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THE EFFETC OF SUSTAINABLE PACKAGING ON QUALITY PERCEPTION AND PURCHASE INTENTION: THE MODERATOR ROLE OF ENVIRONMENTAL CONSCIOUSNESS AND HEALTH CONSCIOUSNESS

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ABSTRACT

The increasing sensitivity of consumers to environmental problems has forced manufacturers to engage in environmentalist activities. Sustainable packaging emerges as a result of producers' sensitivity towards the environment. Within the scope of the research, it was investigated how the quality perception and purchase intention of environmental packaging compared to conventional packaging. In addition, it has been examined whether the perceptions and intentions of consumers differ according to environmental consciousness and health consciousness. Data were collected using the experimental method to test the hypotheses. Two different packages were designed (sustainable and conventional), and hypothesis tests were started after successful packaging manipulation. To test the hypotheses, t test and two-way Anova analysis were applied with the help of SPSS program. According to the results, it has been determined that the quality perception and purchase intention of the environmentally friendly packaging is higher than the classical packaging, but this difference does not change according to environmental consciousness and health consciousness.

Key Words: *Sustainable Package, Environmental Consciousness, Health Consciousness, Quality Perception, Purchase Intention*

Jel Codes*: M11, M30, M31.*

1. INTRODUCTION

It is an undeniable that the problems such as global warming, climate change and environmental pollution caused by human beings. Concerns about the environment has increased and forced people to be more conscious about the environment. The fact that the carbon footprint of all activities can be tracked made consumers more environmentally conscious. Because most consumer products are packaged, their carbon footprint is both dependent on the product itself and on its packaging. To reduce the environmental product footprint, it is necessary to change both the internal and external characteristics of the product (such as packaging) (Magnier et al., 2016). According to a study in 2007,

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more than half of the Norwegian population consider global environmental threats as a very serious problem and even believes that protecting the environment is more important than economic growth (Lewis et al., 2014). When the environmental activities of the companies are combined with the environmental attitudes of the consumers, more environmental products and initiatives emerged. It is known that the marketing activities carried out by the companies affect the perception and behavior of the consumers. As a result of the literature review about the concerned issue, it is seen that the clues used about sustainability affect the product quality perception (Lee et al., 2013) and the items used in the packaging design affect the product perception (Becker et al., 2011; Gordon et al., 1994; Mugge et al., 2014). For these reasons, when environmentally friendly packaging is considered as a packaging feature, it is important to examine its effect on product quality perception. In this context, the effect of sustainable packaging on product quality perception and purchase intention will be examined within the scope of the research. In addition, environmental consciousness and health consciousness, which are consumer characteristics, will be tested as moderator variables in the model. This study is quantitative research, and experimental method will be used to test our hypotheses. The fact that similar studies were conducted mostly in developed countries, however this study will be conducted in Turkey, which is a developing country, will provide the opportunity to make comparisons in terms of countries.

2. LITERATURE REVIEW

2.1. Sustainable Package and Quality Perception

The performance quality of a product is defined as the perceived superiority of the product's performance against its competitors (Garvin, 1988). The perception of product quality is important for both the producers and the consumers. Product quality is considered an important competitive factor for companies that can increase their market share and profitability. On the other hand, consumers are generally willing to pay more for products with higher perceived quality (Dawar and Parker, 1994).

As a result of the literature review about the concerned issue, it is seen that consumers evaluate quality through external attributes, especially when internal cues are not very clear (Olson and Jacoby, 1972). There are many factors that affect the perception of product quality. Some of these are factors are performance, reliability, durability, aesthetics and service (Sebastianelli and Tamimi, 2002). It is claimed that consumers often evaluate product quality through packaging design (Mugge et al., 2014) and signaling sustainability positively affects the product quality perception (Lee et al., 2013).

Elements used in packaging design affect product perception in many ways. For example, design elements such as color and shape affect the perception of product content. Studies show that, in taste analyses, people evaluate the taste of food products differently based on the color and shape of the packaging, even if the actual ingredients are the same (Becker et al., 2011; Gordon et al., 1994).

