



Influence of consumer innovativeness and cosmetic selection attributes on purchase intention of eco-friendly cosmetics

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Background: Owing to the COVID-19 pandemic, consumers' interest in the environment has increased. This has also led to increased interest in eco-friendly products and cosmetics. To increase consumers' purchase intention of eco-friendly cosmetics, this study explores the influence of consumer innovativeness and cosmetic selection attributes on their purchase intention of eco-friendly cosmetics.

Objective: This study aims to provide practical marketing data for eco-friendly cosmetic companies and contribute to increasing consumers' purchase intention.

Methods: This study collected data through self-administered surveys and analyzed the collected data using SPSS ver. 24.0.

Results: Our statistical analysis shows that the functional, hedonic, cognitive, and social innovativeness of consumer innovativeness and the brand, quality, and price of cosmetic selection attributes positively (+) influence purchase intention of eco-friendly cosmetics.

Conclusion: Our statistical results show that consumer innovativeness and cosmetic selection attributes positively influence the purchase intention of eco-friendly cosmetics. We expect that targeting consumers who have high consumer innovativeness and favor brand-, quality-, and price-centered marketing can increase consumers' positive purchase intention.

Keywords: consumer innovativeness; consumer preference; eco-friendly cosmetics; purchase intention; selection attributes

Introduction

Owing to the COVID-19 pandemic in 2020, factories shut down and human activity diminished, significantly reducing air and water pollution [1]. These rapid environmental changes have resulted in enhancing consumer interest in environmental issues. Kearney, a global management consulting firm, reported that half of the US consumers responded that they became more interested in the environment after the COVID-19 pan-

demic [2]. Consumer interest in the environment, in turn, leads the development of eco-friendly products. Nowadays, consumers are interested not only in the main ingredients of products, but also in the production process. Therefore, the demand for eco-friendly management has grown, resulting in a greater preference for products created using eco-friendly methods that avoid chemical production facilities and animal testing [3]. In the cosmetics market, products made with environmental considerations have received significant attention. Eco-friendly

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cosmetics, manufactured using natural materials, are evolving into an independent market segment [4].

Consumer innovativeness

Consumer innovativeness is the tendency to adopt new products and embrace change more quickly and easily than other consumers. This definition has attracted the attention of marketers, gained importance, and is being actively researched [5]. Innovativeness is the degree to which one pursues something new, rather than continuing with, or choosing, existing options. Hence, consumer innovativeness can positively impact the intention to purchase new products [6]. Previous studies define consumer innovativeness as the extent to which consumers quickly and easily adopt novelty within a social system [7]. Additionally, it is defined as the preference for purchasing innovative products based on the awareness of, and interest in, the latest products [8]. With reference to these studies, we categorize consumer innovativeness into functional, hedonic, cognitive, and social innovativeness. Functional innovativeness refers to the tendency to seek convenience and efficiency of products. Hedonic innovativeness is the tendency to seek pleasure from one's purchases. Social innovativeness refers to the tendency to seek differentiation from others in a group, through purchases. Cognitive innovativeness is the tendency to seek logical and intellectual stimulation from a product. Innovation can be applied from various perspectives. However, this does not appear identical for all subjects or fields, and may yield varying results in different categories [9]. Innovative consumers are positive about new experiences and stimuli. Hence, these consumers exhibit more positive attitudes toward new products or services than others [10]. They are open to new things, have a strong sense of adventure and willingness to take risks [11], and share the peculiarity of liking experimental and bold things. These consumers make independent consumption decisions and bear the risks associated with new products. As a result, innovative consumers are proactive and creative people with appropriate information search skills and "trend literacy" [12].

Cosmetic selection attributes

Cosmetic selection attributes refer to factors that consumers value and consider important when purchasing cosmetics. Selection attributes are crucial for product selection. Consumers associate certain attributes with potential outcomes [13]. These attributes provide a method for analyzing consumer behavior, and companies can utilize them as effective marketing factors [14]. Selection attributes are also indispensable for understand-

ing consumers because they are considered important in product selection [15]. Consequently, researchers, including those in the field of cosmetics, have conducted numerous studies on consumer purchase intention related to selection attributes. However, research on eco-friendly cosmetics is limited. Selection attributes are classified into brand attributes, price, quality, trustworthiness, and perceived value [16], and brand, quality, price, and perceived value [3]. Based on prior research, this study divides cosmetic selection attributes into brand, quality, and price. Brand refers to a mark that distinguishes one's product from others. Quality refers to the features that satisfy consumers (e.g., product ingredients, performance, characteristics, appearance, design, and color). Price signifies the total value that consumers pay for a product.

