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A Consumer Behavioral Study of Dietary Supplement Choice Attributes in the Post-COVID-19 Era: Focusing on Generation MZ*

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Abstract

The global nutraceuticals market continues to grow due to rising income levels, increasing life expectancy, and a growing interest in personal health. Especially after the COVID-19 pandemic, the market for nutraceuticals has expanded rapidly with positive perceptions driven by increased attention to immune management for disease prevention. However, there is still a lack of research on the relationship between nutraceuticals and consumer behavior. This study aims to provide new insights into the dietary supplement market and help establish marketing strategies by analyzing consumer behavior toward dietary supplements in the post-COVID-19 era, focusing on Generation MZ. An online survey was conducted among consumers who have purchased dietary supplement products to test the hypotheses. The collected data were analyzed for validity and reliability using SPSS and AMOS programs. The results showed that the taste, price, brand, and design of dietary supplements significantly positively affect the satisfaction of MZ consumers. This study provides an in-depth understanding of the mechanisms of consumer behavior toward dietary supplements in the post-COVID-19 era, focusing on Generation MZ. By offering insights into consumers' health concerns and consumption behaviors, this study provides valuable perspectives on the future development of the market and helps companies develop effective strategies to meet consumer needs.

Keywords: Post-COVID-19 Era, Dietary Supplement, Choice Attribute, Generation MZ

Major Classifications: Restaurant Management, Customer Eating-out behavior, Restaurant Marketing, etc

1. Introduction

In recent years, the global nutraceutical market has experienced remarkable growth (Lee, 2023). This growth has been driven by a number of factors, such as rising income levels, longer life expectancy, and increased attention to personal health (Kim, 2004; Baek, 2006; Lee &

Kim, 2014). The COVID-19 pandemic, in particular, has fundamentally changed health perceptions and consumer behavior globally. The spread of the pandemic and its social and economic impacts have had a significant impact on individuals' daily lives as well as their healthcare practices, which has led to increased demand for nutraceuticals in particular. As isolation and social distancing measures have

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become commonplace during the pandemic, individuals have become more inclined to recognize their health as an important part of self-care, which has led to a surge in the consumption of nutraceuticals aimed at boosting immunity and preventing disease (Kim et al., 2021).

For example, the global nutraceutical market was expected to grow at an annualized rate of 7% through 2025 before the pandemic (Hamulka et al., 2020), but since COVID-19, it has been growing at a higher rate than expected in most countries. The domestic nutraceutical market is also showing steady growth. As of 2021, the market size was KRW 5.454 trillion, an increase of 20% in the last five years (Choi et al., 2022; No, 2023), which is analyzed to be due to the increase in the silver generation and the spread of the self-medication trend. As such, sales of dietary supplements are expanding across a wide range of age groups, from children's products to senior products.

Amidst these market changes, the preferences and purchasing behavior of the MZ generation are gaining prominence. According to the dietary supplement Association, the purchase rate of health products in their 20s and 30s increased by 18.3% and 11.3%, respectively, year-on-year in 2020 (Baek, 2021), and their purchasing decisions are significantly different from previous generations. Born in the early 1980s to early 2000s, this generation actively utilizes information technology to explore product information and make purchasing decisions. Particularly sensitive to digital information, MZers have access to information through social media and prefer sustainable and ethical products. They rely on online reviews, social media channels, and influencer opinions as important sources of information when evaluating products, and these insights help shape their unique consumption patterns.

Against this backdrop, this study aims to analyze the attributes that MZs value when choosing dietary supplements in the post-COVID-19 era. By doing so, we hope to gain a deeper understanding of the nutraceutical market and contribute to the development of effective marketing strategies for companies. Furthermore, this study will provide important insights into the future development of the dietary supplement market by deeply understanding the correlation between dietary supplement choice attributes and the purchasing behavior of Gen MZ. This analysis is expected to deepen the understanding of consumers' health care concerns and consumption behaviors, and play an important role in solving the problems facing the dietary supplement market.

