

A study on functional cosmetics purchasing behavior and satisfaction based on psychological characteristics post-COVID-19

¹Min-ah Jang, ²Jung Min Lee

¹Dept. of Bio Health Care System, Sung Kyul Univ., Korea

²Dept. of Bio Health Care System, Sung Kyul Univ., Korea
Kathj21@Sungkyul.ac.kr, Iris521@Sungkyul.ac.kr

Abstract

This study aims to quantitatively understand the influence of changes in functional cosmetics purchasing sentiment on purchasing behavior and purchase satisfaction after the COVID-19 pandemic and present empirical analysis results regarding the rapidly changing cosmetics consumption market. This study empirically analyzed the structural relationship between non-face-to-face service purchase behavior, functional cosmetics purchase behavior, and functional cosmetics purchase satisfaction to predict purchase behavior of functional cosmetics by psychological characteristics after COVID-19. The collected data were analyzed using SPSS 22.0 (Statistical Package for Social Science) program and Amos 21.0, and correlation analysis was performed to understand the relationship between consumers' purchasing behaviors of functional cosmetics according to their perception of risk of COVID-19 carried out. Summarizing the results of this study, it was found that the higher the anxiety after the corona outbreak, the higher the non-face-to-face service purchase behavior and the functional cosmetics purchase behavior. It was found that purchase satisfaction increased when purchasing behavior of functional cosmetics increased, but purchase satisfaction decreased as anxiety increased after the outbreak of Corona. In this study, a sample of 1452 people were used as research data, and the theoretical implications for the development of functional cosmetics were presented by confirming the effect of changes in non-face-to-face service purchase behavior according to psychological characteristics after Corona 19 on consumer satisfaction.

Keywords: Covid-19, Risk Perception, Functional Cosmetic, Purchasing Behavior, Purchasing Satisfaction

1. INTRODUCTION

The impact of COVID-19, not only on Korean society but the entire world, has gone beyond imagination. Countries have taken different measures in various fields such as the economy, education, politics, and cultural activities to combat the damage caused by COVID-19. Social fear spread due to distorted information and caused hoarding and hatred. Limited social activities produced distrust and preferential treatment, and human rights collapsed. City functions are often suspended due to the government's harsh response to crisis situations [1].

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Corresponding Author: Iris521@Sungkyul.ac.kr

Tel: +82-31-467-8376, Fax: +82-31-449-4182

Dept. of Bio Health Care System, Sung Kyul Univ., Korea

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The nature of risk perception as a subjective behavioral constraint leads people who care more about a particular risk than an optimistic judgment to perceive something as an actual risk. However, some people perceive themselves to be less exposed to certain risks than others [2, 3].

Given the economic situation, the spread of COVID-19 is expected to heighten the recession in regards to the real economy. Corporate profits of financially weak companies will shrink, and the default rate will rise [4].

Functional cosmetics place importance on efficacy as well as safety in comparison to some cosmetics that only place importance on using safe ingredients. Functional cosmetics have a high rate of efficacy and are safe to use on the skin [5].

Purchasing behavior refers to the purchasing of products and services based on the influence of individual needs, consumer desires, and various factors [6], Cosmetic purchasing behavior refers to purchases made through habitual behavior or a limited decision-making process rather than a decision made after an extensive decision-making process [7]. Consumer satisfaction plays an important part when it comes to repurchase decision making. When consumers are dissatisfied, complaints about products become public, and negative words and reviews can eventually cause changes in shopping behavior. Consumer satisfaction affects a consumer's repurchase decision making as well as brand loyalty in the cosmetics industry because the nature of the products makes them habitual use items once a consumer finds something that suits their skin and preferences. Consumer satisfaction also has an impact on positive word-of-mouth advertising [8].

COVID-19 spread rapidly around the world (including places in Europe and the Americas) and caused economic losses at the national level. The cosmetics industry was unable to avoid negative growth after the declaration of the COVID-19 pandemic.

The COVID-19 era arrived in 2020. The cosmetics industry had to make changes to fit the new lifestyles of consumers, workers, and companies [9]. The researchers intend to conduct intensive research on the purchasing behavior of functional cosmetics in response to the risk perception of consumers who have experienced an era of the unprecedented global COVID-19 situation.

