The Effect of Self-characteristics on the Intention to Consume Functional Foods

Sik Sumaedi, Nidya J. Astrini, Tri Rakhmawati, I Gede Mahatma Yuda Bakti and Medi Yarmen
Indonesian Institute of Sciences, Jakarta, Indonesia

Abstract: In the consumer behavior literature, self-characteristics were factors that need to be considered by companies so they could successfully market their products. A consumer has many self-characteristics variables. Companies must identify certain characteristics that merit their attention. This research aims to test the effect of two self-characteristic variables; innovativeness and cosmopolitan lifestyle on the intention to consume functional food that can prevent hypertension. The research was conducted using a quantitative research design. The data was gathered through a survey with a questionnaire. The respondents were thirty undergraduate students from the international class of a public university in Indonesia. The data analyses process included validity and reliability tests and multiple regressions test. The results show that innovativeness and cosmopolitan lifestyle did not have an impact on the intention to consume functional foods that can prevent hypertension.

1 INTRODUCTION

Generally, the functional food market is growing worldwide. People's awareness of the importance of healthy life style was a contributing factor to this growth (Adadi et al., 2019; Siró et al., 2008). That awareness has spurred the demand for functional food products (Adadi et al., 2019; Siró et al., 2008).

Even though the market is growing, it does not mean that every functional food that ever-set foot in a market successfully accepted (Siró et al., 2008). Siró et al. (2008) revealed that functional food companies faced a serious dilemma. In one hand, the development of functional foods required significant capital. On the other hand, functional food products did not last long in the market.

As a processed-food, a functional food product does not only compete with other functional food products but also with other processed foods. For example, a functional biscuit would face competition from other functional biscuits and traditional biscuits. In terms of taste and price, functional foods were having a hard time competing with conventional foods. Therefore, the risk of failure was considerable.

According to the narration above, one of the challenges faced by functional food companies was ensuring that the products they developed can compete in the market. In the marketing literature, it is a common knowledge that when a company is developing a product, it must also ensure that the product would be accepted and consumed (Kotler & Keller, 2011). In order to identify potential consumers, a company needs to pinpoint consumers' characteristics that match the product's function. In other words, the company must have a clear target, so that its product can win the competition (Kotler & Keller, 2011). Thus, in the context of functional food products, a functional food company must be able to recognize its potential consumers' characteristics during the product development process.

A consumer has numerous self-characteristics. Generally, self-characteristics that are easy to identify are the demographic profiles, like gender, locations, marriage status, and age (Solomon, 2012). Aside from that, a consumer also has social-psychological characteristics, which are harder to recognize, such as their cosmopolitanism and innovativeness (Solomon, 2012; Rogers, 1983; Vandecasteele & Geuens, 2010; Bartles & Reinders, 2011). Functional food companies need to identify what kind of characteristics that need to be considered for mapping their consumers and pinpoint the segment that most likely would accept their product. Thus, a research that investigates the relationship between consumers'

self-characteristics and their intention to consume functional foods is important to be performed.

1.1 Previous Research and Research Gaps

Previous studies have investigated the self-characteristics of functional food consumers. Table 1 shows some of the studies.

From the explanation above, it can be seen that the previous studies related to self-characteristics tended to focus on the demographic profile. On the other hand, it is widely known that two persons with similar demographic profiles might have different intention to consume. For example, two 17-years old girls can

have different intention to consume food products during lunch.

Demographic characteristics are relatively straightforward to identify. However, socio-psychological characteristics might create different intention to consume between two people even when they share the same demographic characteristics.

Functional food products can be considered as innovative products (Bigliarda & Galati, 2013). This condition tends to attract certain consumer types. In the literature, consumers' self-characteristics that correlate with innovation are cosmopolitanism and innovativeness. Cosmopolitanism shows to what extent someone was exposed to views/culture/lifestyle beyond his or her environment

Table 1: Examples of studies on the self-characteristics of functional food consumers.

