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AN EVALUATION OF REVERSE LOGISTICS APPLICATIONS FROM CONSUMER PERSPECTIVE

TERSİNE LOJİSTİK UYGULAMALARININ TÜKETİCİ BAKIŞ AÇISINDAN DEĞERLENDİRİLMESİ

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Abstract: The aim of this research is to determine the factors that affect consumers' adoption of reverse logistics applications and the effect of economic and non-economic incentives on reverse logistics applications. The data were collected by face-to-face and online survey method with voluntary consumers over the age of 18 living in Turkey, who were selected by convenience sampling method. As a result of the study, it has been understood that economic incentives as well as non-economic incentives have an effect on the contribution and support of consumers to reverse logistics applications. In addition, the consumers who participated in the study stated that there is not enough waste collection unit in their town, and the public does not have enough information about reverse logistics applications. Besides, according to consumers the laws about reverse logistics are insufficient.

Keywords: Reverse logistics, Consumer, Recycling, Awareness, Economic incentive

JEL: *M3, M30, M31*

Öz: *Bu araştırmanın amacı, tüketicilerin tersine lojistik uygulamalarını benimsemesine etki eden faktörlerin tespiti, ekonomik ve ekonomik olmayan özendiricilerin tersine lojistik uygulamaları üzerindeki etkisininin verimliliğini tespit etmektir. Verilerin tesadüfi olmayan örnekleme yöntemlerinden kolayda örneklem yöntemiyle seçilen Türkiye'de yaşayan 18 yaş üstü ve gönüllü tüketiciler ile yüz yüze ve online anket yöntemiyle toplanmıştır. Çalışma sonucunda, tüketicilerin tersine lojistik uygulamalarına katkı ve desteklerinde ekonomik özendirivcilerin etkisi olduğu kadar ekonomik olmayan özendiricilerin de etkisinini olduğu anlaşılmıştır. Ayrıca çalışmaya katılan tüketiciler yeterli atık toplama tesisi olmadığını, halkın tersine lojistik uygulamaları ile ilgili yeterli bilgi sahibi olmadığı ve konu ile ilgili yasaların yetersiz kaldığını beyan etmişlerdir. Çevreye duyarlı ve tersine lojistik uygulamaları ile ilgili farkındalığı yüksek tüketicilerin benzer kalite ve fiyata sahip ürünler için tersine lojistik uygulayan işletmeleri tercih ettikleri ve gerekirse ederinden daha fazla ücret ödemeye hazır oldukları anlaşılmıştır.*

Anahtar Kelimeler: *Tersine lojistik, Tüketici, Geri Dönüşüm, Farkındalık, Ekonomik Özendirici.*

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1. Introduction

Interest in the concept of recyclable waste has gained momentum in terms of reducing environmental pollution and protecting natural life since the beginning of the 21st century. Studies on this subject have contributed to the increase in efforts to reuse lost economic values as well as to protect the environment.

One of the main problems of developing countries is the increasing environmental, economic and social costs of wastes released back to nature after increased production and consumption. Nature is used as a raw material and the need for this raw material is increasing day by day with technology. As in the rest of the world, this issue is approached sensitively in Turkey as well, and the importance of the issue is emphasized by both consumers and producers. However, as a result of insufficient knowledge and indifferent behavior, the desired level has not been reached and it is still not possible to talk about the efficient and effective use of resources.

The main problem of the study is that consumers are not included in the recycling system at a sufficient level and their motivation in this regard is low. Consumers who do not have sufficient knowledge may see the effort required to enter the system as a wasted effort. A large part of consumers may be unaware of the benefits of the recycling system to both energy resources and nature. The aim of this research is to determine the factors that affect consumers' adoption of reverse logistics applications and the effect of economic and non-economic incentives on reverse logistics applications.

When conscious and knowledgeable consumers and businesses come together, important steps will be taken to find permanent solutions to issues such as waste, depletion of energy resources and environmental pollution, which are the biggest problems of our time.

The concept of reverse logistics means that the logistics process, which both aims to reduce the production cost and follows an environmentalist approach, moves in the opposite direction. Reverse logistics follows a course from the last user to the manufacturer/supplier. Thus, the reusable products/materials are returned to the manufacturer/supplier for assessment.

