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Where is the Potential for Alternative Food Growth Coming from and How Can It Positively Impact Our Environment?

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Abstract

The alternative food market has attracted much attention due to concerns about climate change, increasing consumer awareness of value consumption, and the development of the Food-Tech industry. This study aimed to analyze the factors that drive consumers to purchase alternative food products and identify the mechanisms that can induce consumers to continue buying. We surveyed 1,200 consumers and estimated data using a logit model. The results showed that the presence of vegetarians in the household, environmental concerns, a vegetable-oriented diet, and a mixed diet of meat and vegetables were positively associated with purchasing plant-based alternatives. Of particular interest was the non-linear relationship between respondents' age and their purchasing experience with plant-based options, with the likelihood of purchasing alternatives increasing with age from the mid-50s onward. These findings suggest that in addition to the growing number of consumers who share the environmental value, which leads to increased interest in and purchase of plant-based alternatives, alternative foods are also health-oriented and meet the needs of older consumers, who are becoming an increasingly important segment of the super-aged society, suggesting the potential for continued growth in the alternative food market.

Key words: alternative foods, purchase decisions, health, super-aged

Introduction

The significant growth of the Food-Tech industry has been driven by the global food crisis caused by the explosive growth of the world's population, the expansion of non-face-to-face demand for food-related products due to the pandemic, and concerns about global warming (Park et al., 2019; Jang, 2020; Park et al., 2020; Hong et al., 2023). Numerous studies have highlighted the dangers of a meat-based diet that negatively impacts environmental sustainability and emphasize the need for a shift to plant-based products (Poore & Nemecek, 2018; Sun et al., 2022). In this regard, the alternative food sector in the Food-Tech industry is attracting significant attention as a replacement to traditional meat foods as consumers become more aware of values-based consumption, which is based on environmental beliefs and personal preferences, and the market is growing globally (Hong et al., 2023). The global alternative food market size has increased from USD 14.2 billion in 2021 to USD 17.3 billion in 2023, and is expected to grow at a CAGR of 13.0% to reach approximately USD 40.7 billion by 2030 (Meticulous Research, 2023). In terms of the size of the alternative food market by country, the U.S. accounted for 24.4% of the total market with $1.47 billion in 2020, followed by the U.K. with 10.8% and Germany with 5.1% (aT, 2021).

The domestic alternative food market has been also growing steadily, and many leading food distribution and manufacturing companies, such as Lotte, Shinsegae Food, Nongshim, Pulmuone, and CJ CheilJedang, have been actively investing in R&D and launching various plant-based meat alternatives (Hong et al., 2023). The Ministry of Agriculture, Food and Rural Affairs (MAFRA) has expanded the Food-Tech budget to KRW 63.9 billion in 2024, an 11% increase from last year, and create new food tech research centers in three areas: plant-based alternative foods, food robots, and food upcycling (MAFRA, 2024).

In recent years, environmental protection, rising vegetarianism, and expanding value consumption have been cited as key factors driving the growth of the alternative food market, but the question still remains: what is really driving the growth of the alternative food market? According to the 2023 Food Consumption Behavior Survey Report of the Korea Rural Economic Institute (KREI), diet or health reasons (65.5%) are the main reasons for maintaining vegetarian lifestyle, outweighing those related to

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environmental and ethical values (34.4%). As such, the alternative food market can be influenced by a wider range of factors, and as South Korea's society becomes super-aged, individual health concerns as well as value consumption are expected to become more important growth factors.