Author(s)	Functional food type	Sample	Self-characteristics studied	
			Demographic	Socio-psychological
Chammas et al. (2019)	Cereal bars, protein bars, protein shakes and prebiotic yogurt	251 respondents in Lebanon	Age, gender, educational level, marital status, living location, monthly income and health status	-
Christidis et al. (2011)	Functional food with functional component that relates to Calcium, fiber, vitamin D, Omega-3 fatty acids, Antioxidants, Whole grain products, Phytosterols, and Probiotics	154 respondents in the city of Thessaloniki	Gender, age group (years), and education level	
Goetzke & Spiller (2014)	Low-fat baked goods, low-sugar baked goods, light products (low-fat or sugar), probiotic foods, oils with added vitamins or omega-3 fatty acids, and sport and fitness drinks	An online survey of 500 German consumers	-	Wellness lifestyle
Kljusuric et al. (2015)	Functional food concept	687 respondents in Croatia	Geographical region	-
Kraus (2015)	Functional food with 15 functional component	200 respondents at the "MEDYK" medical centers in Rzeszow and Lancut	-	Motivation
Brečić et al. (2014)	General functional food	424 respondents in Croatia	Age, number of household member, number of children in household, gender, educational achievement, and agricultural household	Perceived standard of living, motivation
Schnettler et al. (2015)	Functional food with 18 different benefits	400 people in southern Chile	The size of family, presence and age of children at home, ethnic origin, education, and socio-economic status	-
Stratton et al. (2015)	General functional food	200 respondents in Canada	Age, gender, education, and income	Food neophobia

(Rogers, 1983), while innovativeness represents someone's tendency to adopt new things (Vandecasteele & Geuens, 2010; Bartles & Reinders, 2011). Thus, cosmopolitanism and innovativeness are predicted to have a relationship with the intention to consume functional foods. Unfortunately, until this time, there has not been a study that investigated consumers' cosmopolitanism and innovativeness in the context of functional food.

1.2 Research Objective and Hypotheses

To fill the gaps in the literature, this study aims to:
▪ Test the validity and reliability of the measurement instruments for cosmopolitanism and innovativeness in the context of functional foods
▪ Test the effect of cosmopolitanism on the intention to consume functional foods
▪ Test the effect of innovativeness on the intention to consume functional foods

2 MATERIAL AND METHODS

2.1 Variables and Indicators

This research uses three main variables, 'cosmopolitanism,' 'innovativeness,' and 'intention

to consume functional foods.' These variables are abstract variables, so they need to be measured using observable variables. Abstract variables are measured using statement indicators gathered from previous studies to ensure their content validity (Buil et al., 2012). Table 2 shows the operational definitions and the leading indicators of this research.

2.2 Functional Food Type

Similar to previous studies, this research was being limited to one type of functional food, which was functional foods that can potentially prevent hypertension, like yogurt, dark chocolate and low-fat milk.

This type of food was chosen because of the rise of hypertension in Indonesia (Ministry of Health of the Republic of Indonesia, 2018) and this type has not received wide coverage in the consumers' self-characteristics studies.

2.3 Data Collection

The data-gathering technique was a survey. This study utilized questionnaires as instruments. The respondents were 30 students of an international class in a public university in Indonesia. The respondents were recruited in a university class. To avoid bias and gain appropriate perception, respondents were

Table 2: Operational definitions and statement indicators.

Variable	Operational Definition	Statement indicators
Intention to consume functional food	The level to what extent someone would be willing to consume functional foods in the future	I plan to consume functional foods in the future (X1)
		I hope I can consume functional foods (X2)
		I want to try functional foods (X3)
Cosmopolitanism	To what extent someone was exposed to views/culture/lifestyle beyond his or her environment	I enjoy sharing ideas with people from other culture or regions (X4)
		I am interested to learn about people from other culture or live in other regions (X5)
		I like being with people from other culture or regions to learn about their views and approaches (X6)
		I like observing people from other culture or regions to see what I can learn from them (X7)
		I like learning about other ways of life (X8)
Innovativeness	The level of self-characteristics that shows how eager someone to adopt something new	Compared to my friends, I often buy more new foods/beverages (X9)
		In my circle, usually I am the first one to know about new foods (X10)
		In my circle, usually I am the first one to buy new foods/beverages (X11)
		When I heard about new foods/beverages, I was instantly interested (X12)
		I am the type of person who's willing to buy new foods/beverages even though I haven't tried them before (X13)
		I am the type of person who's buying new foods/beverages before someone else did (X14)

Source: Adapted from Rogers (1983), Ajzen (1991), Vandecasteele & Geueens (2010), Bartles & Reinders (2011).

engaged in this study on their own volition. The demographic profile can be seen in table 3.