There are four notable studies that have been conducted on the risk perception of COVID-19. The studies are as follows: Shim and Kim's 2020 study on the mediating effects of the perceived value of e-commerce and risk perception in the context of COVID-19 [10], Lee, Jin, and Lee's 2021 study on prevention behaviors and influencing factors related to COVID-19 in nursing students with a focus on knowledge, risk perception of infection, depression, and anxiety [11], Rho & Yi's 2021 study on the effect of tourists' risk perception due to COVID-19 on the intention to choose accommodation in tourist destinations [12], and Yoon's 2021 study on the effect of risk perception of air travel in the COVID-19 era on attitudes and behavioral intent [13]. However, there is an insufficient amount of research on purchasing behavior, which is why it is necessary to conduct studies related to this subject. In addition, few studies have been conducted to elucidate the causal relationship between risk perception according to COVID-19 and its effect on purchasing behavior. It is difficult to find research that has already been conducted on purchasing behavior and satisfaction in regards to functional cosmetics according to the risk perception of COVID-19. Therefore, the researchers expect this study to serve as an initial study on the purchasing behavior of functional cosmetics according to the risk perception of COVID-19.

Barzilay et al. (2020) conducted a survey on 1,964 adults about the stress they felt due to COVID-19 [14]. The survey results showed that people have been under a great deal of stress. People feel stressed over the fact that they can become infected with and/or die from COVID-19 at any moment. People also feel anxious over the fact that they can spread COVID-19 to their friends, family members, and other people without even knowing they were infected.

This study established the following hypothesis under the assumption that the risk perception associated with COVID-19 will have a significant effect on the purchasing behavior of functional cosmetics. Non-face-

to-face service purchases were activated due to the spread of COVID-19, which laid the groundwork for purchasing behavior related to functional cosmetics. The researchers have recognized the risk perception of COVID-19 and would like to present their findings on consumer behavior that can lead to the appropriate manner to address purchasing behavior and purchasing satisfaction.

2. METHODS

2.1 Research Subjects and Data Collection

The researchers intended to investigate the effect of the selection attributes of functional cosmetics on consumer behavior. They conducted an online survey from December 2, 2021 to December 13, 2021 that targeted major consumers in their thirties and forties who have used functional cosmetics. The researchers distributed 1,650 questionnaires. 1,452 copies were used for final analysis data while 198 were excluded after being judged to be inconclusive for analytical purposes.

2.2 Research Model and Hypotheses

The study model is shown in Fig. 1.

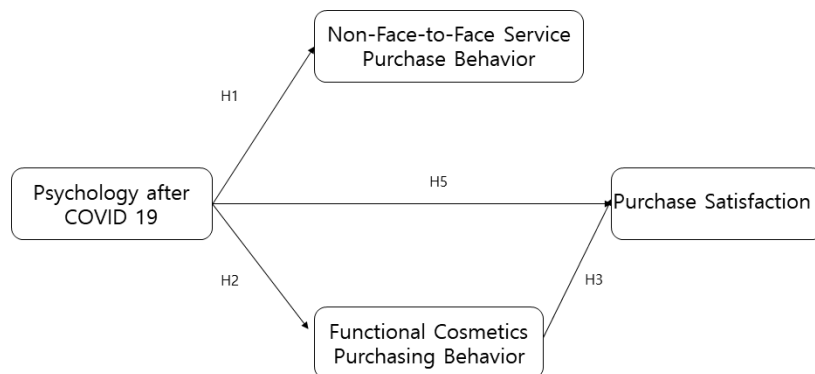


Figure 1. Research model

2.2.1. Hypothesis 1 (H1)

Post-COVID-19 anxiety will have a significant impact on non-face-to-face functional cosmetics purchasing behavior.

2.2.2. Hypothesis 2 (H2)

Post-COVID-19 anxiety will have a significant impact on functional cosmetics purchasing behavior.

2.2.3. Hypothesis 3 (H3)

Functional cosmetic purchasing behavior will affect purchasing satisfaction.

2.2.4. Hypothesis 4 (H4)

Non-face-to-face functional cosmetics purchasing behavior will affect a consumer's overall purchasing behavior.

2.2.5. Hypothesis 5 (H5)

Post-COVID-19 anxiety will have a direct correlation to purchasing satisfaction.

