measure of domestic food quality according to Vabø et al. (2016).

4.2 Managerial Implication

This research provides information about consumers' knowledge of functional foods, functional food definition, and functional food quality parameters. The government can use this result as an input in defining functional food, creating public education program, and establishing a quality standard for functional foods aside from the objective quality parameter.

4.3 Future Research

This study has two limitations. First, this study only involved eleven people through convenience sampling. Second, the subjective quality parameters of functional foods were developed only based on informants' perception and have not been empirically tested. Therefore, similar studies involving more consumers are needed to enrich these quality parameters. Aside from that, these quality parameters need to be complemented with quality parameters from the literature and empirically tested in the context of various functional foods to ensure its stability and generability.

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