This questionnaire has three parts, which are the information related to functional foods that can potentially prevent hypertension including product examples, demographic profiles (see table 3), and questions related to consumers' assessment on cosmopolitanism, innovativeness, and the intention to consume functional foods (table 2). Respondents were required to evaluate to what extent they agreed with the statement indicators. The scale was 1 to 5. The '1' being 'extremely disagree' and the '5' being 'extremely agree.'

Table 3: Demographic profile.

Parameter	Categories	%
Gender	Male	60
	Female	40
Age	≤ 18 years old	3.4
	19 years old	6.9
	20 years old	62.2
	≥ 21 years old	27.5
Residency status	With family (Father/Mother)	90
	Dormitory	10
Monthly allowance	<IDR600,001	6.9
	IDR600,001-IDR1,200,000	17.2
	>IDR1,200,000	75.9

2.4 Data Analysis

A two-step analysis was done. First, validity and reliability tests of the research instrument. Factor analysis and Cronbach's α were employed to test the validity and reliability. The threshold values used can be seen in table 4. The result of the first step is used to answer the first research question.

Table 4: Threshold values for validity and reliability test.

Parameters	Criteria	Threshold
Reliability	Cronbach's α	≥ 0.6
Validity	Standardized factor loading (SFL)	≥ 0.5

Source: Hair et al. (2006), Lai & Chen (2011), Sekaran & Bougie (2010).

Second, multiple regressions analysis was performed. The independent variables were 'cosmopolitanism' and 'innovativeness,' and the dependent variable was 'intention to consume functional foods.' The significance level used was 10%. The independent variables were deemed as significant if it equals to or below 10%. (Hair et al., 2006, Sekaran & Bougie, 2010).

3 RESULTS

3.1 Validity and Reliability Test

Table 5 shows the results of the validity and reliability tests. Based on the results, this study considered that the validity and reliability criteria had been met. The research instrument was valid and reliable.

Table 5: The results of validity and reliability tests.

Variable	Indicator	SFL	Cronbach's α
Intention to consume functional food	X1	0.878	0.762
	X2	0.920	
	X3	0.669	
Cosmopolitanism	X4	0.776	0.818
	X5	0.671	
	X6	0.927	
	X7	0.831	
	X8	0.619	
Innovativeness	X9	0.661	0.722
	X10	0.703	
	X11	0.716	
	X12	0.614	
	X13	0.556	
	X14	0.674	

3.2 Multiple Regressions Analysis

The result can be seen in table 6. From it, this study concluded that cosmopolitanism and innovativeness have a positive, but insignificant β. This shows that cosmopolitanism and innovativeness did not have significant impacts on the intention to consume functional foods.

4 DISCUSSION

The first discovery of this research showed that the research instrument used to measure cosmopolitanism and innovativeness proposed by this research was valid and reliable to be used in the context of functional foods research. This finding implicated that the instrument can be used by functional food companies for mapping the cosmopolitanism and the innovativeness of their target consumers. Knowledge on this would also be helpful for companies in developing a marketing strategy. Aside from that, for researchers and other academics, a valid and reliable measurement instrument can be used to learn functional foods phenomena related to cosmopolitanism and innovativeness.

Table 6: The results of multiple regressions analysis.

Independent Variable	Regression coefficient	Standard error of coefficient	Standardized regression coefficient (beta)	t value	Statistical significance
Intercept	-0,138	0.188		0.000	1.000
Cosmopolitan	-0.037	0.195	-0.037	-0.188	0.852
Innovativeness	0.095	0.195	0.095	0.490	0.628
R2 = 0.009					
F value = 0.125					
P level = 0.883					
Dependent Variable : Intention to consume functional food					

The second finding indicated that cosmopolitanism did not have a significant effect on the intention to consume functional foods. This means people with high cosmopolitanism and low cosmopolitanism have a similar tendency to consume (or not to consume) functional foods. The development of functional foods products can target consumers with both low and high cosmopolitanism.

The third finding indicated that innovativeness did not significantly affect the intention to consume functional foods. This means that consumers with high and low innovativeness have a similar tendency to consume functional foods. For companies, it implies that consumers with both high and low innovativeness can be targeted.

Simultaneously, the second and the third findings signified that the market for functional foods would grow even though the potential target market was neither consisted of people who are easily exposed to culture/value/experience beyond their current environment nor people who like to try new things. Functional food companies should not be careless in the investment of product development by focusing on people who tend to be exposed to new culture/value/experience or people who like to try new things.