Purchase intention of eco-friendly cosmetics

With advancing technology, quality differences between products have become negligible, therefore the attribute of quality has become a given. Beyond quality, consumers also seek to interact with products that fit their lifestyles [17]. Earlier, cosmetics were perceived as products used solely for beauty, owing to low awareness about cosmetic ingredients among consumers. However, with heightened environmental awareness in recent times, modern consumers have begun to seek products genuinely intended for humans, leading to the emergence of eco-friendly cosmetics [18]. Changes in consumers' environmental awareness influence corporate sustainability strategies [19]. In October 2017, Korea Trade-Investment Promotion Agency (KOTRA) hosted the "2017 Global Cosmetic Trends Forum," which emphasized that harmful effects of environmental pollution on humans are intensifying, but simultaneously, awareness of eco-friendly production and consumption is spreading worldwide [20]. Eco-friendly cosmetics are gaining popularity owing to the public backlash against pollution-causing industries. Consumers desire a clean environment and prefer pure plant-based ingredients [21]. Thus, the eco-friendliness domain has expanded from raw materials to production, manufacturing, and disposal [3]. Previous studies have defined eco-friendly cosmetics as those that are made solely from natural extracts and primarily eco-friendly components, and whose production processes do not harm the environment [22]. Eco-friendly cosmetics are environmentally friendly, and use not only sustainable materials as their main components, but also minimal and recyclable packaging [23]. In this study, the purchase intention of eco-friendly cosmetics refers to consumer willingness to purchase them, which signi-

fies the possibility of purchasing behavior. Purchase intention is crucial for businesses because it helps predict and understand consumer purchase patterns [24]. Marketers consider purchase intention to be the ultimate indicator of advertising effectiveness. Thus, positive purchase intentions among consumers should be prioritized [25]. Therefore, purchase intentions have been widely studied in the field of cosmetics.

Materials and methods

Survey respondents and procedure

For our empirical investigation, we conducted a survey targeting adult males and females, who purchased cosmetics, in South Korea. Self-administered surveys were used to collect the data. We collected preliminary data from 30 surveys from October 14th–16th, 2022. We distributed 301 surveys between October 17th and 24th, 2022. After excluding 10 invalid responses, 291 responses were used as the final data. The study was approved by the Korea Institute of Human Resources Development in Science & Technology (KIRD, 2022-R-40543).

Data analysis method

We analyzed the collected data using the statistical package SPSS Ver. 24.0. We then performed frequency analysis to identify the demographic characteristics of the participants. Factor and reliability analyses were used to analyze the validity and reliability of the measurement tools. We also conducted a correlation analysis to examine the correlation between the independent and dependent variables. Finally, we performed a regression analysis to analyze the impact of consumer innovativeness and cosmetic selection attributes on the purchase intention of eco-friendly cosmetics among customers.

Results

This study investigated the influence of consumer innovativeness and cosmetic choice attributes on the intention to purchase eco-friendly cosmetics. The findings are as follows:

First, consumers' functional, social, hedonic, and cognitive innovativeness positively influences their intention to purchase eco-friendly cosmetics [11,26]. Thus, it can be said that consumer innovativeness affects the intention to purchase in various fields.

Second, the brand, quality, and price of cosmetics have a positive impact on the intention to purchase eco-friendly cosmetics [17,27]. In other words, the brand, quality, and price among

cosmetic choice attributes significantly influence the intention to purchase cosmetics, suggesting a need for marketing strategies that utilize these attributes.

One limitation of this study is that the sample group was concentrated in their 20s, and empirical analyses of other age groups were lacking. In future research, it will be necessary to collect data from a balanced representation of all age groups for a more comprehensive study.