There is a growing body of national and international research on alternative foods. Studies analyzing consumption patterns of alternative foods have found that consumers' preference for plant-based meat alternatives is higher among younger, higher-income, and more educated consumers (Van Loo et al., 2020; Neuhofer & Lusk, 2022). There are also regional differences in acceptance of alternative foods, with Bryant et al. (2019) showing significantly higher acceptance of cultured and plant-based meat alternatives in China and India compared to the United States. Choice experiments on meat substitutes have shown that consumers' preferences for the substitutes are very low (Apostolidis & McLeay, 2016; Van Loo et al., 2020). However, food attribute information has been shown to make a difference in the preference of meat substitutes, with Zhou et al. (2022) finding that providing product attributes such as traceability and safety certification leads to higher preference and willingness to pay for plant-based beef patties. Park et al. (2019) found that ethical consumption and concern for animal welfare were the main factors influencing future intention to consume alternative foods, while Hwang et al. (2020) showed that sustainability and food curiosity positively influenced consumers' willingness to pay for plant-based meat alternatives. Byun & Yoo (2022) showed that health, food safety, and environmental concern are the main determinants of willingness to pay for plant-based meat substitutes, and that vegetarians' preference for plant-based meat substitutes is not as high as the media emphasizes. Sim et al. (2022) analyzed whether individual consumption values (functional, environmental, and ethical) affect consumers' positive attitudes and purchase intentions toward meat alternatives, and found that all consumption values had a significant effect on positive attitudes and purchase intentions toward meat alternatives. Later, Sim et al. (2023) investigated the effects of these values on customer satisfaction and repurchase intention, and found that most of the values had a significant and positive effect on customer satisfaction, but not on repurchase intention.

Despite the recent increase in health concerns in the food market and the need for the market to respond to customized diets due to the entry of the super-aged society, many previous studies have analyzed the alternative food market mainly in terms of sustainability, environmental concerns, vegetarianism, and there is still a lack of studies that emphasize individual needs as a factor for the continued growth of the alternative food market. Accordingly, the growth factors analyzed above are insufficient to diagnose the growth potential of the new market of alternative foods. It is necessary to go beyond mere concern for environmental and ethical values as a motivation to consume alternative foods, and to analyze individual needs and consider socio-structural changes. Therefore, the purpose of this study is to identify the determinants that drive the purchase of plant-based meat alternatives, focusing on individual health-related variables that may represent an ongoing consumer need, and to diagnose the potential for growth in the substitute market.

Data and Methods

Data

We conducted the online survey using the recall method between August 16 and September 5 in 2022 and collected the data from 1,200 consumers. The demographic characteristics of respondents and basic statistics of variables that can influence the purchase of alternatives are shown in Table 1.

In order to analyze the determinants of consumers' alternative food purchases, the dependent variable in this study is a dummy variable (1 or 0) indicating whether or not the respondent has purchased plant-based alternative food products in the past year, with 25.2% of respondents reporting that they have purchased plant-based alternatives.

The vegetarian, environmental, and health-related explanatory variables that could influence alternative food purchases include the presence of vegetarians in the household, environmental concern, usual diet, intention to reduce meat consumption in the future, and the proportion of meat restaurants out of the cost of eating out. The proportion of respondents who reported having vegetarians in the household was 15.2%, and the respondents' general concern for the environment averaged 3.95 on a 5-point Likert scale (1 "not at all" to 5 "extremely"), indicating that they are relatively concerned about the environment, and their intention to reduce their meat consumption in the future averaged 3.28 on a 5-point Likert scale (1 "not at all" to 5 "extremely"), indicating that they are moderately to strongly motivated to reduce their meat consumption. The proportion of eating out at meat restaurants (0% = 1, 25% = 2, 26-50% = 3, 51-75% = 4, 76-100% = 5) averaged 2.60, indicating that meat restaurants accounted for slightly less than half of respondents' total eating out expenditures.