Even though this study has generated interesting findings and provided important implications, there are still unfinished agendas. First, this research found that cosmopolitanism and innovativeness did not have significant impacts on the intention to consume functional foods. However, this research has not deeply investigated the reasons behind this insignificancy.

Second, in addition to exploring reasons behind that finding, this research also raised a question on the threshold of 'the innovativeness of functional foods,' so it can be perceived as new. The insignificancy might be caused by a perception that functional foods are not new or innovative. Another question arose. Would cosmopolitanism and innovativeness pose significant impacts on the intention to consume if they were applied to other types of functional food? This study has not been able to answer this question since it only dealt with one type of food.

ACKNOWLEDGEMENTS

REFERENCES

Ajzen, Icek, 1991. The Theory of Planned Behaviour. Organizational Behaviour and Human Decision Processes, 50 : 179 – 211.

Adadi, P., Barakova, N. V., Muravyov, K. Y., Krivoshapkina, E. F., 2019. Designing selenium functional foods and beverages: A review. *Food Research International*, 120: 708-725.

Bartels, J., Reinders, M., 2011. Consumer innovativeness and its correlates: A propositional inventory for future research. *Journal of Business Research*, 64: 601–609.

Bigliardia, B., Galati, F., 2013. Innovation trends in the food industry: The case of functional foods. *Trend in Food Science & Technology*, 31: 118-129.

Brečić, R., Gorton, M., Barjolle, D., 2014. Understanding variations in the consumption of functional foods – evidence from Croatia. *British Food Journal*, 116(4): 662-675.

Buil, I., Chernatony, L., Martinez, E., 2012. Methodological issues in cross-cultural research: An overview and recommendations. *Journal of Targeting Measurement and Analysis for Marketing*, 20(3-4): 223-234.

Chammas, R., El-Hayek, J., Fatayri, M., Makdissi, R., Bou-Mitri, C., 2019. Consumer knowledge and attitudes toward functional foods in Lebanon. *Nutrition & Food Science,* 49(4): 762 - 776.

Christidis, N., Tsoulfa, G., Varagunam, M. Babatzimopoulou, M., 2011. A cross sectional study of

consumer awareness of functional foods in Thessaloniki, Greece. *Nutrition & Food Science*, 41(3): 165–174.

Goetzke, B. I., Spiller, A., 2014. Health-improving lifestyles of organic and functional food consumers. *British Food Journal*, 116(3): 510 – 526.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., 2006. *Multivariate data analysis*. 5th ed. Prentice-Hall, New Jersey.

Kljusuric, J. M., Cacic, J, Misir, A., Cacic, D., 2015. Geographical region as a factor influencing consumers perception of functional food – case of Croatia. *British Food Journal*, 117(3):1017-1031.

Kotler, P., Keller, K., 2011. *Marketing Management*. Prentice Hall, NJ.

Kraus, A., 2015. Factors influencing the decisions to buy and consume functional food. *British Food Journal*, 117(6): 1622-1636.

Lai, W., Chen, C., 2011. Behavioral intention of public transit passenger – the role of service quality, perceived value, satisfaction and involvement. *Transport Policy*, 18: 318-325.

Ministry of Health of the Republic of Indonesia, 2018. *Hasil Utama Riskesdas*. Ministry of Health Republic of Indonesia, Jakarta.

Rogers, E. M., 1983. *Diffusion of innovations*. Macmillan Publishing Co., Inc., London.

Schnettler, B., Miranda, H., Lobos, G., Sepulveda, J., Orellana, L., Mora, M., Grunert, K., 2015. Willingness to purchase functional foods according to their benefits. *British Food Journal*, 117(5): 1453-1473.

Sekaran, U., Bougie, R., 2010. *Research Methods for Business: A Skill Building Approach*. 5th ed. Wiley, Chichester.

Siró, I., Kápolna, E., Kápolna, B., Lugasi, A., 2008. Functional food. Product development, marketing and consumer acceptance - A review. *Appetite*, 51(3): 456–467.

Solomon, M. R., 2012. *Consumer Behavior: Buying, Having and Being*. Prentice Hall, London.

Stratton, L., Vella, M., Sheeshka, J., Duncan, A., 2015. Food neophobia is related to factors associated with functional food consumption in older adults. *Food Quality and Preference*, 41: 133-140.

Vandecasteele, B., Geuens, M., 2010. Motivated Consumer Innovativeness: Concept, measurement, and validation. *International Journal of Research in Marketing*, 27(4): 308–318.