The study is important in terms of researching and revealing the role of the concept of reverse logistics and the tools in this role in the realization of environmental management in the framework of sustainable development in a way that minimizes economic losses. Collection of data only from consumers living in Turkey is the limitation of the research. It is believed that for future researches, the inclusion of consumers in foreign countries, which will cover a larger sample, will contribute greatly to the literature.

2. Conceptual Framework

2.1. Economic Incentives

Economic incentives are basically applications that businesses use to encourage consumers to reverse logistics. Economic incentives provide an economic benefit, directly or indirectly, to both the consumer and the business. From the point of view of the enterprises, reduction of costs, reduction in material usage, spare parts, entry of the new model of the product into the market can be considered as economic benefits for the enterprise (Demirel and Gökçen, 2008: 906; Şengül, 2011: 407).

In terms of consumers, converting the used product into cash or replacing it with a new one by paying a price, using products with returnable packaging, and evaluating the unused product for a monetary return can be counted among the economic incentives (Brito and Dekker, 2002: 6). Based on the findings in the literature and stated, the following hypothesis was constructed.

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H_1: There is a positive and significant relationship between economic incentives and consumers' contribution to reverse logistics.

2.2. Non-economic Incentives

Non-economic incentives usually cover issues such as consumers' environmental awareness and recycling awareness as a result of the strategic approaches of businesses. Businesses can develop their reverse logistics strategies within the scope of environmental awareness, which is rapidly spreading in developing countries, and preparation for laws and new legislation related to them. In addition, enterprises' long-term plans, competition strategies, efforts to develop measures against industrial agents, environmental image development campaigns can be counted as non-economic incentives of enterprises (Dale and Ronald, 1998: 15).

Laws enacted by states regarding reverse logistics, support for reverse logistics practices and businesses, and the instinct to protect the environment and national wealth can be counted among the non-economic incentives of consumers (Kılıçoğlu, 2005: 7; Yıldız, 2013: 56).

Among the non-economic incentives; Issues such as using the lease method instead of purchasing, regulating the laws and rules related to reverse logistics, focusing on promotional activities to increase environmental awareness, and supporting businesses that attach importance to reverse logistics applications can be counted (Brito and Dekker, 2002: 11). Based on the findings in the literature and stated, the following hypothesis was constructed.

H_2: There is a positive and significant relationship between non-economic incentives and consumers' contribution to reverse logistics.

2.3. Consumer Awareness

As a result of the reviews on environmental problems, their causes and precautions, it is understood that the main source of inadequacies is low level of attitude and awareness. People who are not aware of the environment do not need to change their attitudes in this direction. Improving people's environmental awareness should be the first condition of environmental protection strategies (Ünver, Avcıbaşı and Kızılcık Özkan, 2015: 13).

The construction of adequate recycling waste collection facilities, information and public service announcements by both enterprises and government institutions and organizations are important in terms of raising mass awareness in the society. Environmental education should be included in the scope of continuous education within the scope of current issues and measures, starting from schools and at all levels of life, people from all professions and all ages. (Tastepe and Aral, 2014: 146; Gedik,

Kurutkan and Cil, 2014: 3). Based on the findings in the literature and stated, the following hypotheses have been constructed.

H_3: There is a significant relationship between awareness and the contribution of consumers to reverse logistics.

H_4: Economic incentives have a mediating role in the effect of awareness on consumers' contribution to reverse logistics.

H_5: Non-economic incentives have a mediating role in the effect of awareness on consumers' contribution to reverse logistics.

2.4. Contribution to Reverse Logistics Activities

Reverse logistics refers to the re-evaluation of the wastes of the needs, which are met as an advanced stage of meeting the needs of ecological consumers, in a way that does not cause environmental concerns (De Bakker, 2009: 259). Businesses use reverse logistics applications in order to take advantage of this situation both at the stage of creating green consumers and in the strategic competitive environment (Mary, 2016: 33).

Consumers' support for reverse logistics practices can also be reflected in their business choices, and sometimes, in cases where price and quality are similar, they are effective in choosing companies that apply reverse logistics (Simao and Lisboa, 2017: 184; Karahan, Görgün and Oktay, 2017: 62; Özsaçmacı, 2018: 958). Based on the findings in the literature and stated, the following hypothesis was constructed.