Considering the socioeconomic and demographic characteristics of the survey respondents, the average age is

Table 1. Descriptive statistics

Classification	Variables	Descriptions	Ave.	S.D.	Min.	Max.
Dependent variable	Alternative food shopping experience	Yes = 1, No = 0	0.252	0.434	0	1
Vegetarian, environmental, and health-related variables	Vegetarian or not in household	Yes = 1, No = 0	0.152	0.359	0	1
	Environmental concern	Not at all = 1, Slightly = 2, Moderately = 3, Very = 4, Extremely = 5	3.952	0.713	1	5
	Usual diet	Meat = 1, Vegetable = 2, Meat & Vegetable = 3	2.527	0.753	1	3
	Future meat consumption willingness to reduce	Not at all = 1, Slightly = 2, Moderately = 3, Very = 4, Extremely = 5	3.276	0.927	1	5
	Proportion of meat restaurants out of the cost of eating out	0% = 1, 1-25% = 2, 26-50% = 3, 51-75% = 4, 76-100% = 5	2.604	0.976	1	5
Responder attributes-related variables	Age	-	45.073	13.262	20	69
	Gender	Male = 1, Female = 0	0.509	0.500	0	1
	Location	Metropolitan = 1, Non-metropolitan = 0	0.532	0.499	0	1
	Education	College degree or higher = 1, Less than college degree = 0	0.817	0.387	0	1
	Monthly average household income (pre-tax)	Less than 2,000,000 won = 1, 2,000,000-3,000,000 won = 2, 3,000,000-4,000,000 won = 3, 4,000,000-5,000,000 won = 4, 5,000,000-6,000,000 won = 5, 6,000,000 won or more = 6	3.886	1.653	1	6
	White-collar or not	Yes = 1, No = 0	0.328	0.469	0	1
	50+ Members or not in household	Yes = 1, No = 0	0.682	0.466	0	1
	Number of 50+ members in household	-	1.202	0.942	0	4

45.1 years old, and the gender ratio is similar at 50.9% male and 49.1% female. In terms of where they live, 53.2% of respondents live in metropolitan areas and 48.8% live in non-metropolitan areas, and 81.7% of respondents have a college degree or higher. For the average monthly household income on a pre-tax basis, the survey was conducted on a scale of 1 million won, with those earning less than 2 million won designated as 1, those earning between 2 to 3 million won designated as 2, and 5 representing more than 6 million won. The average value was 3.89, indicating that the average income of respondents was more than 3 million won. In addition, 32.8% of respondents were employed in white-collar jobs. When it comes to whether or not there is someone over 50 in the household, 68.2% of respondents have someone over 50 in the household. The average number of household members aged over 50 is 1.2.

Descriptive statistics of the differences in substitute food purchase experience by vegetarian and environmental variables are shown in Table 2. Those with vegetarians in the household were more likely to have made a purchase (54.9%) compared to those without vegetarians in the household (19.8%). In terms of respondents' environmental concern, the greater the concern, the greater the purchase experience, with 36.3% of extremely concerned respondents having made a purchase.

Table 3 shows descriptive statistics of the differences in substitute purchase experience by health-related variables. In terms of respondents' usual diet, respondents with a vegetable-oriented diet were the most likely to have purchased substitutes

Table 2. Differences in alternative food shopping experience by vegetarian and environmental variables **Unit: %, People**

Classification			No	Yes	Number of respondents	Chi-square test p-value
Vegetarian and environmental-related variables	Vegetarian or not in household	No	80.2	19.8	1,018	0.000***
		Yes	45.1	54.9	182	
	Environmental concern	Not at all	75.0	25.0	4	0.000***
		Slightly	90.3	9.7	31	
		Moderately	82.6	17.4	218	
		Very	75.5	24.5	713	
		Extremely	63.7	36.3	234	

Note: *** at 1% significance level, ** at 5% significance level, *** at 10% significance level

Table 3. Differences in alternative food shopping experiences by health-related variables **Unit: %, People**

Classification			No	Yes	Number of respondents	Chi-square test p-value
Health-related variables	Usual diet	Meat	79.5	20.5	190	0.000***
		Vegetable	60.1	39.9	188	
		Meat & vegetable	77.1	22.9	822	
	Future meat consumption willingness to reduce	Not at all	82.4	17.7	51	0.000***
		Slightly	83.9	16.1	168	
		Moderately	80.2	19.8	454	
		Very	68.9	31.1	453	
		Extremely	52.7	47.3	74	

Note: *** at 1% significance level, ** at 5% significance level, *** at 10% significance level

(39.9%), while those who eat a meat-oriented diet and those who eat a mix of meat and vegetables are similarly likely to have made a purchase. When it comes to intentions to reduce meat consumption in the future, the greater the intention to reduce, the greater the likelihood of purchasing alternatives, with 47.3% of those who are very likely to reduce purchasing alternatives.