Researchers used different terms when examining eco-friendly packaging: green packaging design, sustainable design, eco-design, design for the environment, and eco-friendly design (Boks and

Stevels, 2007). For the consumer, a sustainable or environmentally friendly packaging can be defined as "a packaging design that explicitly or indirectly evokes the environmental friendliness of packaging through its design, structure, graphic and informative elements" (Magnier and Crié, 2015). Because most consumer products are packaged, their carbon footprint is both dependent on the product itself and on its packaging. To reduce the environmental footprint of a product, both the internal properties and the external properties of the product (eg packaging), it is concluded that, that need to be changed. In this context, packaging sustainability (for example, using more environmentally friendly materials) is defined as an effort to reduce the carbon footprint of the product by changing the packaging of the product (Magnier et al., 2016).

According to the criteria determined by The Sustainable Packaging Coalition®, 2011, it is not enough to be made only from recycled waste in order to call it sustainable packaging. Accordingly, it is necessary to meet other criteria such as using renewable energy during production, clean production technology, and designing it to provide optimum consumption in use (Magnier and Crié, 2015).

2.2. Consumer Characteristic: Environmental Consciousness and Health Consciousness

Consumer characteristics are frequently used to explain their behavior. One of them is environmental consciousness, which is defined as an attitude that emerges as a result of both cognitive and emotional evaluation (Bamberg, 2003). In a study, it was revealed that the visuals and verbal expressions used in the packaging have an effect on the attitude and purchase intention, and that environmental consciousness has a moderating role on this effect. (Magnier and Schoormans, 2015). There are many reasons such as demographic variables (income, gender), psychological variables (expertise, values) under the environmental behavior of consumers. However, environmental sensitivity is accepted as the most important variable affecting this behavior (Magnier and Crié, 2015).

Another consumer characteristic is health consciousness. It is defined as a person's perception of how health conscious they are. Health consciousness degree varies among people. People who are considered to be health conscious are believed to be more likely to purchase organic brands than those who are not health conscious. (Tarkiainen and Sundqvist, 2009). Health consciousness is used as a consumer attribute in research. For example, Namkung and Jang (2013) examined the moderating role of environmental awareness and health awareness in the effect of green activities on brand equity elements (quality, image and behavior).

3. RESEARCH METHODOLOGY

3.1. Research Hypotheses

When the literature was reviewed, it was seen that the clues about sustainability affect the perception of quality (Lee et al., 2013); consumers generally evaluate product quality through packaging design (Mugge et al., 2014); It is seen that the items used in packaging design affect product perception

(Becker et al., 2011; Gordon et al., 1994). For these reasons, when environmentally friendly packaging is considered as a packaging feature, it is important to examine its effect on product quality perception. Within the scope of the research, the effect of sustainable packaging on product quality perception and purchase intention will be examined. In addition, while examining the effect of sustainable packaging on quality and purchase intention, environmental consciousness and health consciousness, which are consumer characteristics, will be tested as moderator variables in the model. Here, the effects of environmental consciousness and health consciousness will be examined and the importance of consumers in product evaluations will be compared.

According to studies, consumers evaluate quality according to external attributes, especially when internal cues are not very clear (Olson and Jacoby, 1972). Consumers generally evaluate product quality through packaging design (Mugge et al., 2014). In addition, it is claimed that signaling sustainability positively affects the perception of product quality (Lee et al., 2013). In the light of this information;

H1- Quality perception for sustainable packaging is higher than for conventional packaging.

There are many reasons such as demographic variables (income, gender), psychological variables (expertise, values) under the environmental behavior of consumers. However, environmental consciousness is accepted as the biggest variable affecting this behavior (Magnier and Crié, 2015). Based on this, it is assumed that consumers with high environmental consciousness will evaluate the environmental product more positively. In the light of this information;

H2- For those with high environmental consciousness, the quality perception for sustainable packaging is higher than conventional packaging.

It is inferred that people with high health consciousness are more likely to purchase organic brands than those with low health consciousness (Tarkiainen and Sundqvist, 2009). In this study, the effect of health consciousness on quality perception will be examined in order to compare whether the perception of quality of sustainable packaging is more affected by health consciousness or environmental consciousness. According to this;

H3- For those with high health consciousness, the quality perception for sustainable packaging is higher than conventional packaging.

