

The Role of Packaging in Consumer Purchasing Behavior;(Çanakkale/Turkey Model)

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Abstract: *In today's competitive market, the concept of safe food and packaging is increasing day by day. In today's market conditions, consumers pay attention to almost every feature of the products and show very selective behaviors while making their choices in the face of ever-increasing product variety. In parallel with the increase in the level of education, consumers prefer that the products they buy are healthy and produced under hygienic conditions when choosing products. Therefore, packaging is an important parameter for consumers to choose a wide variety of foods. Today, generally, foodstuffs are presented to consumers as packaged on the shelves of big markets and marketed by picking and picking method by attracting the attention of customers. Almost every product on the shelves is exhibited within the framework of its own packaging features and almost assumes the function of a salesperson. In this study, it has been tried to learn how the packaging affects the purchasing behavior of food products and the importance of the packaging for the consumer.*

Keywords: *Consumer behavior, packaging material, contamination, ergonomics, recycling, survey, statistics.*

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I. INTRODUCTION

One of the main factors that provide packaging and preservation in the food industry and mechanization process is the importance of food safety strategies and food innovation development in globalization competition and the promotion and marketing of the product structure. Today, packaging has become even more important with the increase in the level of welfare, attention to health conditions, keeping consumer satisfaction at the forefront and consumer rights becoming mandatory. In addition to these developments, packaging has been kept at the forefront in purchasing behavior of consumers due to its convenience in transportation and use, protection of the product, providing the necessary information about the product to the consumers, and attracting the attention of the consumers has made it essential to make a difference between products. The main function of packaging is to assist in the efficient and safe transfer of food from producer to consumer in the distribution chain. Food safety and sustainability of food packaging, quality, innovative aspects, a healthy ecosystem and contribution to the protection of the environment, the basic perception of the consumers in the region and their feedback on the market share in this interaction are considered as the basis. Therefore, the concepts of food packaging and the packaging method used for products and the supply chain in food preservation and preservation are largely based on packaging material groups [1]. The main purpose of packaging is to protect and preserve foods from potential physical, chemical, microbiological or other hazards that may affect their quality and safety [2]. In general, various chemicals in foods at different stages of the supply chain include micronutrients, sweeteners, antimicrobials, antioxidants, pesticides, and mycotoxins. In addition, additives such as plasticizers, monomers and oligomers in packaging materials can pass into foods on contact during processing or packaging; The transfer of these chemical compounds between food and packaging is called "migration" [3]. Providing an important incentive for the development of the packaging industry has also been instrumental in providing a trend associated with a change in lifestyle, which affects the increase in demand for packaging in facilitating use, among other things, in increasing the demand for products packaged in suitable packaging and in driving the packaging orientation. In addition, consumers desire packaging with innovative solutions in the field of opening, closing, distributing and transporting the packaged product and improvements in protection against unwanted opening [4]. Over the past

three decades, many studies have highlighted how beverage and food packaging can inform, attract and bias the consumer, both at the point of sale and during consumption. Ongoing research shows that even relatively minor adjustments to the visual design of packaging, such as the shapes, colors, orientations, and positions of design elements, can significantly affect consumer evaluations and purchase intentions, either positively or negatively [5]. With the developments in packaging technology, new opportunities have emerged for packaging design, such a trend has shown that it brings transparency to a wide range of product packaging and increases the expected quality [6,7,8].

1.1. METHOD

The main mass of the research consists of individuals residing in the Marmara Region (Çanakkale). Many different methods have been developed to determine the number of samples to be selected from the main population. Estimated sample size was 384 individuals (based on Krejcie and Morgan formula with 95% confidence interval, 5% margin of error, and 50% population ratio) [9]. From this point of view, a total sample number of 392 people was reached through Google forms in the study. The scale, which aims to examine the expectations of the people of Çanakkale from food packaging and the points they pay attention to, consists of 22 questions prepared in a five-point Likert type. The scale was examined in 6 sub-dimensions (advertising feature, visual feature, useful packaging, effect on food safety, epidemic disease contagion, environmental packaging feature) and it was evaluated with statements such as “strongly disagree” (1), “disagree” (2), “undecided” (3), “partially agree” (4), “strongly agree” (5). The score distributions and Cronbach Alpha coefficients of whole scale and its sub-dimensions are given in Table 1. Factor analysis was performed to determine the construct validity of scale and the Cronbach alpha method was used to determine the reliability of this scale.