2. Literature Review

2.1. Choice Attributes of Dietary Supplements

A dietary supplement is defined as a food that is manufactured using ingredients or ingredients that have functional properties useful to the human body and helps maintain health (Ministry of Food and Drug Safety). In addition, a dietary supplement is a product that supplements a specific nutrient or ingredient or has a specific function and can benefit health because it contains a high concentration of beneficial nutrients in the form of food (Gundersen & Ziliak 2015). With the recent interest in wellness and health, the market for nutraceuticals is expected to expand further. At this point, this paper is significant in that it targets the MZ generation and identifies the factors that influence their choice attributes of dietary supplements.

Choice attributes refer to the characteristics of a product that consumers value during the product selection process, which directly affects their purchase decisions (Lewis, 1981). People want to eat what they like, and they want to choose what is relevant to them. Therefore, there are many reasons why consumers prefer certain foods, and a combination of factors influence individuals to make food choices (Kim, 2008). In the process of choosing a dietary supplement, consumers feel the need for the product through the attributes of the product and form positive or negative attitudes, which affect their purchase decisions (Song & Ju, 2021). In particular, choice attributes are very important as a decisive attribute of purchase because consumer satisfaction leading to post-purchase evaluation results in repurchase and positive word-of-mouth (Lewis, 1981; Auh & Johnson, 2005).

Typical choice attributes used to analyze food purchase behavior include taste, price, brand, and design (Gil & Sánchez, 1997; Kim & Ha, 2010; Kim et al., 2019; Zhang & Han, 2024).

Therefore, based on the previous studies, this study presents the choice attributes of dietary supplements as taste, price, brand, and design.

2.1.1. Taste

Taste affects consumers' enjoyment and satisfaction, and products with good taste can provide consumers with a positive experience and induce repurchase (Liem & Russell, 2019). Schutz et al. (1986) found through correlation analysis that taste is a very important factor in continuously consuming and selecting certain foods.

2.1.2. Price

Price is a major factor that greatly influences consumers' purchasing decisions, and is a factor that they react very sensitively to when choosing a product (Bei, 2001). Consumers are more likely to prefer a product when the price is reasonable and economical (Cha & Lee, 2021).

2.1.3. Brand

A brand is a concept that encompasses trademark elements including symbols, names, logos, designs, and phrases that can distinguish and identify a product or service to consumers, as well as images, values, and experiences delivered to consumers. It is used as a strategic tool that companies or organizations use to differentiate their products or services to consumers, thereby promoting interaction and communication between products or services and consumers (Kaufmann, 2016).

2.1.4. Design

Design refers to the product's appearance and package design, and visual elements can influence product selection. A well-designed product can grab consumers' attention and make it stand out. Especially in situations where consumers do not know any product information about new products, design can be seen as directly influencing consumers' first purchase decisions (Ryu & Ha, 2016).

2.2. Satisfaction

Satisfaction is an individual's evaluation of an experience (Howard & Sheth, 1969), and refers to the subjective evaluation and liking of various experiences felt in the process of using a product or receiving a service (Westbrook, 1980). This satisfaction is understood to have three dimensions consisting of positive, negative, and bidirectional emotions, and these emotions have been shown to influence consumer behavior (White & Yu, 2005). In addition, it has been revealed that satisfaction is closely related to consumer loyalty and purchase intention, and in particular, research has shown that the source, quality, and safety perceived by consumers of a specific product act as factors that increase satisfaction and loyalty (Espejel et al., 2008). In addition, consumer dissatisfaction and dissatisfaction behavior were found to have a significant impact on consumer protection and social policy establishment. In particular, it was emphasized that recognizing dissatisfaction is important not only in subjective perception but also in emotional terms, and it was pointed out that dissatisfaction can cause changes in consumer behavior (Hunt, 1991). In addition, through research on consumers' preference, satisfaction, and intentional behavior toward health foods, it has been revealed that consumers' consumption tendencies can vary depending on the brand of the product. Results show that different attributes cause satisfaction for brand loyal customers and non-brand loyal customers, and that satisfaction has different effects on later behavior (Iazzi et al., 2016). Summarizing these research results, satisfaction is a factor that has an important influence on consumer

behavior and intention, and understanding and analyzing it emerges as an important task in consumer behavior research and marketing strategy establishment. In particular, in the dietary supplement market, in-depth research on the impact of consumer satisfaction and dissatisfaction on consumer behavior and market changes is expected to help establish effective marketing strategies. Therefore, based on previous research, this study will focus on the relationship between the choice attributes of dietary supplements and their influence on satisfaction.