Similar hypotheses were developed for another dependent variable, purchase intention. According to this;

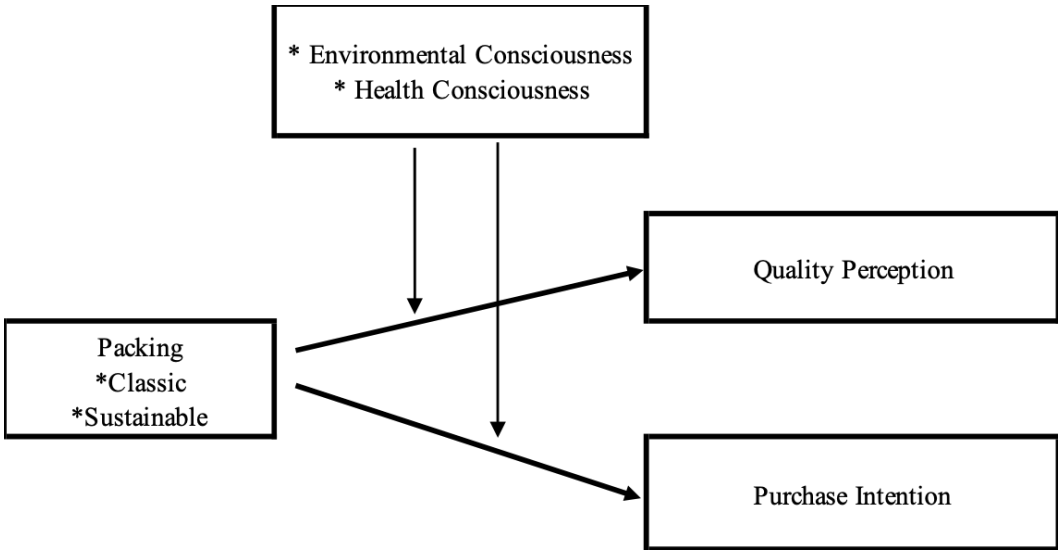
H4- Purchasing intention for sustainable packaging is higher than for conventional packaging.

H5- For those with high environmental consciousness, the purchase intention for sustainable packaging is higher than conventional packaging.

H6- For those with high health consciousness, the purchase intention for sustainable packaging is higher than conventional packaging.

Our research model to be tested according to the developed hypotheses is shown in Figure-1

Figure: 1. Research Model



3.2. Sample and Measures

The research has two important limitations. The research covers a specific product group (coffee), and only Bandırma Onyedi Eylül University students were included in the study by convenience sampling method due to time and cost constraints. Data were collected by online survey method. However, it is not aimed to generalize the results of the research for Türkiye. Before data collection, necessary permissions were obtained from Bandırma Onyedi Eylül University Social and Human Sciences Ethics Committee.[1]

In our study, scales of which validity and reliability were tested before was used. Accordingly, the three-item environmental consciousness scale (Koenig-Lewis et al., 2014); three-item health consciousness scale (Namkung and Jang, 2013); two-item sustainability perception scale (Magnier et al., 2016); three-item product quality perception scale (Sprott and Shimp, 2004); The three-item purchase intention scale (Yoo and Donthu, 2001) which was adapted into Turkish language was used.

3.3. Experiment Process

Experiment was used as data collection method in the study. Experiments are frequently used in social sciences to investigate the cause-and-effect relationship between two or more variables. In the experiment, it is investigated whether one variable has an effect on the other variable (Patzer, 1996: 2).

[1] Bandırma Onyedi Eylül University Social and Human Sciences Ethics Committee decision was taken with the decision dated16.01.2023, numbered 2023-1.

In order to test the hypotheses, two different 2x2 between-subject factorial experiments were designed in this study. The factorial type of experiment is frequently used in the marketing field because it provides time and cost savings by allowing the effect of more than one independent variable on the dependent variable to be examined with a single experiment. In addition, in this type of experiment, independent variables can take more than one value (group). For example, in this study, packaging takes two values (sustainable and classic), while environmental consciousness and health consciousness take two values (low and high) (Patzer, 1996: 76).

Within the scope of the research, unfamiliar brand name was selected. It is recommended that the population is not familiar with the brand, as it may cause confusion when there are different levels of consumer brand knowledge and brand awareness (Baker et al., 2002; Underwood and Klein 2002). Since brand history may have an impact on product perception and purchase intention, participants were asked whether they knew the brand before the research, and the survey was continued with those who did not know the brand. In order to measure the real effect of independent variables, extraneous variables need to be controlled (Patzer, 1996). Thus, the influence of the brand history has been brought under control.

