

# The Impact of Socio-Demographic Profile and Product Identity on Functional Food Acceptance: A Review

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**Abstract** – There is a big demand for healthy food products by the consumer due to the increasing number of non-communicable diseases such as cancer, heart diseases, diabetes, etc. Those kinds of diseases are usually caused by bad nutrition habits. That's why functional food products which consider healthy food became one of the main research interests in both the health and food industries. In this article, we reviewed secondary data collected from journals and other relevant literature trying to find the influencing factors in the acceptance of functional food based on product identity and consumer demographic. Our findings reveal that the functional food novel is still well-unknown in the market and among customers, that's why the influencing factor of acceptance of functional food is still not well determined. In addition, the acceptance of functional food seems to be conditional on educational level, gender, price, ingredients, brand, test, and health information. Our recommendation is, that functional food developmental research and manufacturing companies' research and development departments, as well as their marketing experts, dedicate their resources to developing and communicating to attract customers who have not yet accepted functional foods as a part of their daily diet.

**Keywords** – Functional food, consumer acceptance, socio-demographic profile, product identity.

## 1 Introduction

Cardiac disease, cancer, and diabetes which consider non-communicable diseases are the most general health interest, and these kinds of diseases are usually caused by bad dietary habits that are bounded by unawareness of the influence of high consumption of unhealthy sugar and fat (Dietary Guidelines for Americans 2015-2020, 2015). No doubt, the aged generation has a higher chance to be influenced by the risk of chronic disease, and this became one of the major problems as increasing the number the aged world people (Reinhardt, 2003). However, using food enriched and fortified with such kinds of ingredients of (probiotics, fiber, minerals, antioxidants, and vitamins) which are identified as functional foods has the potential to enhance the physical performance and mental health because it could mini-

mize the chronic disease possibility (Hasler, 2002; Mark-Herbert, 2004; Urala & Lähteenmäki, 2004).

The field of functional food has got the concern of researchers and developers, taking the concentration on food improvement related to health well-being, and technology (Bagchi, 2019). Till now there is no concrete definition and consensus for the term functional food (Alzamora et al., 2005; Siró et al., 2008). According to former studies, the most cited definition of functional food is back to The European Consensus Document which stated that “food can be regarded as functional if it is satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects, in a way that is relevant to either improved stage of health and well-being and/or reduction of risk of disease” (AT et al., 1999)

The lack of knowledge and unbelief in functional foods as innovative healthy products could impact the consumer's willingness to accept such kinds of these products (Siró et al., 2008; Szakály et al., 2019). However, consumers becoming more aware of the quality of the food and the health that they can get from different kinds of food because of the widespread knowledge related to functional food products (Bigliardi & Galati, 2013). That's why it was recommended to highlight the functional food development to match consumer demands (Block et al., 2011).

Many factors such as (product characteristics, socio-demographic factors, psychological characteristics, behavioral characteristics, and physical characteristics) could influence the acceptance of functional food, those factors could be a major obstacle for the market operators in the functional food field when forming a concrete marketing strategy, developing a delicate communication plan, and different promotional tools prepared to enhance the experience of the consumer to adopt the novel functional food (Baker et al., 2022).

in our review, we are focusing on two categories. The first one is the socio-demographic including (age, gender, educational level, householding, and geographic location), and the second category is the product identity including (components and ingredients, price, taste, brand, and health information).

## 2 Methodology

Our review formed according to former studies and articles delves into the field of functional food products and the influencing factors in consumer acceptance toward this kind of product pertaining to socio-demographic profile and product identity. In our review, many search engines were used to support our research goals and target. We used ScienceDirect, Research Gate, Google Scholar, etc. The following keywords were used to search the databases “functional food” AND “socio-demographic” OR “product identity” OR “product characteristic” OR “consumer accept” OR “consumption” OR “consumer willingness to pay” OR “consumer willingness to buy”. These key terms help to reveal the relationship between functional food consumer acceptance and socio-demographic and product identity factors. Our article

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reviewed the articles, books, book excerpts, conference papers, and other miscellaneous publications in the previous 20 years from 2002 to 2022 that focused on our objective. Furthermore, we only included articles written in English; also, we include additional articles referred from the studies and research that have already been reviewed in the same manner.