H_6: Demographic variables have a differentiating and significant effect on consumers' contribution to reverse logistics.

3. Method

3.1. Research Purpose and Model

The aim of this research is to determine the factors that affect consumers' adoption of reverse logistics applications and the effect of economic and non-economic incentives on reverse logistics applications. Based on this purpose, in the study; A conceptual model including consumer aw areness, economic incentives, non-economic incentives and contribution to reverse logistics activities is proposed. The research model is presented in Figure 1.

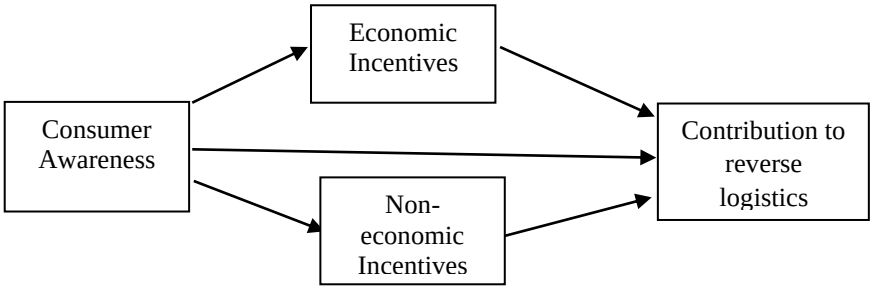

Figure 1. Research Model

Based on the model created in the study, firstly the literature was scanned and then the research method was determined. Structural Equation Modeling was used as the research method and 6 hypotheses determined for the purpose of the research were analyzed as a result of the analysis.

3.2. Universe and Sample

The research was conducted with data obtained from voluntary consumers over the age of 18 living in Turkey, who were selected by convenience sampling method. Questionnaires, prepared in accordance with the purpose of the research, were applied to the participants face-to-face and online by the researchers. A total of 800 questionnaires were prepared. When the completed questionnaires were examined, 34 questionnaires filled incompletely and incorrectly were excluded from the scope of the research. Analyzes are based on data from 766 valid questionnaires.

3.3. Data Collection Tools

A total of 23 statements were investigated in 5 sections of the questionnaire form. The statements in the scale were evaluated as a 5-point Likert scale between "Strongly Disagree" and "Strongly Agree". The questionnaire was applied to a pilot group of 50 people in order to measure whether there were expressions that were unclear or hesitant. The data of the pilot application was analyzed and its reliability was tested. The Cronbach alpha value of the pilot application data of 50 people was found to be 0.928, with a good reliability level.

Economic incentives (EI): The study of Brito and Dekker in 2002 was used to measure the economic incentives factor. Participants were asked to answer the statements in a 5-point Likert system. The Cronbach alpha reliability coefficient of the economic incentives scale was measured as 0.733.

Non-economic incentives (NEI): To measure non-economic incentives factor, Brito and Dekker's 2002 study was used. The statements were answered with a 5-point Likert system. The Cronbach's alpha reliability coefficient of the non-economic incentives scale was measured as 0.787.

Consumer awareness (CA): For the consumer awareness scale, the study of Gedik, Kurutkan, and Cil (2014) was used and 4 expressions in the scale were used. The statements were answered with a 5-point Likert system. The Cronbach's alpha reliability coefficient of the scale was measured as 0.612. In the examination, it was observed that the reliability coefficient increased to 0.75 after the CA4 expression was removed from the scale.

Contribution to reverse logistics activities: The studies of Karahan, Görgün and Oktay (2017) and Özsaçmacı (2018) were used for the scale of Contribution to Reverse Logistics Activities. A total of 4 scale statements, 2 from each study, were applied to the participants with the scale prepared in the 5-point Likert system. The Cronbach's alpha reliability coefficient of the scale was measured as 0.834. All of the reliability coefficients of the factors in the research are above 0.70, and the values obtained show that the scales are reliable (Kılınç, 2016: 48).

3.4. Findings

SPSS and AMOS package programs were used for research analysis. After determining the frequencies of demographic variables, analyzes were made to determine the validity, reliability and accuracy of the data. Structural Equation

Modeling was applied in the AMOS package program in order to determine the relationships between the variables.