When it comes to age, different generations may have different consumption characteristics. However, due to the different definitions of generations in different countries and literature, we used the commonly used age groups of 20s to 30s (Millennials and Gen Z), 40s (Gen X), and 50s to 60s (Baby Boomers) as the generations with different consumption habits to compare the differences in substitute food purchase experience (Table 4). The results showed that those in their 20s to 30s had the most experience (29%), while those in their 40s and 50 to 60s had similar levels of experience (about 23%), with slightly less experience than those in their 20s and 30s.

Table 4. Differences in substitute food shopping experience by age **Unit: %, People**

Classification		No	Yes	Number of respondents	Chi-square test p-value
Age	2-30s	71.0	29.0	424	0.076*
	40s	76.7	23.3	262	
	5-60s	77.0	23.0	514	

Note: *** at 1% significance level, ** at 5% significance level, *** at 10% significance level

Methods

This study uses a binary logit model to analyze the determinants of consumers' purchase of plant-based substitutes. Logit regression is a statistical technique used to analyze the relationship between a dependent variable, which is a qualitative variable and only has a value of 0 or 1, and independent variables.

$$y^*_i = x_i\beta + u_i, i = 1 \ldots n \quad (1)$$

y_i is the dependent variable in the form of a dummy variable

indicating whether the consumer has purchased a plant-based meat product in the past year or not. As explanatory variables, x_i is the explanatory variable, which includes vegetarian, environmental, and health-related variables (presence of vegetarians in the household, environmental concerns, usual diet, intention to reduce meat consumption in the future, proportion of eating out expenditures spent on meat restaurants) and respondents' socioeconomic and demographic characteristics variables (age, gender, location, education, income, white-collar status, presence of people over 50 in the household, number of people over 50 in the household). Expressing Eq. (1) in terms of an observable dummy variable $y_i$is equivalent to Eq. (2).

$$\begin{aligned} y_i &= 1\,(\text{Yes}) \text{ if } y^*{}_i > 0 \\ y_i &= 0\,(\text{No}) \text{ if } y^*{}_i \le 0 \end{aligned} \tag{2}$$

The odds ratio, which is the ratio of the probability of an event occurring $\Pr(y_i = 1|x_i)$ to the probability of it not occurring $\Pr(y_i = 0|x_i)$, is given by Eq. (3).

$$\text{odds ratio} = \frac{\Pr(y_i = 1 \mid x_i)}{\Pr(y_i = 0 \mid x_i)} = \frac{\Pr(y_i = 1 \mid x_i)}{1 - \Pr(y_i = 1 \mid x_i)} \tag{3}$$

The value of this odds ratio can range from 0 to ∞, or from –∞ to ∞ when taking a natural logarithm. This transformation is called a logit transformation, and can be represented by a linear model as follows.

$$\ln \frac{\Pr(y_i = 1 \mid x_i)}{1 - \Pr(y_i = 1 \mid x_i)} = x_i\beta \tag{4}$$

Solving Eq. (4) for the probability $\Pr(y_i = 1|x_i)$ gives a logistic response function shown in Eq. (5).

$$\Pr(y_i = 1 \mid x_i) = \frac{\exp(x_i\beta)}{1 + \exp(x_i\beta)} = \Lambda(x_i\beta) \tag{5}$$

$\Lambda[x\beta]$ is a logistic distribution function with mean 0 and variance $\pi^3/3$. In a logistic regression model, regression coefficients are estimated using a maximum likelihood method. The likelihood function is represented as a joint probability function of individual observations. When the dependent variable (y_i) has two values, the likelihood function $F(y_i|x_i)$ and the joint probability function $F(y_1, ..., y_n|x)$ at the level of the independent variable (x_i) are defined as follows.