1.2. ANALYSIS OF DATA

SPSS version 25 program [statistical packages for the social sciences (SPSS) version 25 commercial software (IBM Corp.; Armonk, NY, USA)] was used for data analysis. In the study, descriptive statistics (number, percentage, mean ± standard deviation) and the normality test of numerical variables were checked with the Shapiro-Wilk test and the kurtosis-skewness coefficient values. The differences between the total scores of the whole scale and its sub-dimensions were compared with each other in terms of other characteristics by one-way analysis of variance (ANOVA) and independent groups t-test.

II. RESULT AND DISCUSSION

Table 1. Distribution of Scale Total Scores and Sub-dimension Scores for Examination of Çanakkale People's Expectations and Considerations from Food Packaging

Scale Factors	n	$\bar{X} \pm ss$	Min-Max Point	Items	α
Ad Feature	392	15.4±3.2	4-20	1-11-14-21	0.731
Visual Feature	392	11.6±2.6	3-15	2-15-19	0.708
Convenient packaging	392	12.9±2.6	3-15	3-16-17-20	0.843
Impact on Food Safety	392	26.7±4.7	6-30	4-5-6-12-13-18	0.923
Epidemic Contagion	392	8.3±1.8	2-10	7-8	0.659
Environmental Packaging Feature	392	13.8±2.5	3-15	9-10-22	0.931
Scale	392	88.5±15.2	21-105	Tümü	0.956

\bar{X} (arithmetic mean), ss (standard deviation), α (Cronbach alpha)

Table 2. Distribution of the participants' socio-demographic characteristics (n=392)

Socio-demographic data			
	$\bar{X} \pm ss$	Min	Max
Age Avg.	37.3±11.5	14	69
Age Groups		n	%
	25 altında	72	18.4
	25-34	78	19.9
	34-44	140	35.7
	45-54	76	19.4
Gender	Over 54	26	6.6
	men	163	41.6
	women	229	58.4
Educational Status	Primary and Secondary Education	16	4.1
	High school	51	14.0

	Associate degree	55	21,7
	Licence	208	53,1
	Degree	41	10,5
	Doctorate	21	5,4
Income status	3000 TL ve altı	73	18,6
	3001-5000 TL	98	25,0
	5001-7000 TL	146	37,2
	7001-9000TL	29	7,4
	9000 TL üzeri	46	11,7

Descriptivestatisticsweregiven as mean ± standard deviation fornumericalvariables, numberand% forcategoricalvariables . \bar{X} : Mean, sd: Standard deviation, Min (Minimum), Max (Maximum).

Following the analysis of variance, Duncan multiple comparison tests (post-hoc test) were applied. Values less than $P < 0.05$ were considered statistically significant. The relationship between the whole scale and its sub-dimensions was analyzed by Pearson product moment correlation analysis. According to Table 2, the mean age of the participants in our study was found to be 37.3 ± 11.5 . 35.7% of the participants are 34-44, 19.9% are 25-34, 19.4% are 45-54, 18.4% are under 25 and 6.6% are 54 and over, and 58.4% are women 41.6%. He was also male. While 53.1% were undergraduate, 21.7% associate degree, 14% high school, 10.5% graduate, 5.4% doctorate and 4.1% primary-secondary education. It was seen that 62.2% of the participants had an income between 3001-7000 and 19.1% had an income of 7 thousandormore.

Table 3. Comparison of the Scale andSub-dimensions of Çanakkale People'sExpectationsand Considerations from Food Packaging with socio-demographic characteristics (N=392).