### 3 Results

#### 3.1 Socio-Demographic Profile

Many studies showed that there is a very strong relationship between socio-demographic profile which is embodied in (age, gender, education level, household, geography, marital status) and the willingness to consume functional food products (Ares & Gámbaro, 2007; Kavoosi-Kalashami et al., 2017; Kljusuric et al., 2015; Kraus et al., 2017; Moro et al., 2015; Ozen et al., 2013; Schnettler et al., 2015; Tung BUI & Duy TUNG, 2015; Verbeke, 2005, 2006).

##### 3.1.1 Educational Level

Undoubtedly, there is a significant relationship between education level and consumer acceptance of functional food (Bekoglu et al., 2016; Ružica Brečić et al., 2014; Büyükkaragöz et al., 2014; Kraus et al., 2017; Szakály et al., 2019). The level of education and knowledge has a strong impact on consumer acceptance of functional food and the way how they think about the food ingredients (Szakály et al., 2019). For example, people with a graduation degree had a higher potential to use functional food (Çakiroğlu & Uçar, 2018). In another word, educated people are correlated with a willingness to consume functional food (Jong et al., 2003). And also survey showed that the respondents are aware of the definition of functional food and the influence of functional food on the body (Balogh et al., 2020a).

##### 3.1.2 Gender

Gender plays an essential role in the acceptance of functional food by consumers and it was shown in most research (Balogh & Kőszegi, 2020b; Kozup et al., 2018; Szab et al., 2021). Most of the studies declared that females are more willing to consume functional food than males (Ružica Brečić et al., 2014; Büyükkaragöz et al., 2014; Çakiroğlu & Uçar, 2018; Plasek et al., 2021; Verneau et al., 2019).

##### 3.1.3 Age

Numerous studies explained the influencing factor of age and consumer willingness to use functional food (Çakiroğlu & Uçar, 2018; Plasek et al., 2021; Verneau et al., 2019). It was shown that aged people have more po-

tential to consume functional foods compared with the young generation (Büyükkaragöz et al., 2014; Siegrist et al., 2008; Verneau et al., 2019). In contradiction, other studies demonstrated that young people 25 years of age were more interested to consume functional food compared with the old generation (Çakiroğlu & Uçar, 2018; Rezai et al., 2012). And another study showed that young 18–25 years and older generation 56 years are interested in consuming functional food (Plasek et al., 2021). This is due to the old generation cares more about their health compared the young generation (Büyükkaragöz et al., 2014; Siegrist et al., 2008). and the explanation for that the young generation is more open-minded to the innovation of functional food (Carrillo et al., 2013).

#### **3.1.4 Household Characteristics**

Household characteristics such as size and income are one of the main demographic factors that have a strong relationship with the acceptance of using functional food (Corso et al., 2018; Plasek et al., 2021), and the willingness to pay for the functional food was strongly connected with the consumer higher income (Corso et al., 2018; Jelena Filipovic, 2013; Rezai et al., 2012; Szakály et al., 2019). Another factor that influences the consumer acceptance to buy functional food is the size of the family (Plasek et al., 2021). In general, families with fewer members (2 persons) showed more tendency to buy and consume functional food compared with large size families members (Markovina et al., 2011; Plasek et al., 2021). However, this was contradictory to a study conducted in Malaysia that show that a family size with 5-6 members was more willing to buy functional food (Phuah et al., 2015).

#### **3.1.5 Marital Status**

Not many studies determined the relationship between the influence of marital status and the acceptance of functional food products (Baker et al., 2022). One of the studies debated that single people showed more susceptibility to pay and consume functional food compared with married people (Bekoglu et al., 2016). and also, respondents from Malaysia showed that those who were more accepting to buy functional food were married and have children under 18 years old (Phuah et al., 2015). And another study showed that married consumers or widowed ones were more tendencies to consume functional food which is contradictory to divorced single consumers (Moro et al., 2015).

#### **3.1.6 Geographic Location**

Geographic location could be a very important influencing factor in identifying consumer acceptance of functional food (Kljusuric et al., 2015). The study of Balogh et al., (2020b) showed that there is a positive connection between the consumption of functional food and the area of the respondent,

which declares that most who show a tendency to consume functional food many times per week lives in the urban area. however, another study showed that most of the respondent who consumes functional food lives in a countryside town (Plasek et al., 2021). Furthermore, regarding answers to satisfaction with consuming functional food products were mostly female respondents with high income who more likely lives in cities (Balogh et al., 2020b).