$$\begin{aligned} F(y_i \mid x_i) &= \Lambda(x_i\beta)^{y_i}\left[1 - \Lambda(x_i\beta)\right]^{1-y_i},\ i = 1, ..., n \\ F(y_1, ..., y_n \mid x) &= \prod_{i=1}^{n} F(y_i \mid x_i) = \prod_{i=1}^{n} \Lambda(x_i\beta)^{y_i}\left[1 - \Lambda(x_i\beta)\right]^{1-y_i} \end{aligned} \tag{6}$$

The maximum likelihood method estimates the parameters that maximize the joint likelihood function in Eq. (6). However, for ease of estimation, it is often used to estimate the parameters by taking a natural logarithm in Eq. (6). Combining Eq. (6) with Eq. (5) gives the natural log-likelihood function shown in Eq. (7).

$$\begin{aligned} &\ln F(y_1, ..., y_n \mid x) \\ &= \sum_{i=1}^{n}\left[y_i \ln\left(\frac{\Lambda(x_i\beta)}{1 - \Lambda(x_i\beta)}\right)\right] + \sum_{i=1}^{n} \ln y_i\left(1 - \Lambda(x_i\beta)\right) \\ &= \sum_{i=1}^{n} y_i(x_i\beta) - \sum_{i=1}^{n} y_i(1 + x_i\beta) \end{aligned} \tag{7}$$

The maximum likelihood method finds the maximum likelihood estimates of the regression coefficients β that maximizes Eq. (7). Since the marginal effect of particular independent variables in the logistic regression model is affected by the level of all independent variables, the marginal effect is calculated after fixing the level of independent variables to the sample mean ($\bar{x}$). After fixing the levels of the independent variables to the sample mean ($\bar{x}$), the logistic distribution function in Eq. (5) is partially differentiated by x_j, and the marginal effect as shown in Eq. (8) is obtained.

$$\begin{aligned} \frac{\delta \Pr(y = 1 \mid \bar{x})}{\delta x_j} &= \frac{\delta \Lambda(\bar{x}\beta)}{\delta x_j} \\ &= \lambda(\bar{x}\beta) = \frac{\exp(\bar{x}\beta)}{\left[1 + \exp(\bar{x}\beta)\right]^2}\beta_j \end{aligned} \tag{8}$$

Results

The estimated results for purchasing plant-based alternatives in the past year (none = 0, yes = 1) showed that age, average monthly household income, presence of vegetarians in the household, environmental concern, intention to reduce

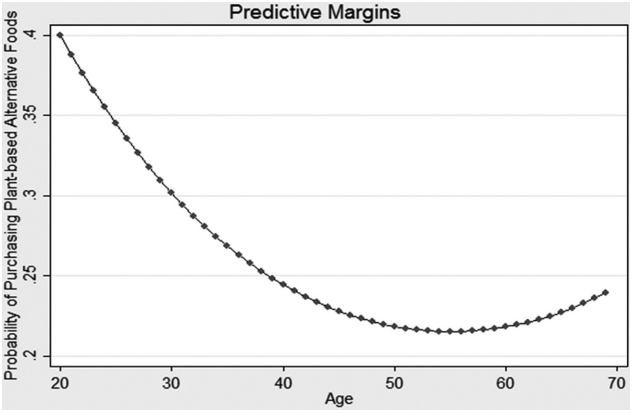

Fig. 1. Age marginal effect graph.

meat consumption in the future, and the proportion of meat restaurants out of the cost of eating out were statistically significant.