		Ad Feature	Visual Feature	Convenient packaging	Impact on Food Safety	Epidemic Contagion	Environmentalist Packaging Feature	Scale Total
		$\bar{X} \pm ss$	$\bar{X} \pm ss$	$\bar{X} \pm ss$	$\bar{X} \pm ss$	$\bar{X} \pm ss$	$\bar{X} \pm ss$	$\bar{X} \pm ss$
Gender	Man	15.7±2.4	11.9±2.2	12.8±1.9	26.6±3.1	8.1±1.6	13.8±1.8	88.8±10.3
	Women	15.1±3.6	11.3±2.9	12.9±3	26.8±5.6	8.4±2	13.8±2.9	88.3±17.9
t		1.767	2.144	0.628	0.243	2.103	0.044	0,332
p		0.060	0.033*	0.531	0.790	0.030*	0.962	0.740
Age Community	25 under	15.6±2.8	11.9±2.4	12.6±2.4	26±3.9	8.4±1.8	13.7±2.2	88.1±13.2
	25-34	14.8±4.5	11.3±3.4	12.7±3.4	26.1±6.5	8.2±2.2	13.4±3.5	86.5±21.9
	34-44	15.3±2.9	11.6±2.3	13.1±2.3	27.2±3.9	8.3±1.7	14±2	89.5±12.2
	45-54	15.6±2.7	11.5±2.5	12.6±2.5	26.5±5	8.2±1.8	13.5±2.8	87.9±15
	54 over	16±2.6	11.5±2.7	13.3±2	28.5±2	8.6±1.2	14.5±0.6	92.4±9.8
F		1.011	0.476	0.856	2.077	0.348	1.517	0.944
p		0.401	0.753	0.491	0.083	0.845	0.196	0.438
Educational Status	Primary and Secondary Education	12.8±4.3 ^a	9.1±4.1 ^a	9.5±4.4 ^a	22.5±8.3 ^a	6.9±2 ^a	10.5±5.2 ^a	71.3±26.6 ^a
	High school	15.2±2.8 ^{ab}	11.8±2.7 ^{ab}	12.7±2.7 ^b	26±4.4 ^{ab}	8.1±1.8 ^{ab}	13.2±2.5 ^b	87.2±14.8 ^{ab}
	Associate degree	13.8±4.5 ^b	10.3±3.3 ^{ab}	11.9±3.6 ^b	24.6±7.1 ^b	7.7±2.3 ^{ab}	12.8±3.6 ^{bc}	81.2±22.6 ^{bc}
	Licence	15.9±2.8 ^b	12±2.2 ^b	13.3±2 ^b	27.6±3.6 ^b	8.5±1.6 ^b	14.2±1.8 ^{bc}	91.5±11.5 ^{bc}
	Degree	15.8±2.5 ^b	11.9±1.8 ^b	13.6±1.6 ^b	26.8±3.2 ^b	8.6±1.8 ^b	14.2±1.1 ^{bc}	90.8±9.1 ^{bc}
	Doctorate	15.8±1.6 ^b	10.6±2.2 ^b	12.9±1.4 ^b	27.5±1.8 ^b	8.1±1.8 ^b	14.7±0.5 ^c	89.6±5.7 ^c
F		6.215	7.906	9.427	7.218	4.134	10.855	9.519
p		<0.001**	<0.001**	<0.001**	<0.001**	0.001**	<0.001**	<0.001**
Income status	3000 TL and under	14.2±4.3 ^a	11±3.4	12.1±3.7	25.5±6.7	8.1±2.2	13.1±3.7 ^a	84±22.3
	3001-5000 TL	15.6±2.7 ^{ab}	11.4±2.5	13.1±2.3	26.5±4.5	8.4±1.5	14±2.2 ^{ab}	89±13.1
	5001-7000 TL	15.7±3.3 ^{ab}	11.8±2.6	13±2.6	27.4±4.4	8.5±1.8	13.9±2.4 ^{ab}	90.3±14.6
	7001-9000TL	15±2.2 ^{ab}	11.4±1.6	13.4±0.7	26.7±1.9	8.2±1.5	14.4±0.7 ^{ab}	89.1±6.8
	9000 TL over	16±1.9 ^b	11.8±1.6	12.6±1.9	27±3.1	7.7±1.8	13.5±1.5 ^b	88.5±8.5

F	3.379	1.316	2.179	1.973	2.225	2.472	2.182
p	0.010*	0.263	0.071	0.098	0.066	0.044*	0.070

* Independent groups T -test. ** One-Way ANOVA test was used. \bar{X} (arithmetic mean), ss (standard deviation) P values indicated in bold were considered statistically significant ($p < 0.05$). a-c There is no difference between education/income levels with the same letter.

The comparison of the Scale and Sub-dimensions for the Examination of the Expectations and Considerations of the People of Çanakkale from Food Packaging with the socio-demographic characteristics is given in the table. When looked according to gender, it was determined that the visual feature of the men had a high score and the feature of the epidemic disease was high by the women, and there was a statistically significant difference. When analyzed according to educational status, a statistically significant difference was found between educational status, the whole scale and its sub-dimensions ($p < 0.05$). In the sub-dimension of advertisement feature and its effect on food safety, high school graduates have a higher score than primary-secondary education, associate, undergraduate, graduate and doctoral graduates, and associate, undergraduate, graduate and doctoral graduates have higher scores than primary-secondary education scores, visual feature effect and In the dimensions of epidemic disease contagiousness, those with high school and associate degree education have lower scores than those with higher education, undergraduate, graduate and doctorate education, and those with undergraduate, graduate and doctorate education have a higher score according to their primary-secondary education score, according to the useful packaging feature. On the other hand, it was determined that those who received primary and secondary education had the lowest scores compared to the others. Likewise, those who received postgraduate education in terms of environmentalist packaging are higher than the others; Associate, bachelor's and master's degree graduates were also found to have higher scores than high school and primary-secondary education graduates, and those who received high school primary and secondary education. Considering their income status, it has been determined that those with 9 thousand and above advertising features have higher scores than others, and those between 3001-9000 have higher scores than those with less than 3 thousand. In addition, in terms of Environmentalist packaging feature, it was determined that those with 3001-9000 had higher scores than those with over 9 thousand and less than 3 thousand, and those with 9 thousand compared to those with less than 3 thousand.