### 3.2 Product identity

Many studies revealed the relationship between consumer acceptance of functional food and the product identity that is summarized in components and ingredients, price, taste, brand, and health information (Balogh & Kőszegi, 2020b; Ruzica Brečić et al., 2017; Jahn et al., 2019; Szab et al., 2021).

#### 3.2.1 Price

Many former studies reported that the price influences the willingness to consume functional food (Ares et al., 2010; Büyükkaragöz et al., 2014; Miroso & Mangan-Walker, 2017). In the first place, consumers prefer to buy functional food at a fair price and receive expected health benefits (Büyükkaragöz et al., 2014; Huang et al., 2019; Jelena Filipovic, 2013). Price has a contradictory influencing factor in consumer point of view: the first point of view is that low price means low quality and low consumer purchasing intention, and the second point of view is that higher price means higher perceived quality and increasing purchasing intention (Ares et al., 2010; Huang et al., 2019; Jaeger, 2006). In some cases, if the consumers are more concerned with a healthy lifestyle, they could be more tolerant of higher prices (Ares et al., 2010). And it was shown that a consumer who cares more about their health didn't mind paying an extra cost to get the expecting health from using functional food products (Pappalardo & Lusk, 2016).

#### 3.2.2 The Combination and Ingredients

It was found that strong relationship between a functional food component and willingness to pay to obtain these products because of increasing perceived nutrition value and the expectation to receive it positively in their health (Szakály et al., 2019). Furthermore, consumers preferred to use functional foods that include naturally enriched components (Ares & Gámbaro, 2007; Jahn et al., 2019). And also, consumers consider that there are naturally healthy foods such as yogurt which are more healthy than harmful foods such as spreads (Bech-Larsen & Scholderer, 2007). In addition, it was shown that the attitudes toward functional food were indirectly influenced by beliefs about nutrition throughout the information that was given about functional food (Szakály et al., 2019).

### 3.2.3 Brand

Many studies proved that there is a significant relationship between brand and functional food acceptance and selection (Ares et al., 2010; Bimbo et al., 2018; Miroso & Mangan-Walker, 2017). In general, customers are more willing to consume functional food if they already know this brand and they experienced it before (Miroso & Mangan-Walker, 2017). And also, consumers who are aware of the most famous brands have more potential to accept and use functional food (Miroso & Mangan-Walker, 2017).

### 3.2.4 Taste

The influencing factor of taste has a high impact on consumer preference and got a major concern in former studies (Moons et al., 2018; Temesi et al., 2019). In some cases, the factor of taste could be more favorable for the customer than the health perceived benefits (Moons et al., 2018). And also, consumers are not able to sacrifice the taste of the food to obtain health (Lyly et al., 2007; Moons et al., 2018; Temesi et al., 2019).

### 3.2.5 Health Information

The health information that can be found on the product label has a very important role in the acceptance of functional food products (Kozup et al., 2018). This information can enhance the consumer expectation that they can receive from consuming functional food (Marette et al., 2010). It was explained that the health information about functional food that could not be understood by consumers was less acceptable to be consumed (Ahn et al., 2016). And also it was found that the more provided information about the advantage of lowering cholesterol the more interested the consumer to buy yogurt with functional characteristics (Marette et al., 2010).

## 4 Discussion

In our literature review, we are discussing the influencing factors in consumer acceptance of functional food products for a better understanding of market opportunities and improvement. In addition, discovering and explaining the main market research that has been found in previous studies and reports that are related to socio-demographic and product identity.

It's very important to study carefully the factor of socio-demographic and product identity before releasing a new product on the market. For example, most who consider functional food expensive because they don't have a high income and they don't have adequate purchasing power (Balogh et al., 2020). And in another case the same that was found in Sri Lanka, consumers care more about the price of functional food than the health benefits that they obtain from consuming healthy food (Nayana et al., 2020). No doubt, people prefer high-quality products, but high quality is associated with higher prices considered the main player, that's why the majority of the people are

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not able to do financial sacrifices to get expensive healthy food due to the inability to buy it (Balogh & Kőszegi, 2020), and this explains how a customer with higher incomes have more ability to afford to pay extra costs to buy higher quality food products (Carrillo et al., 2013). that's why market players and industries should find pricing strategies to make functional food suitable for all customer segments covering all household sizes and incomes.