3. RESEARCH INSTRUMENTS AND MEASUREMENTS

Most of the questions in the study were measured on a 5-point Likert scale with one being “strongly disagree” and five being “strongly agree.” These questions were measured based on the degree to which the subjects agreed. The questions were modified and supplemented based on COVID-19 risk perception, purchasing behavior, and purchasing satisfaction. The survey was composed of the following: five questions on post-COVID-19 anxiety with reference to prior research [15], five questions on non-face-to-face service purchasing behavior [16], three questions on the purchasing behavior of functional cosmetics [17], and five questions on functional cosmetic purchasing satisfaction [18].

4. DATA ANALYSIS METHOD

The researchers used the statistical package for the social science (SPSS) WIN 22.0 statistical program to analyze the collected data. Frequency analysis was performed on the demographics and general characteristics of the subjects while a descriptive statistical analysis was performed to determine the normality of measurement tools. An exploratory factor analysis and reliability analysis were also conducted to verify the validity of the items used in this study and to find common factors that could be used as variables. The researchers were able to use the exploratory factor analysis to identify factors. The centralized validity of each measurement and latent variable was confirmed through an objective factor analysis. Bivariate correlation analysis was performed to understand the relationship between each measurement variable while AVE and conceptual reliability analysis were performed to determine discriminant validity. The hypotheses selected for the study were verified through the use of the path coefficients of the structural model. Bootstrapping was used to understand the indirect effect of post-COVID-19 anxiety.

5. RESULTS

5.1 Validity and Reality Test Analysis

The following four factors for functional cosmetic purchasing behavior in the COVID-19 era are shown in Table 1: post-COVID-19 anxiety, non-face-to-face service purchasing behavior, purchasing behavior, and purchasing satisfaction. The total variance explanatory power for the study was 70.884%, and the KMO value was derived as 0.898, which is greater than the reference value of 0.5. The value from Bartlett’s Sphericity Test was 17,814.259, which was analyzed to be statistically significant at 0.000. The common values of each factor ranged from a minimum of 0.480 to a maximum of 0.887. The loading values of all items were analyzed above the reference value, thereby securing their validity.

The researchers analyzed the exploratory factors for five factors corresponding to purchasing satisfaction. The results showed a total variance explanatory power of 21.393% and an Eigen-Value of 3.851. The results of the exploratory factor analysis for the five factors corresponding to purchasing behavior showed a total variance explanatory power of 17.311% and an Eigen-Value of 3.116. Hypotheses 1 (H1) was incorporated into the other factor based on the results of the analysis on post-COVID-19 anxiety and therefore discarded. The four factors corresponding to purchasing behavior showed a total variance explanatory power of 16.105% and an Eigen-Value of 2.899. The analysis of non-face-to-face service purchasing behavior correlated to all four factors. The total variance explanatory power was 16.507% while the Eigen-Value was 2.894. This study was conducted by selecting factors for purchasing behavior based on the analysis of non-face-to-face service purchasing behavior.

Table 1. Results of exploratory factor analysis on after COVID19 Purchasing behavior(N=1452)

Factor Name	Measurement item	Factor Loading	Eigen Value	Variance Explanation(%)	Cumulative Explanation(%)	Cronbach's α
Purchase Satisfaction 3	I am generally satisfied with the functional selection properties of functional cosmetics.	.887	3.851	21.393	21.393	0.912
Purchase Satisfaction 2	I am generally satisfied with the stability of functional cosmetics.	.784				
Purchase Satisfaction 1	I am generally satisfied with the functional cosmetic products which I have purchased.	.779				
Purchase Satisfaction 4	I am satisfied with the convenience of functional cosmetic products.	.760				
Purchase Satisfaction 5	I am satisfied with the quality of the functional cosmetics that I have recently purchased.	.751				
Purchasing Behavior 5	I will try to use functional cosmetics.	.801	3.116	17.311	38.704	0.877
Purchasing Behavior 3	I would recommend functional cosmetics to others.	.771				
Purchasing Behavior 4	I would prefer to use functional cosmetics over other cosmetics.	.751				
Purchasing Behavior 1	I will repurchase functional cosmetics.	.630				
Purchasing Behavior 2	I would love to purchase the same product in the future.	.480				
Psychology after COVID 4	I am afraid that I will be infected with COVID.	.871	2.899	16.105	54.809	0.838
Psychology after COVID 5	I am afraid of getting infected with COVID-19, putting lives at risk and having to be socially isolated.	.820				