H 1: The taste of dietary supplement will have a significant positive (+) effect on satisfaction.

H 2: The price of dietary supplement will have a significant positive (+) effect on satisfaction.

H 3: The brand of dietary supplement will have a significant positive (+) effect on satisfaction.

H 4: The design of dietary supplement will have a significant positive (+) effect on satisfaction.

2.3. Repurchase Intention

Repurchase intention is a concept that indicates a customer's intention to repurchase previously purchased products or services in the future (Hellier et al., 2003). This is one of the important indicators for companies and is directly related to customer loyalty and sustainable growth of the company. Strategies to increase repurchase intention are considered an essential element in establishing a company's marketing and management strategy. This repurchase intention is influenced by various factors such as service quality, customer satisfaction, brand trust, and product value perception (Wen et al., 2011; Lin & Lekhawipat, 2014; Lim et al., 2020). In particular, customer satisfaction is an important variable that directly affects repurchase intention, which is formed as a result of the experience customers gain from products or services (Shang & Bao, 2020). According to a recent study, the higher the customer's usage experience and satisfaction, and the greater the value perception of the product, the higher the repurchase intention (Ilyas, 2020). Therefore, companies can increase repurchase intention by establishing strategies to improve customer experience and increase customer satisfaction. Suhaily and Soelasih (2017), a study related to online shopping, investigated the impact of E-service quality, price perception, and experiential marketing on repurchase intention through customer satisfaction. These studies play an important role in understanding customers' repurchase intentions and provide insight into how these factors influence customer behavior. In addition, a study by Singh and Alok (2021) studied customers' repurchase intention for organic food in India and analyzed the effects of perceived consumer social responsibility, price, value, and quality on repurchase intention. These studies provide

insight into sustainable consumption and the growing demand for organic food, and look at the various factors that influence customers' repurchase intentions. Through these various studies, important theoretical background and insight can be obtained in understanding customers' repurchase intentions. Studies like these provide a deeper understanding of consumer behavior and choices and can be helpful in establishing future marketing strategies and policies. Therefore, based on previous research, this study will focus on the relationship between satisfaction with dietary supplements and repurchase intention.

H 5: Satisfaction with dietary supplement will have a significant positive (+) effect on repurchase intention.

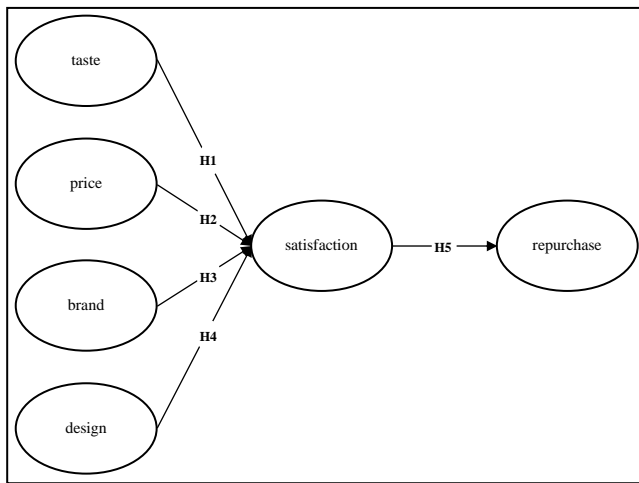


Figure 1: Research Model

3. Research Methods and Materials

This study conducted a survey based on the questionnaire items of an existing study and supplemented it according to the purpose of the study to identify the influence relationship between the choice attributes of dietary supplements and consumer behavior in the post-corona era. The survey was conducted from April 10, 2023 to April 28, 2023 among MZs who have consumed dietary supplements during the post-covid period, and a total of 272 valid samples were used for analysis. The demographic characteristics of the respondents are shown in Table 1. In terms of gender, 133 (49%) were male and 139 (51%) were female. Age: 27 (10%) were in their teens, 92 (34%) were in their 20s, 95 (35%) were in their 30s, and 57 (21%) were in their 40s or older. In terms of occupation, 79 (29%) were students, 68 (25%) were employees, 52 (19%) were self-employed, 60 (22%) were housewives, and 14 (5%) were other. In terms of monthly expenditure on dietary supplements, 14 (5%) spent less than 5,000 won, 87 (32%) spent between 5,000 and 10,000 won, 106 (39%) spent

between 1-3,000 won, 52 (19%) spent between 3-5,000 won, and 14 (5%) spent more than 5,000 won.