Labeling should be carefully designed and considered by marketing professionals and industries of a functional food because in some cases, showing scientific complicated information about the functional food products reduced the potential to buy these kinds of products by consumers (Marette et al., 2010). For example, in a study analyzing the impact of labeling functional food products (simple name vs. scientific name) on consumer comprehension and acceptance to buy dairy functional food, it was shown that using simple familiar names such as fiber had the potential to increase consumer acceptance to buy and willingness to use functional food compared with using a scientific name such as b-glucan (Ares et al., 2009). Thus, providing labels with health information easy to understand by consumers can enhance the consumer acceptance of functional food.

The studies showed that brand has an important factor in influencing consumers' acceptance of functional food (Bimbo et al., 2018; Miroso & Mangan-Walker, 2017), and also packaging has an essential role in the decision-making of accepting and choosing functional food brands (Pramudya & Seo, 2019). Research proved that the estimation of health effects is determined by many extrinsic factors (Rao & Monroe, 2018). In many cases, brands tend to indicate the composition and properties, and health expectations of the products by using the shape, color, and packaging of the products (Plasek et al., 2021). Our suggestion is, that brands need to focus more on consumer behavior and health perception by using healthy products, and how to show their brand is better than the competitors in the market, in this case, consumers can trust this kind of product and increase the acceptance of functional food.

Ingredients and the combination should be informed by functional food industry experts because it was found that consumers perceived suitability toward functional food that includes a component that is already known before and used to consume (Krutulyte et al., 2011). In addition, consumers of lactose-free dairy products, also seek to get products rich in calcium, fiber, and vitamins and also free of sugar and gluten (Szab et al., 2021). Furthermore, consumers preferred to use functional foods that include naturally enriched components (Ares & Gámbaro, 2007; Jahn et al., 2019). Thus, informing consumers with information about ingredients could increase their purchasing experience and increase their trust in functional food products.

Geographic location still confusing and doesn't give a clear answer regarding accepting functional food. The study of Balogh et al., (2020b) showed that consume functional food many times per week lives in the urban area this is contradictory to a study that found most of the respondent who consumes functional food lives in a countryside town (Plasek et al., 2021). This inconsistent result could be attributed to different kinds of func-

tional food that might be preferred by different locations or nationalities (Kraus et al., 2017).

Higher education level is connected with higher acceptance of functional food (Szab et al., 2021). Furthermore, It was shown that a higher level of knowledge of the consumer and income level not only increases The acceptance to buy functional food and the willingness to pay to consume functional food but also increases the purchasing number of functional food (Szakály et al., 2019), and a lot of people know about functional food from the internet because it's the fastest way to gate information in this era (Balogh et al., 2020b). however, here we can see also missing market gap doesn't cover low educated consumers. That's why spreading the knowledge and education between all customer levels could also enhance their health care and awareness leading to an increase in the acceptance of using healthy products.

Females showed dominance in consuming and willing to pay for functional food compared with males, this is due to females generally responsible to prepare the food for their families, running the household, and they buy the food for their house by themselves (Balogh & Kőszegi, 2020b; Bech-Larsen & Scholderer, 2007; Kozup et al., 2018). while males prefer to do shopping with a companion, which makes females the decision-maker in buying household products (Szab et al., 2021). and also, another reason that females care more about their health and they have more ability to pay extra money to keep themselves in a healthy lifestyle and consume healthy food (Szab et al., 2021). That's why functional food marketing experts should find a way to involve males in purchasing this kind of product by providing tools or online platforms to make the buying experience easier for them.

## 5 Conclusions

The increasing rate of the problem is caused by non-communicable diseases, especially among the aging generation (Reinhardt, 2003). Thus, the functional food industry started to bloom due to the high demand for healthy food (Phuah et al., 2015). However, Analyzing the influencing factors of functional food on consumer acceptance should be more studied before and after releasing this kind of product. The acceptance of functional food seems to be conditional on educational level, gender, age, household character, marital status, geographic location, price, ingredients, brand, test, and health information. That's why, it is recommended that both functional food developmental research and manufacturing companies' research and development departments, as well as their marketing experts, dedicate their resources and communicate to develop functional food products due to their importance for sustainability and healthy life which could increase the credibility of the health claims of functional food products and attract a large population of consumers. And it would mean a huge potential market for companies producing functional food if this large segment of non-health-conscious customers who have not yet accepted functional foods as a part of their diet became more involved.

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