Among the demographic characteristics, respondent age was found to have a negative effect on purchasing experience of plant-based alternatives, but the coefficient on the squared term for respondent age was positive. This suggests that there is a non-linear relationship between age and the purchasing experience, indicating that at a certain point, purchase probability of plant-based alternatives decreases with age, but at some point, the purchase probability increases again as the respondent gets older. Fig. 1, which graphs the marginal effect of age, shows that the probability of purchasing plant-based alternatives decreases with age in the 20s to mid-50s, but increases again with age in the mid-50s and beyond. When analyzing the reasons for buying plant-based alternatives by age group (Table 6), curiosity about flavors was the biggest motivator for those in their 20s and 30s, followed by environmental protection, health, and animal welfare. In contrast, health reasons were the most important reason

Table 5. Analyzing factors that influence the alternative food shopping experience

Variables		Estimates	Marginal effects
Age		–0.092** (–0.041)	–0.015** (0.007)
Age^2		0.001* (0.000)	0.000* (0.000)
Gender (Male = 1, Female = 0)		–0.182 (0.147)	0.029 (0.024)
Location (Metropolitan = 1, None-Metropolitan = 0)		–0.222 (0.149)	–0.036 (0.024)
Education (college degree or higher = 1, less than college degree = 0)		0.077 (0.214)	0.012 (0.035)
Monthly average household income (pre-tax)		0.104** (0.048)	0.017** (0.008)
White-collar or not (Yes = 1, No = 0)		0.179 (0.159)	0.029 (0.026)
50+ Members or not in household (Yes = 1, No = 0)		–0.276 (0.356)	–0.045 (0.058)
Number of 50+ members in household		0.145 (0.176)	0.023 (0.028)
Vegetarian or not in household (Yes = 1, No = 0)		1.465*** (0.220)	0.237*** (0.033)
Environmental concern		0.334*** (0.112)	0.055*** (0.018)
Usual diet (Based variable = Meat)	Vegetable	0.355 (0.312)	0.055 (0.049)
	Meat & vegetable	0.340 (0.227)	0.053 (0.033)
Future meat consumption willingness to reduce		0.293*** (0.088)	0.047*** (0.014)
Proportion of meat restaurants out of the cost of eating out		0.280*** (0.073)	0.045*** (0.012)
Constants		–2.594*** (0.986)	
Obs.		1,200	

Note 1) Values within ( ) are standard errors.
2) Note: *** at 1% significance level, ** at 5% significance level, *** at 10% significance level
3) Age^2 means the squared value of the respondent's age.

Table 6. What drives plant-based alternative food purchases by age group **Unit: People**

Classification	50s to 60s	20s to 30s
For health reasons	50 (40.0%)	20 (14.8%)
Due to animal welfare concerns	6 (4.8%)	20 (14.8%)
To contribute to environmental protection, including reducing greehouse gas emissions	22 (17.6%)	22 (16.3%)
Vegetarians in household	11 (8.8%)	2 (1.5%)
Curiosity about the flavor (interest, experience, trial)	33 (26.4%)	62 (45.9%)
Dieting	3 (2.4%)	9 (6.7%)

Table 7. Future purchase intent by purchase factors of plant-based alternatives **Unit: Point (3-point average), People**

Classification	Whole	50s to 60s
For health reasons	2.32 (92)	2.34 (50)
Due to animal welfare concerns	2.35 (31)	2.17 (6)
To contribute to environmental protection, including reducing greehouse gas emissions	2.27 (52)	2.45 (22)
Vegetarians in household	2.11 (18)	2.09 (11)
Curiosity about the flavor (interest, experience, trial)	2.08 (116)	2.15 (33)
Dieting	1.94 (16)	2.33 (3)

Note: 1 = No or decrease, 2 = about the same, 3 = increase

for purchasing the alternatives among those in their 50s and 60s. Curiosity about flavors and animal welfare concerns are relatively less important factors compared to those in their 20s and 30s. In addition, when the future purchase intention of each plant-based alternative food purchase factor is expressed on a 3-point average (Table 7), those in their 50s and 60s are most likely to purchase plant-based alternatives for environmental protection and health reasons. While not significant for gender, location, highest level of education, and white-collar status, being female, living in a non-metropolitan area, having a college degree or higher, and having a white-collar job increased the likelihood of purchasing the alternatives. Income is positively associated with the likelihood of buying plant-based alternatives, with an average increase of 1.7% in the likelihood of purchasing the alternatives for every one rank increase in income. Looking at household characteristics, the presence of someone over 50 and the number of people in the household over 50 were not significant.