In addition, exploratory factor analysis was conducted using SPSS 20.0 for validity and reliability analysis, and confirmatory factor analysis and discriminant validity analysis were conducted using AMOS 20.0 for structural equation modeling (SEM) to evaluate the overall fit of the research model and to interpret the influence relationships between all constructs.

Table 1: Demographic Characteristics of the Sample

Variables	No. of Sample	Percentage (%)
Gender	Male	49
	Female	51
Age	10-19	10
	20-29	34
	30-40	35
	Over 40	21
Occupation	Student	29
	Office worker	25
	Business person	19
	Housewife	22
	Misc.	5
Amount Spent on dietary supplement per Month (Thousand KRW)	<5	5
	5-10	32
	10-30	39
	30-50	19
	>50	5

4. Results and Discussion

4.1. Validity and Reliability Analysis

First, this study conducted an exploratory factor analysis to ensure the validity and reliability of the measurement variables used to collect data. As a factor extraction method, principal component analysis was selected to maximize the information of the measurement items to derive the components, and Varimax, a method that simplifies the factors by maximizing the sum of the variance of the columns of the factor matrix, was used as a rotation method. In addition, Cronbach's α values were extracted through reliability analysis. As a result, the rotated component matrix values as shown in Table 2 and Table 3 were all measured above 0.5, indicating that the variables represented each factor well, and the total cumulative variance explained were found to be 71.734% and 82.773%, respectively, indicating that there was validity among the factors. Furthermore, the Cronbach's α values were all above 0.7, indicating relatively high consistency and reliability among the variables, suggesting good agreement between the survey instruments on the choice attributes, satisfaction, and repurchase intentions of dietary supplements. Therefore, in this study, the validity and reliability of the measurement variables used to collect the data were secured through exploratory factor analysis.

Next, a confirmatory factor analysis (CFA) was conducted using the AMOS 20.0 program for statistical validation. As shown in **Table 4**, the overall fit of the model was tested, and the Chi-square value was 348.396, which is a large value, but other indicators showed that the p value was 0.000, which is less than the significance level of 0.05, and the NFI, RFI, IFI, TLI, and CFI values were all above 0.8, and the RMSEA value was 0.08 or less, which indicates that the model explains the data well (Browne & Cudeck, 1993; Hu & Bentler, 1999; Tucker & Lewis, 1973). In conclusion, the structural equation model of this study overall meets the validity criteria set forth in the literature, indicating that the research model is appropriate. Furthermore, the composite reliability (CR) values of all variables were above 0.8, which indicates the desired convergent validity, and the average variance extracted (AVE), which measures the dispersion of the constructs, was above 0.5, which meets the criteria of CR above 0.7 and AVE above 0.5 proposed by Fornell and Larcker (1981) and Anderson and Gerbing (1988), indicating that the constructs are highly reliable.

In addition, the discriminant validity analysis was conducted and the results are shown in **Table 5**. Discriminant validity is a comparison of whether the average variance extracted (AVE) of each construct is greater than the maximum shared variance between that construct and all other constructs, i.e., the correlation coefficient squared, and is judged to meet the criterion if the correlation values between variables are all above the threshold (Fornell & Larcker, 1981). The analysis shows that the diagonal values, which represent the variance of the components, are the largest in the corresponding rows and columns. This indicates that there is adequate correlation between the variables, while at the same time each variable is conceptually distinct and being measured independently. In other words, the measurement instruments in this study have reliable discriminant validity.