After asking demographic questions to the participants, environmental consciousness and health consciousness scales were asked. Then, the first of the participants, consisting of two groups, was shown the sustainable packaging and asked whether they knew the brand before. The scales of packaging sustainable perception, product quality perception and purchase intention were asked to those who did not know the brand. The second group was shown classic packaging and similar questions were asked to those who did not know the brand.

3.3.1. Sustainable Package Manipulation

Two different product images were designed to manipulate the sustainable packaging perception of the research participants. As the first alternative, a sustainable (recycled, kraft visual) coffee packaging was designed, and secondly, a classic (aluminum visual) coffee packaging was designed.

Figure 2. Sustainable Packing and Classic Packing

In order to test the research hypotheses, the perception of sustainability of the two different packaging (sustainable/classic) we designed should be significantly different. In fact, the sustainability perception of Kraft packaging is expected to be higher than conventional packaging. For this, the sustainability perception of two packages was measured and t-test was applied to test whether there was a significant difference between them. When we look at the results of the t test, the average of the Kraft packaging was 3.93, while the average of the classical packaging was 2.53. In addition, this difference was found to be statistically significant (t(124)= 11,968, p= 0.01).

3.3.2. Experiment Groups

Within the scope of the research, it is necessary to divide the participants into groups in order to test whether the responses of the participants about sustainable and classical packaging differ according to environmental consciousness and health consciousness. In order to test the hypotheses, the participants should be divided into two groups as low and high according to environmental consciousness and health consciousness. Environmental consciousness and health consciousness of the participants were measured with valid and reliable scales and the average of the scales was taken. The mean of the environmental consciousness scale was 3.42; The average of health consciousness was calculated as 3.70. Participants below the mean were coded as low and above as high. Group averages are given in the table. The t-test was used to test whether the difference between the two groups was significant. Accordingly, the difference between the environmental consciousness of the two groups was found to be statistically significant (t(124) = -16,149 p=0.00). Likewise, the difference between the health consciousness of the two groups was found to be statistically significant (t(124) = --14,084 p=0.01).

Table 1. Experiment Group Statistics

	Recode	N	Mean	Std. Deviation	Std. Error Mean
Env_Concern_SUM	1	61	2,7377	0,50227	0,06431
	2	65	4,0615	0,41622	0,05163
Health_Concern_SUM	1	66	3,1061	,56435	,06947
	2	60	4,3556	,41108	,05307

4. RESEARCH FINDINGS

4.1. Descriptive Statistics

The sample of the study consists of university students. Therefore, demographic questions such as age, marital status, education level were not asked, considering that there would be no significant difference. Only household income and gender were asked. Descriptive statistics about the research sample are given in the Table 2.

Table 2. Descriptive Statistics of the Sample

		Frequency	Percent
Income	Expense is over income	31	24,6
	Expense equal to income	61	48,4
	Expense is under income	34	27
	Total	126	100
Gender	Female	70	0,56
	Male	56	0,44
	Total	126	100

4.2. Reliability and Validity Analysis of the Scales

Before testing the hypotheses, validity and reliability analyses of the scales were done. The validity of environmental awareness, health awareness, quality perception and purchase intention scales were tested with exploratory factor analysis, and Cronbach's alpha coefficient was used for reliability. It is seen that the Cronbach's alpha coefficient, that is, the internal consistency, of the scales is above the minimum value of 0.6. For exploratory factor analysis to be an accurate technique for the sample, KMO values should be checked. It is seen that the KMO values of the scales are well above the required 0.5. Therefore, we can say that factor analysis is a suitable statistical technique for our scales. It is seen that the explained variances of the scales are also high.

Table 3. Reliability and Validity Analysis of the Scales

Scales	**Sample**	**Scale**	**Alpha**	**Total Variance**	**KMO**
	n	**Item**	**(Reliability Analysis)**	**(Factor Analysis)**	**Value**
Env_Concern	126	3	0,698	62,816	0,656
Health_Concern	126	3	0,763	67,958	0,673
Quality	126	3	0,918	86,106	0,735
Purchase_Intention	126	4	0,965	90,654	0,865

4.3. Hypothesis Analysis

4.3.1. T-Tests

The H1 hypothesis tests whether sustainable packaging is perceived to be of higher quality than conventional packaging. For this, t-test was applied. While the quality perception average of sustainable

packaging is 3.50, the average of quality perception of classical packaging has been determined as 2.90. The difference between the means was statistically significant (t(124)= 4,574, p= 0.01).