Psychology after COVID 3	I am afraid that a similar epidemic will occur again in the future.	.815				
Psychology after COVID 2	Social distancing is essential.	.618				
Non-face-to-face service Purchase Behavior 2	I will continue to use non-face-to-face online services.	.788				
Non-face-to-face service Purchase Behavior 1	I will give priority to online shopping as a non-face-to-face service for purchasing functional cosmetics.	.758				
Non-face-to-face service Purchase Behavior 3	I am willing to purchase functional cosmetics whenever there is an opportunity to use non-face-to-face functional cosmetics services.	.732	2.894	16.075	70.884	0.812
Non-face-to-face service Purchase Behavior 4	I would buy new brands of functional cosmetics online that I have never used before.	.580				
KMO=0.898, Bartlett's test $\chi^2=17814.259$, df=53, p=0.000						

5.2 Correlation and Discriminant Validity Analysis Results

The correlation coefficient values between average variance extracted (AVE) and constructs was used in order to understand the discriminant validity of the variables used in this study. The results are shown in Table 2. Average variance extracted is used to confirm the discriminant validity if the squared value of the correlation coefficient between constituent concepts does not exceed the AVE [19]. Post-COVID-19 anxiety showed the highest correlation to purchasing behavior at 0.476. It also showed a positive correlation to service purchasing behavior at 0.474 and a positive correlation to purchasing satisfaction at 0.281. The results of the analysis of purchasing behavior showed a high correlation of 0.980 with non-face-to-face service purchasing behavior at 0.980 and a positive correlation with purchasing satisfaction at 0.514. Non-face-to-face service purchasing behavior was confirmed to have a significant correlation on purchasing satisfaction at 0.489. According to Anderson & Gerbing [20], convergent validity is judged to be excellent when construct reliability is 0.7 or higher. The construct reliability of the factors used in this study was mostly 0.7 or higher. The discriminant validity was found to be 0.5 or higher. As a result, construct reliability and discriminant validity each satisfied the criteria set forth in previous studies.

Table 2. Correlation and Discriminant Validity analysis results(N=1452)

Factors	M±SD	Psychology after COVID-19	Purchasing Behavior	Non-face-to-face service Purchase Behavior	Purchase Satisfaction
Psychology after COVID-19	4.19±0.78	1			
Purchasing Behavior	3.93±0.68	.476**	1		
Non-face-to-face service Purchase Behavior	4.00±0.67	.474**	.980**	1	
Purchase Satisfaction	3.76±0.62	.281**	.514**	.489**	1
AVE		.626	.666	.618	.793
Concept Reliability		.866	.908	.860	.950

** , <0.01

5.3 Confirmatory Factor Analysis Results

The confirmatory factor analysis of independent factors indicates that when interpreting the size of the critical ratio for the structural model estimation based on the absolute value of 1.96 or more, as shown in Table 3, this study’s model is the rejection ratio of each measurement variable, which greatly exceeded 1.96. Furthermore, it was significant at $p < 0.001$, which justifies the focus.

Table 3. Confirmatory Factor Analysis Results(N=1452)

	Division	Estimate	S.E.	C.R.	P	
Purchase Satisfaction 5	<---	Purchase Satisfaction	1.000			
Purchase Satisfaction 4	<---	Purchase Satisfaction	.980	.026	37.898	***
Purchase Satisfaction 1	<---	Purchase Satisfaction	.875	.023	38.861	***
Purchase Satisfaction 2	<---	Purchase Satisfaction	.905	.026	34.995	***
Purchase Satisfaction 3	<---	Purchase Satisfaction	.997	.027	37.324	***
Purchasing Behavior2	<---	Purchasing Behavior	1.000			
Purchasing Behavior1	<---	Purchasing Behavior	1.107	.034	32.867	***
Purchasing Behavior4	<---	Purchasing Behavior	.964	.041	23.557	***
Purchasing Behavior3	<---	Purchasing Behavior	1.215	.046	2607	***
Purchasing Behavior5	<---	Purchasing Behavior	1.070	.044	24.084	***
Psychology after COVID 2	<---	Psychology after COVID	1.000			
Psychology after COVID 3	<---	Psychology after COVID	1.458	.060	24.257	***
Psychology after COVID 5	<---	Psychology after COVID	2.346	.118	19.883	***
Psychology after COVID 4	<---	Psychology after COVID	2.108	.104	20.198	***