Demographic characteristics of respondents

Of the respondents, 72.5% and 27.5% were female and male, respectively. In terms of age, 46.4%, 23.0%, 18.2%, and 12.4% of the participants were in their 20s, 40s, 50s or older, and 30s, respectively. Regarding the highest level of education, 52.9% were currently attending, or had graduated from, a four-year university. This was followed by 17.2% of the respondents, who were currently attending, or had graduated from graduate school, 15.8% who had graduated from high school, and 14.1% who were currently attending or had graduated from a 2-year college. Regarding marital status, 59.1% and 40.9% of the respondents were unmarried and married, respectively, indicating a higher proportion of unmarried respondents. Regarding monthly income, 43.3% earned less than 2 million KRW (Korean won), 21.6%, earned 2 million to less than 3 million KRW, 14.1% earned 3 million to less than 4 million KRW, 13.1% earned 5 million KRW or more; and 7.9% earned 4 million to less than 5 million KRW. Regarding current occupation, 30.2% were students, 22.7% were office workers, 11.3% were in other professions, 10.7% were service workers, 10.0% were professionals, 9.6% were self-employed, and 5.5% were homemakers (Table 1).

Validity and reliability analysis of measurement tools

The total variance that explained consumer innovativeness was 72.170%. The KMO measure of sampling adequacy was 0.873, and Bartlett's test of sphericity result was $\chi^2=1,872.254$, $p<0.001$, indicating that the factor analysis was appropriate. Previous research has classified confidence interval sub-factors into social, functional, cognitive, and hedonic innovativeness. According to the reliability analysis results, Cronbach's α was 0.862, 0.741, 0.799, and 0.845 for social, functional, cognitive, and hedonic innovativeness, respectively, indicating the reliability of all items (Table 2).

The total variance explained by the selection attributes was 65.106%. The KMO measure of sampling adequacy was 0.815, and Bartlett's test of sphericity result was $\chi^2=1,710.755$, $p<0.001$, indicating that the factor analysis was appropriate. Previous re-

Table 1. Demographic characteristics of survey participants

Item	Number	%
Sex	291	100
Male	80	27.5
female	211	72.5
Age (yr)	291	100
20s	135	46.4
30s	36	12.4
40s	67	23.0
≥50	53	18.2
Education	291	100
High school graduation	46	15.8
Completed/graduate from a two-year college	41	14.1
Completed/graduate from a university	154	52.9
Enrolled in/completed/graduate school	50	17.2
Marital status	291	100
Single	172	59.1
Married	119	40.9
Monthly average income (Korean won)	291	100
<2 million	126	43.3
≥2 to <3 million	63	21.6
≥3 to <4 million	41	14.1
≥4 to <5 million	23	7.9
≥5 million	38	13.1
Occupation	291	100
Student	88	30.2
Office worker	66	22.7
Service worker	31	10.7
Professional	29	10.0
Self-employed	28	9.6
Homemaker	16	5.5
Other	33	11.3

search has shown that the subfactors of selection attributes are quality, price, and brand. The reliability analysis results showed that Cronbach's α was 0.884, 0.752, and 0.744 for quality, price, and brand, respectively, indicating the reliability of all items (Table 3).

The total variance explaining the intention to purchase eco-friendly cosmetics was 68.180. The KMO measure of sampling adequacy was 0.872, and Bartlett's test of sphericity yielded the result, $\chi^2=743.504$, $p<0.001$, indicating that the factor analysis was appropriate. The reliability analysis results showed that Cronbach's α was 0.882, indicating the reliability of all items (Table 4).

Analysis of correlations between measurement variables

Functional innovativeness of consumer innovativeness showed positive correlation with hedonic ($r=0.466$, $p<0.001$), social ($r=0.417$, $p<0.001$), and cognitive innovativeness ($r=0.411$, $p<0.001$), which belong to the same variable. Moreover, it showed positive correlations with the brand ($r=0.326$, $p<0.001$), quality ($r=0.354$, $p<0.001$), and price ($r=0.214$, $p<0.001$) selection attributes. Additionally, we found a positive correlation with purchase intention ($r=0.488$, $p<0.001$).

Hedonic innovativeness was positively correlated with social ($r=0.672$, $p<0.001$) and cognitive innovativeness ($r=0.454$, $p<0.001$), which belong to the same variable. Moreover, it showed positive correlations with the brand ($r=0.402$, $p<0.001$), quality ($r=0.303$, $p<0.001$), and price ($r=0.223$, $p<0.001$) selection attributes. In addition, we found a positive correlation with purchase intention ($r=0.452$, $p<0.001$).