Table 2: Exploratory Factor Analysis

	Variables			
	taste	price	brand	design
tas01	.843	.168	.224	.106
tas02	.755	.124	.012	.200
tas03	.774	.135	.204	.178
tas04	.809	.179	.233	.205
pri01	.143	.763	.218	.217
pri02	.170	.806	.226	.115
pri03	.140	.890	.140	.130
pri04	.134	.709	.139	.126
bra01	.116	.112	.793	.085

bra02	.070	.211	.807	.259
bra03	.281	.215	.734	.215
bra04	.204	.232	.721	.155
des01	.223	.178	.441	.568
des02	.194	.087	.134	.813
des03	.182	.194	.185	.838
des04	.172	.215	.181	.846
Variance (%):	18.209	18.127	18.128	17.270
Total 71.734				
Cronbach's Alpha	0.864	0.858	0.848	0.866

Table 3: Exploratory Factor Analysis

	Variables	
	Satisfaction	Repurchase
sat01	.908	.151
sat02	.865	.269
rep01	.205	.875
rep02	.241	.892
rep03	.171	.883
Variance (%):	34.049	48.724
Total 82.773		
Cronbach's Alpha	0.795	0.892

Table 4: Confirmatory Factor Analysis

Variables	Measure	Standardized Regression Coefficient	CR	AVE
taste	tas01	0.857	0.870	0.629
	tas02	0.666		
	tas03	0.764		
	tas04	0.868		
price	pri01	0.782	0.868	0.625
	pri02	0.819		
	pri03	0.900		
	pri04	0.638		
brand	bra01	0.666	0.850	0.589
	bra02	0.829		
	bra03	0.827		
	bra04	0.735		
design	des01	0.681	0.874	0.637
	des02	0.742		
	des03	0.863		
	des04	0.889		
satisfaction	sat01	0.748	0.802	0.670

	sat02	0.884		
repurchase	rep01	0.844	0.894	0.738
	rep02	0.899		
	rep03	0.832		
Chi-square=348.396(p=0.000, df=174), NFI=0.904, RFI=0.884, IFI=0.949, TLI=0.938, CFI=0.949, RMSEA=0.061				

Table 5: Discriminant Validity Analysis

	satisfacti on	brand	design	taste	repurcha se	price
satisfacti on	0.819					
brand	0.448	0.767				
design	0.473	0.587	0.798			
taste	0.506	0.547	0.525	0.793		
repurch ase	0.532	0.669	0.522	0.646	0.859	
price	0.422	0.545	0.479	0.454	0.473	0.790

4.2. Hypothesis Testing

The hypotheses of this study were tested, and the results are shown in **Table 6** and **Figure 2**.

First, the standardized path coefficient of H1, the effect of taste of dietary supplement on satisfaction, is .407, and the C.R. value is 5.059 ($p < .001$), which shows a statistically significant effect. Therefore, H1, "Taste of dietary supplement will have a significant positive effect on satisfaction," is accepted. Second, the standardized path coefficient of H2, the effect of price of dietary supplement on satisfaction, was .117 and the C.R. value was 2.031 ($p < .05$), indicating a statistically significant effect. Therefore, H2, "The price of dietary supplement will have a significant positive effect on satisfaction," was accepted. Third, the standardized path coefficient of H3, the effect of brand of dietary supplement on satisfaction, was .301 and the C.R. value was 3.528 ($p < .001$), indicating a statistically significant effect. Therefore, H3, "The brand of dietary supplement will have a significant positive effect on satisfaction," was accepted. Fourth, the standardized path coefficient of H4, the effect of design of dietary supplement on satisfaction, was .144 and the C.R. value was 2.141 ($p < .05$), indicating a statistically significant effect. Therefore, H4, "Design of dietary supplement will have a significant positive effect on satisfaction," was accepted. Fifth, the standardized path coefficient of H5, the effect of satisfaction on repurchase intention, was .803 and the C.R. value was 9.405 ($p < .001$), which showed a statistically significant effect. Therefore, H5, "Satisfaction will have a significant positive effect on repurchase intention," was accepted. This means that consumer satisfaction obtained through taste, price, brand, and design, which are the choice attributes of dietary supplement, influences repurchase intention.