When examining the vegetarian and environmental related variables, the presence of vegetarians in the household was found to have a positive impact on the purchase probability of plant-based alternatives, with the presence of vegetarians in the household increasing the purchase probability by approximately 23.7%. Environmental concern is also positively associated with the likelihood of plant-based alternative food purchases, with a one-rank increase in environmental concern associated with a 5.5% increase in the likelihood of the purchases, suggesting that environmental concern is strongly correlated with the purchasing experiences of plant-based alternatives.

For the health-related variables, although not significant for usual diet, a vegetable-oriented diet and a mix diet of meat and vegetable were associated with an increased likelihood of plant-based alternative food purchases. Intention to reduce meat consumption in the future was positively correlated with the purchase probability of the alternative foods, with respondents who reported higher intentions to reduce meat consumption being more likely to have purchased the alternatives, and a one-rank increase in intention to reduce meat consumption was associated with a 4.7% increase in the purchase probability. For the variable of the proportion of eating out expenditure that is spent at meat restaurants, the higher the proportion, the higher the purchase probability of plant-based alternative foods.

4. Conclusion

The findings of this study are as follows. First, the presence of vegetarians in the household and greater concern for the environment significantly increased the purchase probability of plant-based alternative foods, which is consistent with the results of many other studies.

Second, there is a non-linear relationship between respondents' age and their experience in purchasing plant-based alternative foods, with the purchase probability of the alternative foods decreasing with age in the 20s to mid-50s, but increasing again after the mid-50s. To understand the reasons for this, the results of the survey on the reasons for buying plant-based alternatives by age group showed that curiosity about taste and value-based consumption were the main reasons for the purchasing in the 20s to 30s age group, while health reasons were the main reason for the purchasing in the 50s to 60s age group. In addition, the results of the survey on future purchase intentions by the purchase reasons of plant-based alternative foods showed that the 50s to 60s age group had the highest future purchase intention scores for health reasons along with environmental protection. The specific health reasons can be speculated to be the digestive burden of consuming animal protein from the 50s onward and the concern of aging diseases such as hyperlipidemia and

cholesterol, but for a clear interpretation of this, further analysis is needed through detailed health-related variables such as intake, nutrition, and diseases of respondents.

Third, when considering the variables related to health concerns, the purchase probability of plant-based alternatives increased significantly with a vegetable-oriented diet and a mix diet of meat and vegetable. However, in the case of the variable of the proportion of eating out at meat restaurants, the higher the proportion, the higher the purchase probability of the alternatives, which may be interpreted as a relative increase in the purchase of plant-based alternatives due to individual psychological factors such as guilt. In addition, daily meat intake did not have a statistically significant effect on the probability of experiencing plant-based alternative food purchases, suggesting that further analysis should be conducted to determine the relationship between the proportion of meat specialty restaurants in eating out expenses and other variables.

The study found that age and health concerns are essential determinants of the experience of purchasing plant-based alternatives, as well as vegetarianism and environmental concerns, which are consistent with existing literature. This confirms that while the younger generation's interest and preference for value consumption is expected to drive the alternative food market, the continued growth of the alternative food market will require meeting to the needs of individual consumers.

In order to respond to the ever-changing trends in the alternative market and secure Korea's leading position in the long term, it is necessary to develop price and product competitiveness that can attract potential consumers. In particular, plant-based alternatives can fulfill consumers' health and nutrition needs, so it is necessary to develop various products to respond to socio-structural changes. Through these efforts, we expect to lead the market by attracting consumers in various countries that have entered the super-aging society.

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