Social innovativeness was positively correlated with cognitive innovativeness ($r=0.464$, $p<0.001$), which belongs to the same variable. Moreover, it showed positive correlations with the brand ($r=0.379$, $p<0.001$), quality ($r=0.266$, $p<0.001$), and price ($r=0.244$, $p<0.001$) selection attributes. In addition, we found a positive correlation with purchase intention ($r=0.394$, $p<0.001$).

Cognitive innovativeness showed positive correlations with brand ($r=0.301$, $p<0.001$), quality ($r=0.349$, $p<0.001$), and price ($r=0.192$, $p<0.01$) selection attributes. In addition, we found a positive correlation with purchase intention ($r=0.437$, $p<0.001$).

Brand selection attributes showed positive correlations with quality ($r=0.309$, $p<0.001$) and price ($r=0.381$, $p<0.001$), which belong to the same variable. In addition, we found a positive correlation with purchase intention ($r=0.416$, $p<0.001$).

Quality of selection attributes showed a positive correlation with price ($r=0.394$, $p<0.001$), which belongs to the same variable. In addition, we found a positive correlation with purchase intention ($r=0.500$, $p<0.001$). Price was also positively correlated with purchase intention ($r=0.336$, $p<0.001$) (Table 5).

Regression analysis results

Through regression analysis, this study aims to verify the influence of consumer innovativeness and cosmetic selection attributes on the purchase intention of eco-friendly cosmetics.

We conducted regression analysis, taking consumer innovativeness and purchase intention as the independent and dependent variables, respectively. The regression model for consumer innovativeness had an F-value of 128.801 ($p<0.001$) and the Durbin-Watson value was 1.906, which was close to 2, not

Table 2. Factor analysis and reliability analysis of consumer innovativeness

	Social innovativeness	Hedonic innovativeness	Cognitive innovativeness	Functional innovativeness
I enjoy using products that no one else has used before.	0.804			
I want to be the first to purchase attention-grabbing products that everyone envies.	0.796			
I like products that differentiate me from others.	0.727			
I like using products that leave a deep impression on others.	0.714			
Having new products always excites me.		0.827		
Using new products energizes my daily life.		0.818		
Discovering products I didn't know before is enjoyable and fun.		0.652		
I enjoy keeping up with the latest information.			0.871	
I often look for media that provides new information.			0.849	
I like being exposed to new ideas.			0.652	
If a new product is released that saves me time (steps) compared to existing products, I will purchase it right away.				0.846
If a new product is released with new features not found in the one I'm currently using, I will purchase it right away.				0.809
If a new product has better functionality than the one I'm currently using, I will purchase it right away.				0.624
Total	2.817	2.277	2.266	2.021
% Variance	21.670	17.516	17.433	15.550
% Cumulative	21.670	39.186	56.620	72.170
Cronbach's α	0.862	0.845	0.799	0.741

Table 3. Factor analysis and reliability analysis of cosmetic selection attributes

	Quality	Price	Brand
Quality is important when purchasing eco-friendly cosmetics.	0.851		
Functionality is important when purchasing eco-friendly cosmetics.	0.801		
Feel is important when purchasing eco-friendly cosmetics.	0.794		
Ingredients are important when purchasing eco-friendly cosmetics.	0.787		
Availability of price discounts is important when purchasing eco-friendly cosmetics.		0.824	
Price per volume is important when purchasing eco-friendly cosmetics.		0.757	
Price is important when purchasing eco-friendly cosmetics.		0.709	
Availability of samples is important when purchasing eco-friendly cosmetics.		0.546	
Brand is important when purchasing eco-friendly cosmetics.			0.779
Brand recognition is important when purchasing eco-friendly cosmetics.			0.751
I compare brands when purchasing eco-friendly cosmetics.			0.640
Brand endorsement models are important when purchasing eco-friendly cosmetics.			0.602
When purchasing eco-friendly cosmetics, I make a purchase after seeing the brand's advertisement.			0.579
Total	3.477	2.505	2.481
% Variance	26.748	19.271	19.086
% Cumulative	26.748	46.020	65.106
Cronbach's α	0.884	0.752	0.744

to 0 or 4. This indicates that there was no correlation between the residuals. Hence, this can be considered an appropriate regression model. This explains 30.8% of the dependent variables. Our analysis showed that consumer innovativeness positively (+) influences purchase intention ($\beta=0.555, p<0.001$).