The H4-hypothesis tests whether sustainable packaging has a higher purchase intention than conventional packaging. For this, t-test was applied. While the purchasing average of sustainable packaging is 3.06, the purchasing average of classical packaging is 2.52. The difference between the means was statistically significant (t(124)= 3.356, p= 0.01).

Table 4. Independent T-Test Results for H1 and H4 Hypothesis

	Group	N	Mean	Std. Deviation	Std. Error Mean
Quality_SUM	Sustainable Package	61	3,5027	0,74193	0,09499
	Classic Package	65	2,9077	0,71809	0,08907
Purchase_Intention_SUM	Sustainable Package	61	3,0656	,96166	,12313
	Classic Package	65	2,5192	,86524	,10732

4.3.2. Two-Way Anova Tests

In the H2 hypothesis, the regulatory effect of environmental awareness on the effect of packaging on quality perception was tested. For this, two-way anova analysis was used. The ANOVA table showing the effect of two-level packaging (sustainable and classic) and two-level environmental awareness (low and high) on quality perception is presented below.

As seen in Table, 5 the effect of packaging on quality perception was found to be significant (0.00). As we can remember from the H1 hypothesis, sustainable packaging was perceived to be of higher quality and this was found to be statistically significant. The analysis results here also confirm this finding. In addition, the effect of environmental consciousness on the perception of quality was not found significant (0.397). Finally, the interactive effect of packaging and environmental consciousness on quality perception, which is a dependent variable, was not statistically significant at the level of α: 0.05 (p 0.468).

Tablo 5. Two-Way Anova Results for H2 Hypothesis

Source	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Main Effect					
Package Group	1	10,433	19,484	0,00	0,138
Env.Concern Group	1	0,386	0,721	0,397	0,006
Interactive Effect					

Package * Env.Concern	1	0,284	0,284	0,468	0,004

Table 6. Group Statistics, Package Group * Env_Concern_Group

Group	Env_Concern_ Recode	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Sustainable Package	Low	3,493	,146	3,204	3,783
	High	3,509	,122	3,268	3,751
Classic Package	Low	2,815	,122	2,573	3,056
	High	3,023	,136	2,754	3,292

In the H3 hypothesis, the moderator effect of health consciousness on the effect of packaging on quality perception was tested. For this, two-way anova analysis was used. The ANOVA table showing the effect of two-level packaging (sustainable and classic) and two-level health consciousness (low and high) on quality perception is presented below. As in the H2 hypothesis, the interactive effect of packaging and health consciousness on quality perception, which is a dependent variable, was not found statistically significant at the level of α: 0.05 in the H3 hypothesis (p 0.346).

Tablo 7. Two-Way Anova Results for H3 Hypothesis

Source	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Main Effect					
Package Group	1	10,723	20,000	0,00	0,141
Health.Concern Group	1	0,127	0,236	0,628	0,002
Interactive Effect					
Package * Health.Concern	1	0,480	0,895	0,346	0,007

Table 8. Group Statistics, Package Group * Health_Concern_Group

Group	Health_ Concern_ Recode	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Sustainable Package	1,00	3,533	,134	3,269	3,798
	2,00	3,473	,132	3,213	3,733

Classic Package	1,00	2,824	,122	2,582	3,066
	2,00	3,011	,136	2,742	3,281

In the H5 hypothesis, the moderator effect of environmental consciousness on the effect of packaging on purchase intention was tested. For this, two-way anova analysis was used. The ANOVA table showing the effect of two-level packaging (sustainable and classic) and two-level environmental consciousness (low and high) on quality perception is presented below. According to the results of the analysis, the interactive effect of packaging and environmental consciousness on purchase intention, which is the dependent variable, was not statistically significant at the level of α: 0.05 (p 0.937).