3.4.1. Demographic Findings

The demographic characteristics of the consumers participating in the research are presented in Table 1. In summary, it is seen that the majority of the participants are female (56.4%), aged between 26-35 (55.0%), have a bachelor's degree (56.1%) and have an income of 4.000-5.000 TL (48.8%).

Table 1. Demographic Characteristics

	Variable	Frequency	%
Gender	Female	432	56.4
	Male	334	43.6
Age	18-25	219	28.6
	26-35	421	55.0
	36-45	67	8.7
	46 and above	59	7.7
Educational Status	Primary and Secondary	253	33.0
	University	430	56.1
	Postgraduate	83	10.9
Income Status	3.000 TL and less	208	27.2
	3.000-4.000 TL	96	12.5
	4.000-5.000 TL	374	48.8
	5.000 TL and above	88	11.5

3.4.2. Validity and Reliability Analyzes

The validity and reliability of the variables were checked, and the results are presented in Table 2. Cronbach Alpha values were examined to determine the reliability of the data used in the research, and Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied to determine their validity. As a result of the EFA analysis, Kaiser Meyer Olkin (KMO) values above 0.7 means that the sample size is sufficient for the analysis (Fidell and Tabachnick, 2015:544). As a result of EFA, it was decided to remove the EI5 statement with a factor load of 0.557, which was considered to adversely affect the validity of the scale.

Table 2. Validity and Reliability Results

	Statement	Factor Values	KMO	AVE	CR	Cronbach
Economic Incentives (EI)	EI 1	0.702	0.748	0.541	0.824	0.742
	EI 2	0.678				
	EI 3	0.772				
	EI 4	0.786				
	EI 5	0.557				
Non-Economic Incentives (NEI)	NEI 1	0.705	0.769	0.543	0.856	0.787
	NEI 2	0.727				
	NEI 3	0.737				
	NEI 4	0.779				
	NEI 5	0.736				
Consumer Awareness (CA)	CA 1	0.570	0.700	0.513	0.759	0.754
	CA 2	0.708				
	CA 3	0.701				
	CA 4	0.740				
Contribution to Reverse Logistics Activities (CRLA)	CRLA 1	0.872	0.791	0.673	0.891	0.834
	CRLA 2	0.877				
	CRLA 3	0.766				
	CRLA 4	0.760				

For the convergent validity of the scales, all of the Average Variance Extracted values (AVE) should be above 0.5, and the Composite Reliability (CR) values should be above the AVE values. In addition, the fact that the factor loads of the scales are all over 0.7 indicates that the statements in the scale are suitable for the structure of the scale. The Cronbach Alpha and Composite Reliability (CR) values of the scale are above 0.7 indicates that the scale has internal consistency (Hair et al., 2010:123).

By applying Confirmatory Factor Analysis (CFA) to the data used in the study, the criteria used without evaluating the fit of the data, the values of the model and the ideal fit indices are presented in Table 3.

Table 3. Confirmatory Factor Analysis Results

	CMIN/DF	GFI	NFI	TLI	CFI	RMSEA
Two-Factor Model (EI+CRLA)	5.618	0.975	0.976	0.961	0.980	0.078
Two-Factor Model (NEI+CRLA)	4.804	0.977	0.980	0.966	0.984	0.071
Two-Factor Model (CA+CRLA)	4.484	0.980	0.974	0.965	0.980	0.067
Three-Factor Model (CA+EI+CRLA)	4.658	0.968	0.969	0.955	0.975	0.069
Three-Factor Model (CA+NEI+CRLA	3.745	0.970	0.977	0.969	0.983	0.060
Research Model (4 Factor)	4.501	0.940	0.958	0.950	0.967	0.068

EI: Economic Incentives, NEI: Non-economic Incentives, CA: Consumer Awareness, CRLA: Contribution to Reverse Logistics Activities

In the CFA analysis, the fit indexes of different models were examined and it was determined that the research model had good index. (CMIN/df = 4.501; $p < 0.001$; GFI = 0.940, NFI = 0.958, TLI = 0.950, CFI = 0.967, RMSEA = 0.068). After determining the suitability of the fit indexes of the research model, the parameters in the model were examined. The estimation, CR, standard error, R2 and p values for each variable are shown in Table 4.

