Perceived quality of green reverse products and diffusion effect

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Abstract
This study is conducted on the academicians in University of Gaziantep and examines the perceived green reverse logistics products and their behaviours about the diffusion of these products. In this context, as a result of the analysis of the 233 data obtained by the survey technique, it is found that there is significant relationship between demographic features (age, gender, marital status, education level and income rate) and perceived quality of the green reverse logistics products and diffusion. There are not found any statistical differences in the perceived quality of the green reverse logistics products according to education level, age, gender, marital status and income rate. But it is seen that perceived quality changes according to title of the academicians as statistically. In addition, in this study it is statistically found that the opinions of the academicians on the diffusion of the green reverse logistics products, there are differences according to education level, age, title and income rates. It is also seen that there are no differences according to marital status and gender. This study was made only one occupational group, but following studies can be extended to cover different occupational groups or industrial consumers. Moreover, other variables can be added in the study. For example, relations between risk, quality and diffusion can be examined.

Introduction
Environmental sustainability implements (Green supply chain management (GSCM) is one of them) reverse logistic and sustainable supply chain management are seen as an important interest for managers, academicians based on many of articles, magazine, conference and websites (Nikbakhsh, 2009; Sarkis, 2003; Sarkis, 2011; Nikolaidis, 2013, Taticchi et al, 2015). The reason of increasing interest in reverse logistic are due to environmental fear and continuation of sustainability, dictated environmental-friendly product and legal arrangements that increase manufacturers' obligations, desire to achieve stability that resulted from manufactures recycling and as a necessity of competitive environment (Lee ve Na, 2010 ; Toffel et al, 2008; Nikolaidis, 2013). Specially lately consumers'raised awareness and the term of sustainability that came out as a result of business life's trend are accepted as demonstration of firms' consistencyin sustainability (Hitchcock 2012:98-99, Khor and Udin 2013 ; Lubin and Esty, 2010).

Firms need to meet these demands as a reason of increasing implied coercion of shareholders (customers, suppliers, partners, government etc.) (Yu and Ramathan, 2015). Increase in environmental deformation and pollution, decrease in sources caused of a raise in awareness of green supply chain management (GSCM) (Sarkis et al., 2007). GSCM purposes to raise interest in supply chain management and implements for researchers and implementers and ensure transition from environmental management practices in audience of the reactive position to proactive position Srivastava, 2007).Customers are an important part of reverse logistics and interaction with customers increases the efficiency of GSCM applications (Rao and Holt, 2005; Zhu and Sarkis, 2004). Thanks to this interaction, it will be easier to understand how customers think about reverse logistic, why they would buy or they would not buy those products. Interaction with customers has a great importance on green reverse logistic products' adaptation process and increasing volume of diffusion (for logistic diffusion). Therefore, analyzing the interaction between identifying consumers' quality perception and demographic attributes that the most important variables, which effects logistic spreading, are very important. Reverse logistic is a reflection of loss of customer satisfaction and profitability although it's not as old as advanced logistic. Herewith, attempts in the supply chain areas are important in order to achieve competitive advantage (Hazen et al, 2011). Barn (1991) had analyzed the relationship between sustainable competitive advantage and resources and declared that sources (human, physical and organizational resources) which cannot be imitated by other companies have sustainable competitive advantage (Barn ,1991). Four basic factors that affects sustainable competitive advantage are value, rare, imperfectly imitable, non-substituable (Barn ,1991). With the sources that firm possess different strategies can be developed which boost

productivity and provide competitive advantage. Those sources that provide competitive advantage can be assets, talent, organizational processes, company logo, information etc. Generally, acceptance of sustainable products in global green business field operated with source reduction and quality strategy (Khor ve Udin, 2013).Thus recovery on reduction of source usage and reverse logistic activities gain importance. Firms supposed to expect benefits in order to hold competitive advantage if they have more or less knowledge of quality management in recovery activities (Barn , 1991: Nikolaidis, 2013). It is foresighted that there will be no perceived quality difference between the products that obtained by reused, remanufactured and recycled in reverse green logistic and new products (Bhattacharya, 2006:430). However, not only having lack of information about perceived quality differences but also competitive priority and recycling choice have not fully explained. Thus more detailed researches are in need between GRL and quality (Prahinski and Kocabasoglu, 2006:526-528). The first pioneer study on GSCM goes back to 1969 done by Ayres and Kneese (Sarkis et al, 2011). Green reverse logistic (GRL) products and new products are substitute products. Supply chain attempts in all over fields are important to achieve competitive advantage however, researches that done for this field are insufficient (Hazen et al, 2011).   Whence, its attempted to contribute to literature by studying on perceived quality which is accepted as GSCM adaptation and competitive advantages. EPA (U.S. Environmental Protection Agency) mentioned in 1997 that reproduction activities with consuming less energy and less contaminant are one of integration of reuse. But there are insufficient number of research on recycling yet (Souza, 2002). After considering on all of those facts, expected unique values from this research are;

Firstly, identifying academicians' quality perception about GRL products in Turkey,

Analyzing academicians' quality perceptions' effects on GRL products' diffusions

Analyzing quality perception of GRL products based on academicians' demographic characteristics

The findings, which will be obtained from the research, are important for firms to develop strategy and policy for GRL products. Because, policy and strategies that developed for consumers' perception will contribute to boost spreading green reverse logistic activities and increase customer satisfaction. Herewith, Firms will contribute sustainable environment and gain public prestige. Furthermore, reproduction option will not only increase serving quality to customers but also will increase firms' efficiency by reducing costs (Bhattacharya, 2006).