Tablo 9. Two-Way Anova Results for H5 Hypothesis

Source	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Main Effect					
Package Group	1	7,755	9,422	0,03	0,072
Env.Concern Group	1	2,963	3,600	0,06	0,029
Interactive Effect					
Package * Env.Concern	1	0,005	0,006	0,937	0,000

Table 10. Group Statistics, Package Group * Env_Concern_Group

				95% Confidence Interval	
Group	Env_Concern_ Recode	Mean	Std. Error	Lower Bound	Upper Bound
Sustainable Package	1,00	2,890	,181	2,531	3,249
	2,00	3,188	,151	2,888	3,487
Classic Package	1,00	2,375	,151	2,076	2,674
	2,00	2,698	,168	2,365	3,032

In the H6 hypothesis, the moderator effect of health consciousness on the effect of packaging on purchase intention was tested. For this, two-way anova analysis was used. The ANOVA table showing the effect of two-level packaging (sustainable and classic) and two-level health consciousness (low and high) on quality perception is presented below. According to the results of the analysis, the interactive effect of packaging and health consciousness on purchase intention, which is the dependent variable, was not statistically significant at the level of α: 0.05 (p 0.992).

Tablo 11. Two-Way Anova Results for H5 Hypothesis

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Main Effect					
Package Group	1	8,890	10,635	0,01	0,072
Health.Concern Group	1	1,415	1,693	0,196	0,029
Interactive Effect					
Package * Health.Concern	1	0,00	0,00	0,992	0,000

Tablo 12. Group Statistics, Package Group * Health_Concern_Group

Group	Health_Concern_Recode	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Sustainable Package	1,00	2,958	,167	2,628	3,289
	2,00	3,169	,164	2,844	3,494
Classic Package	1,00	2,424	,152	2,122	2,725
	2,00	2,638	,170	2,302	2,974

5. RESULTS - CONCLUSION

Increasing the sensitivity of consumers to environmental problems has led manufacturers to behave environmentally. Sustainable packaging is the result of the producers' sensitivity to the environment. Within the scope of the research, the quality perception of environmental packaging and the purchase intention is investigated compared to the classical packaging. In addition, according to environmental consciousness and health consciousness, it has been examined whether the perception and intentions of consumers differ. Data were collected using the experimental method to test the hypotheses. Two different packaging was designed (sustainable and classic) and sustainability perceptions of packaging were measured. Accordingly, the perception of sustainability of the kraft packaging was more than the classical packaging and was found to be statistically significant. The validity and reliability of the scales was also tested after the successful packaging manipulations. SPSS program was used to make analyzes, T test and two -way ANOVA analysis were applied to test the hypotheses.

According to the research findings, it was determined that the quality perception and purchase intention of sustainable packaging was higher than classical packaging and it was found statistically significant. Therefore, the H1 and H4 hypotheses were accepted. When the literature is examined, the

clues used regarding sustainability affect the quality perception (Lee et al., 2013), the items used in packaging design affect the perception of the product (Becker et al., 2011; Gordon et al., 1994; Mugge et al., 2014), and even the perception of product quality affects the perception of packaging design (Lee et al., 2013). The results obtained within the scope of the research also support this phenomenon, sustainable packaging is perceived to be higher for quality and purchase intention.

Within the scope of the research, the moderator effect of environmental consciousness and health consciousness on the quality perception and purchase intention of product packaging was also examined. To put it in more detail, it is assumed that the quality perception and purchase intention of sustainable packaging will be higher in consumers with high environmental and health awareness. The hypotheses were tested with two-way Anova analysis, but the hypotheses were rejected. In other words, the effects of environmental consciousness and health consciousness on the quality and purchase intention of sustainable packaging were not found significant.

The perceived quality of sustainable packaging compared to conventional packaging and the higher purchase intention of these packaged products encourage manufacturers to use sustainable packaging. In our study, we can interpret the lack of significant moderator effect of environmental consciousness and health consciousness as follows; The target audience of sustainable packaging produced by manufacturers is not only consumers with environmental and health concerns. This can actually be interpreted as a good sign by the manufacturers. Because if the moderator effect of environmental consciousness and health consciousness is significant, in other words, if those with high environmental and health concerns react more positively to sustainable packaging, the target audience will be limited to these. However, in the current situation, sustainable packaging is perceived to be of higher quality by all consumers and the purchase intention is higher. This situation encourages manufacturers and brand owners about environmentally friendly packaging.

Different product groups can be examined in future studies. In this study, the perception of sustainability was manipulated with packaging. However, in different studies, not only the sustainability clues about the product, but also the clues that can affect the sustainability perception of the manufacturer or the brand can be used. For example, the effect of carbon emission reduction measures during production on brand perception can be examined.

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