We conducted a regression analysis with the functional innovativeness of consumers as the independent variable, and purchase intention as the dependent variable. The regression model for functional innovativeness has an F-value of 90.519 ($p<0.001$). The Durbin-Watson value was 1.927, close to 2,

not to 0 or 4, indicating no correlation between the residuals. Hence, it can be considered an appropriate regression model. This explains 23.9% of the dependent variables. Our analysis shows that functional innovativeness positively (+) influences purchase intention ($\beta=0.488, p<0.001$).

We conduct a regression analysis using the hedonic innovativeness of consumers as the independent variable and purchase intention as the dependent variable. The regression model for hedonic innovativeness has an F-value of 74.261 ($p<0.001$). The Durbin-Watson value was 1.940, close to 2, not to 0 or 4, indicating no correlation between the residuals. Hence, it can be considered an appropriate regression model. This explains 20.4% of the dependent variables. Our analysis shows that hedonic innovativeness positively (+) influences purchase inten-

tion ($\beta=0.452, p<0.001$).

We conducted a regression analysis with social innovativeness of consumers as the independent variable and purchase intention as the dependent variable. The regression model for social innovativeness has an F-value of 53.056 ($p<0.001$). The Durbin-Watson value was 1.882, close to 2, not to 0 or 4, indicating no correlation between the residuals. Hence, it can be considered an appropriate regression model. This explains 15.5% of the dependent variables. Our analysis shows that social innovativeness positively (+) influences purchase intention ($\beta=0.394, p<0.001$).

We conducted a regression analysis with cognitive innovativeness of consumers as the independent variable and purchase intention as the dependent variable. The regression model for cognitive innovativeness has an F-value of 68.338 ($p<0.001$). The Durbin-Watson value was 1.845, close to 2, not to 0 or 4, indicating no correlation between the residuals. Therefore, it can be considered an appropriate regression model. This explains 19.1% of the dependent variables. Our analysis shows that cognitive innovativeness positively (+) influences purchase intention ($\beta=0.437, p<0.001$).

We conducted regression analysis with cosmetic selection attributes and purchase intention as the independent and dependent variables, respectively. The regression model for the cosmetic selection attributes had an F-value of 122.518 ($p<0.001$). The Durbin-Watson value was 1.936, close to 2, not to 0 or 4, indicating no correlation between the residuals. Hence, it can be considered an appropriate regression model. This explains 29.8% of the dependent variables. According to the analysis, cosmetic selection attributes positively (+) influence purchase

Table 4. Factor analysis and reliability analysis of purchase intention of eco-friendly cosmetics

	Factor loading
I am willing to recommend eco-friendly cosmetics to others.	0.893
I plan to invest time in purchasing eco-friendly cosmetics.	0.840
I intend to purchase eco-friendly cosmetics.	0.812
I will consider purchasing eco-friendly cosmetics first when purchasing cosmetics.	0.796
I am willing to gift eco-friendly cosmetics to acquaintances.	0.784
Total	3.409
% Variance	68.180
% Cumulative	68.180
Cronbach's α	0.882

Table 5. Correlation analysis

	Consumer innovativeness				Selection attributes			Purchase intention
	1	2	3	4	5	6	7	
Consumer innovativeness								
1	1							
2	0.466***	1						
3	0.417***	0.672***	1					
4	0.411***	0.454***	0.464***	1				
Selection attributes								
5	0.326***	0.402***	0.379***	0.301***	1			
6	0.354***	0.303***	0.266***	0.349***	0.309***	1		
7	0.214***	0.223***	0.244***	0.192**	0.381***	0.394***	1	
Purchase intention	0.488***	0.452***	0.394***	0.437***	0.416***	0.500***	0.336***	1
Mean	3.44	3.30	3.03	3.53	3.17	4.38	3.52	3.72
Standard deviation	0.969	1.06	1.081	0.963	0.837	0.789	0.892	0.878

1, functional innovativeness; 2, hedonic innovativeness; 3, social innovativeness; 4, cognitive innovativeness; 5, brand; 6, quality; 7, price. *** $p<0.001$.

intention ($\beta=0.546, p<0.001$).