Non-face-to-face service Purchase Behavior4	<---	Non-face-to-face service Purchase Behavior	1.000			
Non-face-to-face service Purchase Behavior3	<---	Non-face-to-face service Purchase Behavior	1.434	.078	18.398	***
Non-face-to-face service Purchase Behavior1	<---	Non-face-to-face service Purchase Behavior	1.555	.092	16.921	***
Non-face-to-face service Purchase Behavior2	<---		1.559	.091	17.156	***

***, <0.001

5.4. Evaluating the Fit of the Research Model Analysis Results

The model of the study was composed of four important variables: post-COVID-19 anxiety, non-face-to-face service purchasing behavior, purchasing behavior of functional cosmetics, and purchasing satisfaction. Table 4 shows that among the overall indices, both the CFI and RMSEA values exceeded the structural model criteria. This indicates that the structural model was well established for this study. The model of this study had a CFI of 0.909 and a significant Chi-square value compared to the indicators of the fitted model.

Table 4. Evaluating the fit of the research model analysis results(N=1452)

Goodness-of-fit index	Evaluation standard	Model fit results
df	Number of available information units after the parameter is estimated	121
Chi square statistic	-	15.588
p	-	.000
AGFI	>0.8 excellent, >0.7 good	.824
RMR	minimum	.065
NFI	>0.9 excellent, >0.8 good	.895
TLI	>0.9 excellent, >0.8 good	.874
CFI	>0.9 excellent, >0.8 good	.901
IFI	The closer to 1 the better	.901
Parsimonious CFI	>0.7 excellent, >0.6 good	.712
Parsimonious NFI	>0.7 excellent, >0.6 good	.708
RMSEA	<0.1 Adoption, <0.05 optimum	.100

df, degree of freedom; AGFI, adjusted goodness of fit index; RMR, root mean square residual; NFI, normed fit index; TLI, Tucker-Lewis index; CFI, comparative fit index; IFI, incremental fit index; RMSEA, root mean square error or approximation.

5.5 Hypothesis Analysis Results

Table 5 shows the test results for the hypotheses of the study. Post-COVID-19 anxiety had a C.R. value of 12.557, which indicated a statistically significant positive effect on service purchasing behavior.

Therefore, it can be seen that the higher the post-COVID-19 anxiety, the higher the non-face-to-face service purchasing behavior. Hypothesis 1 (H1) was adopted based on these results.

The results from the Kim and Oh (2018) study on the purchasing behavior and purchasing satisfaction of cosmetics from online-only brands showed that the factor that significantly affected repurchase decision making was convenience of use [21]. The results of this study have been consistent with those from the 2018 study.

Hypothesis 2 (H2) was confirmed to have a statistically significant positive effect with a C.R. value of 14.477 in regards to the effect of post-COVID-19 anxiety on functional cosmetic purchasing behavior. Therefore, it was determined that the higher the post-COVID-19 anxiety, the higher the impact on purchasing behavior of functional cosmetics. Functional cosmetics purchasing behavior had a significant positive effect (C.R. value of 19.987) on purchasing behavior. Hypothesis 3 (H3) was adopted based on these results. Hypothesis 4 (H4) was rejected because the C.R value was lower than 1.96. It was confirmed that purchasing satisfaction increased when the purchasing behavior of functional cosmetics increased. In regards to Hypothesis 5 (H5), the impact of post-COVID-19 anxiety on purchasing satisfaction had a C.R. value of -2.240, meaning it had a negative effect. It was confirmed that the higher the post-COVID-19 anxiety, the lower the purchasing satisfaction. Hypothesis 5 (H5) was adopted based on these results.

The study conducted by Park, Jeong, and Lee (2020) on the effect of consumers' interpersonal anxiety on their purchasing addiction propensity showed that interpersonal anxiety increased purchasing addiction propensity due to self-control and awareness of others [22].