Table 6: Results of Research Hypothesis

Hypothesis	Paths	Path Coefficient	t - value	p - value	Results
H1	taste → Satisfaction	0.407	5.059	***	Support
H2	price → Satisfaction	0.117	2.031	*	Support
H3	brand → Satisfaction	0.301	3.528	***	Support
H4	design → satisfaction	0.144	2.141	*	Support
H5	satisfaction → repurchase	0.803	9.405	***	Support

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

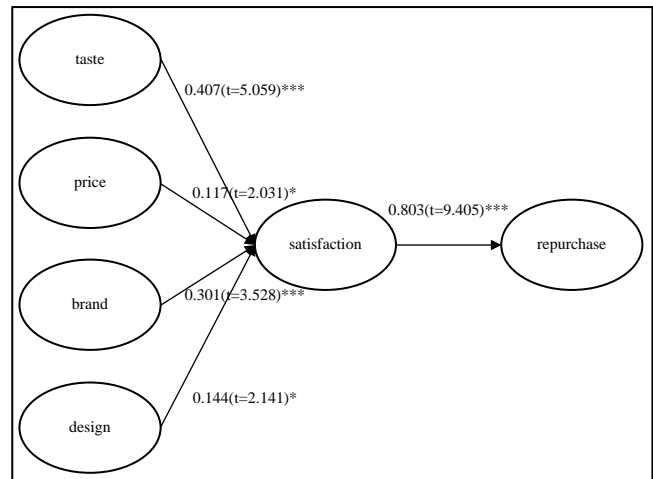


Figure 2: SEM Result of the Research Model

5. Conclusions

This study analyzed the attributes that Gen MZ consumers value when choosing dietary supplements in the post-COVID-19 era and their consumer behavior accordingly.

The theoretical implications of this study are as follows. First, this study empirically analyzed the impact of choice attributes (taste, price, brand, and design) on consumer satisfaction with dietary supplements. The results show that all four choice attributes have a significant positive effect on consumer satisfaction, with flavor and brand having the strongest effects. This suggests that consumers consider not only functionality but also sensory factors and brand image when choosing a dietary supplement product. Second, we analyzed the impact of consumer satisfaction on repurchase intentions and found that higher satisfaction increased

repurchase intentions. This result is consistent with existing studies, confirming once again that satisfaction has a significant impact on repurchase intention.

The practical implications of this study are as follows. First, dietary supplement manufacturers should focus on improving product flavor and brand image. Taste is an important consideration for MZ consumers when choosing dietary supplements, so it is necessary to add a variety of flavors and improve taste quality during product development. Second, brands should strengthen their marketing strategies. Generation MZ tends to rely on digital platforms such as social media to acquire information and make purchasing decisions, so it is important to increase brand awareness and build a positive brand image through social media marketing. Third, recognize the importance of design and improve the design of product packaging to make it stylish and attractive. Visual elements have a great impact on first impressions and play an important role in consumers' purchasing decisions, especially for new products.

This study has the following limitations. First, the sample is limited to the MZ generation, which limits the generalization of consumer behavior to other generations. Therefore, future studies should be more inclusive and include different age groups. Second, the data was collected through an online survey, which may be subject to voluntary respondent bias. This may limit the generalizability of the findings. Future studies should utilize different data collection methods to obtain more reliable data. Third, the variables considered in the research model were limited. In addition to taste, price, brand, and design, future studies should consider other factors that may influence consumer behavior (e.g., social influences, health information, etc.).

Future research avenues for this study include First, there is a need to expand the study to include different generations and demographics. This would allow for more comprehensive and generalized conclusions about dietary supplement consumption behavior. Second, more in-depth studies using qualitative research methods are needed. Interviews and focus group interviews can be used to understand consumers' in-depth perceptions and attitudes to compensate for the limitations of quantitative studies. Third, it is necessary to analyze the relationship between the specific efficacy of dietary supplements and consumer satisfaction. By analyzing the actual health benefits experienced by consumers and their satisfaction, the effectiveness of nutraceuticals can be more clearly demonstrated. Fourth, research is needed to analyze the effectiveness of digital marketing strategies. An in-depth analysis of the impact of social media and online reviews on consumer behavior will contribute to the development of effective digital marketing strategies.

The findings of this study will provide important implications for the future development of the dietary

supplement market and help companies formulate effective marketing strategies to meet the needs of consumers. Future research is expected to address the limitations of this study and further improve our understanding of dietary supplement consumption behavior through a more diverse and in-depth approach.

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