Table 4: Model Parameter Estimates and Statistics

Variables					
Economic Incentives	**Estimate**	***t*-value (CR)**	**Standart Deviation**	**R^2**	**P**
EI1	1.000			0.25	
EI2	1.055	11.910	0.089	0.22	***
EI3	1.582	14.388	0.110	0.56	***
EI4	1.828	15.038	0.122	0.67	***
Non-economic Incentives	**Estimate**	***t*-value (CR)**	**Standart Deviation**	**R^2**	**P**
EOO1	0.809	17.513	0.046	0.36	
EOO2	0.553	12.630	0.044	0.20	***
EOO3	0.834	18.643	0.045	0.41	***
EOO4	0.624	15.474	0.040	0.30	
EOO5	1.000			0.66	
Consumer Awareness	**Estimate**	***t*-value (CR)**	**Standart Deviation**	**R^2**	**P**
CA2	1.603	10.690	0.150	0.45	***
CA3	0.830	8.807	0.094	0.12	***
CA4	1.000			0.16	***
Contribution to Reverse Logistics	**Estimate**	***t*-value (CR)**	**Standart Deviation**	**R^2**	**P**
CRLA1	1.000			0.59	
CRLA 2	1.247	30.568	0.041	0.93	***
CRLA 3	0.918	18.716	0.049	0.43	***
CRLA 4	0.614	17.855	0.034	0.34	***

As can be seen from Table 4, each expression of the variables has a significant level of determination ($p<0.001$). When the economic incentives variable is examined, the statement “The campaigns of the companies that pay a fee if the product is returned, will encourage me” explains the variability the most (R2=0.67), and the least “If the company offers the option to buy the product back while purchasing the product, even the price difference, I would prefer that company" (R2=0.22). The standard values of these variables are at the appropriate level, and the t values are significant.

When the non-economic incentives variable is examined, the statement “I usually prefer companies that prioritize reverse logistics practices” explains the variability the most (R2=0.66), and the least (R2=0.20). “I usually use the rental method instead of buying.”. The standard values of these variables are at the appropriate level, and the t values are significant.

When the consumer awareness variable is examined, the statement “I find the legal regulations regarding reverse logistics sufficient” explains the variability the most

(R2=0.45), and the statement "I think the public has sufficient information about reverse logistics" (R2=0.12) the least. The standard values of these variables are at the appropriate level, and the t values are significant.

When the contribution to reverse logistics practices variable is examined, the statement "Business' reverse logistics practices affect my choices" explains the variability the most (R2=0.93), and the statement "When price and quality are similar, I prefer the products of the company that supports reverse logistics practices." (R^2=0.34) explained the least. The standard values of these variables are at the appropriate level, and the t values are significant.

3.5. Testing Structural Modeling

In addition to the reliability and validity of the data used in the research, it was determined that the values of goodness of fit were also explained within acceptable limits. At this stage, the structural model was examined in order to determine the curious effects and mediating roles in the research. As a result of the analyzes performed, the estimation, standard error and CR values of the variables are presented in Table 5, and the significance values of the mediation role of the reference group are presented in Table 6.

Table 5. Estimates, Standart Error, T Values

	β	**S.E.**	**T**	**P**
EI-CRLA	0.167	0.017	9.942	***
NEI-CRLA	0.298	0.026	11.477	***
CA-CRLA	0.326	0.026	12.761	***
CA+EI+CRLA	0.351	0.036	9.665	***
CA+NEI+CRLA	0.724	0.043	16.826	***
Research Model (4 Factor)	0.154	0.027	5.650	***

Table 6. Standardized Indirect Effect Values

	CA		CA
EI	-	EOO	-
CRLA	0.009***	TLUK	0.019 ***

According to the results of the structural equation modeling given in Table 5, all estimations were significant. According to the results, economic incentives (β= 0.167; t= 9.942; p < 0.005), non-economic incentives (β=0.298; t= 11.477; p < 0.005) and consumer awareness (β= 0.326; t= 12,761; p < 0.005) positively and significantly affect the contribution phase to reverse logistics applications.