Table 4. Correlations of Scale and Sub-dimensions for the Examination of Çanakkale People's Expectations and Considerations from Food Packaging (n=392).

	1	2	3	4	5	6	7	
Ad Feature	r	1	0.818	0.690	0.668	0.620	0.645	0.858
	p		<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
Visual Feature	r		1	0.645	0.610	0.589	0.614	0.817
	p			<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
Convenient packaging	r			1	0.810	0.635	0.825	0.891
	p				<0.001*	<0.001*	<0.001*	<0.001*
Impact on Food Safety	r				1	0.629	0.896	0.918
	p					<0.001*	<0.001*	<0.001*
Epidemic Contagion	r					1	0.656	0.764
	p						<0.001*	<0.001*
Environmentalist Packaging Feature	r						1	0.904
	p							<0.001*
Scale Total	r							1

$p < 0.01$

The relationship between the scale and sub-dimensions in order to examine the expectations of the people of Çanakkale from food packaging and the points they pay attention to was examined by Pearson product moment correlation analysis and the findings are given in Table 4. According to Table 4; It was determined that there was a high degree of contagious disease contagiousness with the scale, and a very high and significant relationship with other sub-dimensions. Again, it was determined that there is a significant and moderate relationship in terms of visual feature, packaging usefulness, food safety effect, epidemic disease contagion and environmentalist packaging feature. It has been determined that the advertising feature has a very high and significant relationship with the visual feature, and the effect of the useful packaging on food safety is again highly related and significant. It was determined that the effect on food safety and the environmentalist packaging feature again showed a very high and significant relationship.

III. CONCLUSION

Along with the thought that food consumers in Çanakkale are generally careful in the relationship between food packaging and that food packaging is effective in spreading the epidemic, the importance of visual features, ergonomics, packaging material-food safety relationship and recyclability has come to the fore. In addition, it was determined that the visual feature increases the advertisement of the product and the ergonomic packaging is closely related to food safety.

REFERENCES

- [1]. Brody, A. L., Bugusu, B., Han, J. H., Sand, C. K., & McHugh, T. H. (2008). Innovative food packaging solutions. *Journal of food science*, 73(8), 107-116.
- [2]. Lee, M. L. T., & Whitmore, G. A. (2010). Proportional hazards and threshold regression: their theoretical and practical connections. *Lifetime data analysis*, 16(2), 196-214.
- [3]. Arvanitoyannis, I. S., & Bosnea, L. (2004). Migration of substances from food packaging materials to foods. *Critical reviews in food science and nutrition*, 44(2), 63-76.
- [4]. Lisińska-Kuśnierz, M. (2011). Oczekiwaniakonsumentówdotycząceopakowań a realizacjaichpotrzebspołeczno-ekonomicznych. *ZeszytyNaukoweUniwersytetuEkonomicznego w Krakowie*, 874(06), 89-100.
- [5]. Simmonds, G., Woods, A. T., & Spence, C. (2018). 'Show me the goods': Assessing the effectiveness of transparent packaging vs. product imagery on product evaluation. *Food quality and preference*, 63, 18-27.
- [6]. Steenis, N. D., vanHerpen, E., van der Lans, I. A., Ligthart, T. N., &vanTrijp, H. C. (2017). Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. *Journal of Cleaner Production*, 162, 286-298.
- [7]. Vladić, G., Kecman, M., Kašiković, N., Pál, M., &Stančić, M. (2015). Influence of the shape on the consumers perception of the packaging attributes. *Journal of Graphic Engineering and Design*, 6(2), 27.
- [8]. Westerman, S. J., Sutherland, E. J., Gardner, P. H., Baig, N., Critchley, C., Hickey, C., ... &Zervos, Z. (2013). The design of consumer packaging: Effects of manipulations of shape, orientation, and alignment of graphical forms on consumers' assessments. *Food Quality and Preference*, 27(1), 8-17.
- [9]. Krejcie, R. V., & Morgan, D. W. (1970). *Educational and psychological measurement*. New York: MinnisotaUniversity.