We conducted regression analysis with brand and purchase intention as the independent and dependent variables, respectively. The regression model for the brands had an F-value of 60.465 ($p<0.001$). The Durbin-Watson value was 1.921, close to 2, not to 0 or 4, indicating no correlation between the residuals. Therefore, this can be considered an appropriate regression model, explaining 17.3% of the dependent variables. The analysis shows that the brand positively (+) influences purchase intention ($\beta=0.416, p<0.001$).

We conducted regression analysis with cosmetic quality and purchase intention as the independent and dependent variables, respectively. The regression model for quality had an F-value of 96.487 ($p<0.001$), and the Durbin-Watson value was 1.833, close to 2, not to 0 or 4. This indicates no correlation between the residuals. Hence, this can be considered an ap-

propriate regression model, explaining 25.0% of the dependent variables. The analysis shows that quality positively (+) influences purchase intention ($\beta=0.500, p<0.001$).

We conduct a regression analysis with price and purchase intention as the independent and dependent variables, respectively. The regression model for price has an F-value of 36.887 ($p<0.001$). The Durbin-Watson value was 1.894, close to 2, not to 0 or 4. This indicates no correlation between the residuals. Hence, this can be considered an appropriate regression model, explaining 11.3% of the dependent variables. According to the analysis, price positively (+) influences purchase intention ($\beta=0.336, p<0.001$) (Table 6).

Discussion

Consumer innovativeness has been identified as a significant

Table 6. Regression analysis results

	Unstandardized coefficient		Standardized coefficient	t	p
	B	Standard error	β		
(Constant)	1.730	0.181		9.549***	<0.001
Consumer innovativeness	0.604	0.053	0.555	11.349***	<0.001
F=128.801 ($p<0.001$), Durbin-Watson=1.906, $R^2=0.308$					
(Constant)	2.205	0.166		13.264***	<0.001
Functional innovativeness	0.442	0.047	0.488	9.514***	<0.001
F=90.519 ($p<0.001$), Durbin-Watson=1.927, $R^2=0.239$					
(Constant)	2.490	0.151		16.511***	<0.001
Hedonic innovativeness	0.375	0.043	0.452	8.617***	<0.001
F=74.261 ($p<0.001$), Durbin-Watson=1.940, $R^2=0.204$					
(Constant)	2.756	0.141		19.484***	<0.001
Social innovativeness	0.320	0.044	0.394	7.284***	<0.001
F=53.056 ($p<0.001$), Durbin-Watson=1.882, $R^2=0.155$					
(Constant)	2.318	0.177		13.122***	<0.001
Cognitive innovativeness	0.399	0.048	0.437	8.267***	<0.001
F=68.338 ($p<0.001$), Durbin-Watson=1.845, $R^2=0.191$					
(Constant)	0.982	0.252		3.899***	<0.001
Selection attributes	0.752	0.068	0.546	11.069***	<0.001
F=122.518 ($p<0.001$), Durbin-Watson=1.936, $R^2=0.298$					
(Constant)	2.343	0.184		12.732***	<0.001
Brand	0.436	0.056	0.416	7.776***	<0.001
F=60.465 ($p<0.001$), Durbin-Watson=1.921, $R^2=0.173$					
(Constant)	1.286	0.252		5.095***	<0.001
Quality	0.556	0.057	0.500	9.823***	<0.001
F=96.487 ($p<0.001$), Durbin-Watson=1.833, $R^2=0.250$					
(Constant)	2.561	0.198		12.938***	<0.001
Price	0.331	0.054	0.336	6.074***	<0.001
F=36.887 ($p<0.001$), Durbin-Watson=1.894, $R^2=0.113$					

Dependent variable: purchase intention.
*** $p<0.001$.

factor influencing purchase intention, and previous studies have been conducted in various related fields. However, research on intention to purchase cosmetics has been limited. In this regard, this study is significant in examining the relationship between consumer innovativeness, cosmetic choice attributes, and the intention to purchase eco-friendly cosmetics.

This study can serve as foundational academic material for the cosmetics industry, and the results indicate that the significant influence of consumer innovativeness and cosmetic choice attributes on the intention to purchase eco-friendly cosmetics can also be applied in the formulation of marketing strategies by companies.

Conflicts of interest

The authors have nothing to disclose.

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