The results of the analyzes conducted to determine the mediating role of economic and non-economic incentives in the effect of consumer awareness on participation in reverse logistics practices are presented in Tables 5 and 6. According to the results

obtained, a significant difference (EIp= 0.009; NEIp= 0.019) was found between the direct effect and the indirect effect of consumer awareness, and it was understood that economic and non-economic incentives have a mediating role in the effect of consumer awareness on participation in reverse logistics practices (Gürlek, 2020). As a result of the analysis, it was determined that all hypotheses were accepted. In order to measure the effect of demographic variables on reverse logistics applications, independent groups t-test and ANOVA test were applied and the findings are presented in Tables 7 and 8.

Table 7. Descriptive Statistics of the Relationship between Gender and Reverse Logistics Applications

	Gender	N	S.D.	F	t	P	Mean
CRLA	Female	432	0.051	0.191	8.380	0.000	4.000
	Male	334	0.051		8.450	0.000	3.568

Table 8: Descriptive Statistics of Age, Education and Income Status and Reverse Logistics Practices Relationships

		N	S.E.	F	P	Mean
Age	18-25	219	0.136	10.298	0.000	4.000
	26-35	421	0.058			3.757
	36-45	67	0.132			3.687
	46 and above	59	0.181			3.375
Educational Status	Primary and Secondary	253	0.185	18.912	0.000	3.375
	University	430	0.055			4.022
	Postgraduate	83	0.183			3.711
Income Status	3.000 TL and less	208	0.090	5.245	0.001	3.903
	3.000-4.000	96	0.083			3.645
	4.000-5.000	374	0.086			3.850
	5.000 and above	88	0.107			3.613

Although there is not a big difference according to the independent groups t-test findings on the relationship between gender and reverse logistics applications, it has been determined that female consumers support and give more importance to reverse logistics applications than male consumers.

According to the findings of the ANOVA test conducted to determine the relationship between age, education and income status and reverse logistics applications, it was understood that young consumers (18-35 years old) are more sensitive and interested about reverse logistics applications compared to other age groups. In addition,

university and post-graduated consumers support reverse logistics applications more than primary and secondary school education graduates. It has been understood that there is a negative relationship between low income status (3.000 TL and less) and reverse logistics applications.

4. Discussion, Conclusion and Recommendations

In this study, it has been tried to determine the factors that affect the adoption of reverse logistics applications and to reveal the efficiency of the effect of economic and non-economic incentives on reverse logistics applications.

As a result of the analysis and testing of the hypotheses, it was seen that all 6 hypotheses determined in the light of the conceptual model were accepted. By examining the first, second and third hypotheses, it was concluded that economic incentives, non-economic incentives and consumer awareness have a direct, significant and positive effect on the support and contribution of consumers to reverse logistics applications.

It has been understood that deposits paid for products such as bottles, boxes, newspapers, pallets, used products can be replaced with new ones for a reasonable price, and campaigns that pay a fee in case the product is returned, encourage consumers. Furthermore, it has been understood that businesses that provide the option to take back the product are more preferred than other businesses, and that consumers prefer reverse logistics facilities where unused products are destroyed for free or for a reasonable price. In terms of businesses, their own corporate, economic and marketing strategies can be counted among the reasons that push businesses to reverse logistics applications. These findings are supported by the results of these studies although there are similar results in the literature examining economic incentives that encourage reverse logistics applications (Brito and Dekker, 2002: 18; Coşkun, 2011: 90; Yıldız, 2013: 72; Wang, Hao, Gao, Zhang, Zhang and Zhou, 2019: 730; Genevois and Dinç, 2020: 12).

It has been understood that consumers may prefer the companies selling new products in case of bringing the old product, they emphasize the importance of legal regulations regarding reverse logistics practices, and environmentally sensitive consumers are more interested in reverse logistics practices. Furthermore, from the point of view of enterprises, it has been understood that reverse logistics applications are important in terms of positively affecting the image of enterprises. Although these findings are similar to studies examining non-economic incentives that encourage reverse logistics practices in the literature, they are supported by the results of these studies (Brito and Dekker, 2002: 19; Kumar and Putnam, 2008: 313; Coşkun, 2011: 91; Kısa, 2015: 15; Sayın, 2017: 43; Tighazoui, Turki, Sauvey and Sauer, 2019: 1173).