Cho conducted a 2021 study on the effects of the risk perception on infectious diseases on tourism intention. The group with high self-efficacy believed they would be able to prevent the risk of contracting COVID-19 if they acted cautiously, which meant their risk perception had no effect on tourism intent. On the other hand, the group with low self-efficacy believed they could become infected with COVID-19 even if they took care of themselves. The results of the study showed that the higher the risk perception, the lower the intent to engage in tourism activities [23].

Table 5. Result of adopting research hypothesis(N=1452)

Hypothesis Number	Hypothesis Analysis	Estimate	S.E	C.R.	P	Adoption
H1	Psychology after COVID --> Non-face-to-face service Purchase Behavior	.566	.045	12.557	***	Accept
H2	Psychology after COVID --> Purchasing Behavior	.646	.045	14.477	***	Accept
H3	Purchasing Behavior --> Purchase Satisfaction	.887	.044	19.987	***	Accept
H4	Non-face-to-face service Purchase Behavior--> Purchase Satisfaction	.107	.055	1.931	.054	Not Accept
H5	Psychology after COVID--> Purchase Satisfaction	-.124	.056	-2.240	.025*	Accept

***, <0.001, **, <0.01, *, <0.05

5.6 Indirect Effect Verification

Table 6 shows the results of the indirect effect verification of the study. It can be confirmed that post-COVID-19 anxiety has had a significant mediating effect on purchasing satisfaction. The bootstrapping method (500 times, $p = 0.05$) was used on both sides to verify the indirect effect of the independent variable (post-COVID-19 anxiety) on the dependent variable (purchasing satisfaction). The results validated an indirect effect.

Table 6. Indirect Effect Verification(N=1452)

Dependent variable	Independent variable
Purchase Satisfaction	Psychology after COVID
Count value	.527
p	.005**

***, <0.01, *, <0.05.

6. DISCUSSION

This study analyzed the risk factors for the purchasing behavior of functional cosmetics of consumers in the COVID-19 era. The empirical analysis results on purchasing behavior and purchasing satisfaction can be summarized as follows.

First, post-COVID-19 anxiety showed the highest correlation with purchasing behavior at 0.476. It also showed a positive correlation with service purchasing behavior at 0.474 and purchasing satisfaction at 0.281. Analysis of purchasing behavior showed a high correlation of 0.980 with non-face-to-face service purchasing behavior and 0.514 with purchasing satisfaction. There was a significant correlation with purchasing satisfaction at 0.489. Second, the model of this study was based on four important variables: post-COVID-19 anxiety, non-face-to-face service purchasing behavior, functional cosmetic purchasing behavior, and purchasing satisfaction. Among the overall indices, both the CFI and RMSEA values were higher than the structural model standard, which indicated that the structural model was suitable for the study. Third, it was confirmed that post-COVID-19 anxiety has had a significant positive (+) influence on non-face-to-face service purchasing behavior. Fourth, it was confirmed that post-COVID-19 anxiety has had a significant positive (+) influence on the purchasing behavior of functional cosmetics. Fifth, it was confirmed that purchasing satisfaction has had a significant positive (+) effect on functional cosmetic purchasing behavior. Sixth, it was confirmed that post-COVID-19 anxiety has had a significant negative (-) influence on purchasing satisfaction. Seventh, it was confirmed that post- COVID-19 anxiety has had an indirect effect on purchasing satisfaction.

7. CONCLUSION

The results of the verification of the hypotheses of this study confirmed that the higher the anxiety after COVID-19, the higher the non-face-to-face service purchasing behavior and functional cosmetic purchasing behavior. It can also be seen that an increase in the purchasing behavior of functional cosmetics led to an increase in purchasing satisfaction, but an increase in post-COVID-19 anxiety led to a decrease in purchasing satisfaction. The results of this study have shown that post-COVID-19 anxiety has had an impact on purchasing behavior and purchasing satisfaction. It can be suggested that the results of this study will serve as an important factor in the creation of marketing strategies for functional cosmetics. The researchers hope that the results of this study will help the cosmetics industry plan and differentiate new strategies in uncertain environments such as COVID-19 to revitalize management.

The limitations of this study are as follows. The online survey showed that post-COVID-19 anxiety was relatively highly accepted among those who had experience using functional cosmetics. Research was also limited as the survey was conducted in a non-face-to-face setting. Further studies will need to investigate the various factors that influence a consumer's decision and motivation to purchase functional cosmetics.

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