The majority of the consumers who participated in the research stated that there are not enough waste collection facilities in the city they live in, that they do not find the legal regulations regarding reverse logistics sufficient, that the public does not have enough information about reverse logistics, and that there is not enough contribution and importance to reverse logistics practices among people around. Although these findings are similar to the studies examining consumer awareness about reverse logistics applications in the literature, they are supported by the results of these studies (Tastepe and Aral, 2014: 150; Gedik, Kurutkan and Çil, 2014: 11; Ünver, Avcıbaşı and Özkan, 2015: 3; Karahan, Görgün and Oktay, 2017: 74; Sayın, 2017: 44; Ünüvar,

Kılınç, Sarıgök and Şalvarcı, 2018: 21; Yaşar, 2019: 34; Vezir Oğuz, 2018: 180; Özdemir, 2019: 27; Yıldız and Göktepe, 2020: 2065).

It is understood that the majority of the consumers who participated in the research preferred the companies that support the processing of the collected wastes in the recycling facilities, generally and within their possibilities, prefer the businesses that apply reverse logistics, do not hesitate to spend more money on businesses that create social benefits, and that they prefer businesses that support reverse logistics applications when the price and quality are similar. Although these findings are similar to the studies examining the support and contributions of consumers to reverse logistics applications in the literature, they are supported by the results of these studies (Karahan, Görgün and Oktay, 2017: 74; Mataracı, 2017: 123; Özsaçmacı, 2018: 958; Saba, 2019: 22; Balaban, 2020: 82).

In addition to these findings, as a result of researching the effect of demographic variables of the consumers participating in the research on their support and contribution to reverse logistics applications, it was found that female consumers have higher awareness and contribution compared to men, young and those with a university/graduate education degree consumers support reverse logistics applications more than other groups. It has been understood that there is a direct ratio between income level and supporting reverse logistics practices.

It is expected that this study will give an idea to businesses, marketers and practitioners on the issues related to the determination of the factors that affect consumers' adoption of reverse logistics applications, and the efficiency of the effect of economic and non-economic incentives on reverse logistics applications. When the studies on reverse logistics applications are examined, it has been determined that generally evaluations are made in terms of businesses and suggestions are made for reverse logistics facilities. In the literature, there are not many studies in which reverse logistics applications are evaluated from the point of view of consumers. When businesses organize more information and awareness-raising campaigns about the reverse logistics activities they implement, they will both provide a corporate benefit in terms of customer acquisition and a social benefit in terms of raising awareness of consumers. With the importance that businesses attach to reverse logistics practices, they will be able to create loyal customers and also have the opportunity to recycle for improving activities related to their products/services.

It is considered that the study will shed light on future academic studies. The sample of the study is limited to consumers over the age of 18 living in Turkey. For this reason, a model specific to consumers over the age of 18 living in Turkey has been developed with the collected data. It is considered that the application of similar studies on the subject to be done in the future in different countries and consumer groups may provide the opportunity to reach more detailed results.

Tablo ve şekillere başlık ve sıra numarası verilmeli, başlıklar tabloların üzerinde (Tablo 1. Tablo adı), şekillerin ise altında (Şekil 1. Şekil adı) yer almalıdır. Tablo ve şekiller dikey olarak (tam sayfa olan tablo ve şekiller yatay olarak yerleştirilebilir), denklemler sayfaya ortalı olarak verilmeli ve denklemlerin sıra numaraları parantez içinde olup sayfanın sağ tarafına yaslanmalıdır. Tablo ve şekillerin paragraf hizasını aşmamasına özen gösterilmelidir. Tablo ve şekillere başlık ve sıra numarası verilmeli, başlıklar tabloların üzerinde (Tablo 1. Tablo adı), şekillerin ise altında (Şekil 1. Şekil adı) yer almalıdır. Tablo ve şekiller dikey olarak (tam sayfa olan tablo ve şekiller yatay olarak yerleştirilebilir), denklemler sayfaya ortalı olarak verilmeli ve denklemlerin

sıra numaraları parantez içinde olup sayfanın sağ tarafına yaslanmalıdır. Tablo ve şekillerin paragraf hizasını aşmamasına özen gösterilmelidir.

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