Literature Review

The tough competition in business world, environmental law and regulations, customer power and awareness, social responsibilities urge firms to use green management approaches. (Kaus, 2012) Value saver green reverse logistic activities are strategically important for firms. Moreover, both customers and firms (Rogic, 2010 ; Atasu and Cetinkaya, 2006) accept these activities as motivation for the environmental protection process.

 Developments on green supply logistics are important for both environment and for competitive advantage (Hazen et al, 2011). Firms in green supply chain management (GSCM) supposed to switch from passive reactive environment management to proactive (recycling, reuse, repair, reproduction, reverse logistics and so on) environment-friendly implements (Srivastava, 2007). Nunes and Bennett (2010) assert that green activity implement should include green building, eco-design or design for environment, green supply chain, green production and reverse logistic activities (Yu and Ramanathan, 2015). Reverse supply chains processes are regarded as value savers due to allowing usage of used products (Atasu and Cetinkaya, 2006). Thus re-production with recycling to reach sustainable development goals are accepted as one of the biggest impression both economically and environmentally (Souza, 2002).

2.1. GSCM and GRL

According to Sarpong and Sarkis (2016) industrial damage to environment cause of drawing more attention by GSCM researchers and applicators (Beske and Seuring, 2014; Brandenburg et al., 2014; Tseng and Chiu, 2013) .

Srivastava (2007) determined GSCM as integrating supply chain management into environmental considerations.

Scrapheap products management is one of the essential strategies of GSCM (Zhu et al., 2008). RL is the term which refers to scrapheap product management and also all the information about collecting wasted products, transferring, stocking, repairing and revise, creating value or refuse disposal and logistics during the steps (Hazen et al., 2011 ; Krikke, 1998) Rogers and Tibben-Lembke, 2003).

Moritz and fellows (1997); defines reverse logistic as a process which contains all the logistic activities of converting used products or the products no longer available for usage into reusable products

Dowlatshahi (2000) explains the RL "a process in which a manufacturer systematically accepts previously shipped products or parts from the point for consumption for possible recycling, remanufacturing or disposal".

GRL; Rogers and Tibben-Lembke (1998) defines GRL as green logistic or in other term ecologic logistic is minimizing ecological efficiency of logistic activities. Green logistic activities include reducing energy consumption of logistic activities and amount of material usage, measure environmental effects. Some of green logistics may be categorized as reverse logistic. For instance, reusable transportation and reproduction are one of reverse and green logistic activities. However, there are many green logistic activities, which are not related with reverse logistic. For example, reduction of energy consumption or less packing process required single-used package designs are not reverse logistic activities. While designing a product with using less plastic material is not counted as reverse logistic, designing a product with a reusable pack is a reverse logistic (Rogers and Tibben-Lembke, 1998). Increasing demands in green products demonstrate requirements of using green logistic for these products (Wu et al., 1994). Doing more with less according to (Westkamper, 2000) industries during the production process not only aim to minimize environmental effects for sustainability but also necessarily required using recycling, remanufacturing and reusing for the recovery strategies (Anityasari and Kaebernick, 2008). Current literature studies on consistent points between GSCM and RL (Bilodeau, 2016, Nunes and Bennett, 2010, Nylund, 2012, O'Connell, 2007, Rogers and Tibben-Lembke, 2001, Murphy and Poist, 2000, Van Hoek, 1999). In this context, RL functions which serves to GSCM and reusing, one of GRL implements, reproducing and recycling terms will be defined (Hazen et al., 2011). In this perspective, GRL functions that are belonging to GSCM are the way of innovation due to contribute spreading GSCM. Furthermore, the term of perceived quality will be examined with this innovation diffusion.

2.1.1. *Reuse*

Produced millions of products upon entering refuse chain with short product life circle is an extreme problem for environment however comes with great potential for recycling used products (Guide and Van Wassenhove, 2001). According to Guide and Van Wassenhove (2001) reusing options prevent wastage and protects natural sources (energy and raw material) by creating value (repair, reproducing etc.) and recycling material (recycling process) (Thierry , Salomon , Van Nunen and Van Wassenhove 1995) Additionally, affects stability positively. Reuse may be defined as a product that bought by customer but returned back for some reason and entering supply chain back. There is no additional feature required for this kind of products that are ready to be reused and all the functions work perfectly. This product will be passed only collecting and cleaning process (Hazen et al., 2011). Purpose of the reuse is making new products from old products that as good as new one with same quality and acceptable utility and reliability features (Anityasari and et al, 2005; Steinhilper, 1998).

2.1.2. *Remanufacturing*

Process of remanufacturing are removing products' part, cleaning, repairing or changing apart and then assembling (Hazen et al, 2011; (Stata, 2006). In another term, producing visually and capably as good as original one with used products by recycling app (The Remanufacturing Institute, 2006; Stata, 2006).Goals are to extend life cycle of mentioned products. Developed products' new version may differ depends on the reproducing technique and strategic purpose (Hazen et al, 2011). Remanufacturing costs almost half of original product. Reproduced product may be sold at 60% of original product's price with 40% less cost. Therefore, while consumers are buying reproduced products economically at cheaper price, manufacturers will also make a significant profit (Stata, 2006).

2.1.3. *Recycling*

Rogers and Tibben-Lembke (1999), from council of logistic management, explains reverse logistic;

"The process of planning, implementing and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or for proper disposal". Studies on RL are focused on recycling (Guiltinan and Nwokoye, 1975; Pohlen and Farris, 1992). Recycling is a process that recover parts of a product which still have values (Hazen et al, 2011). During the process of reuse and remanufacturing which is a step of recovering previous product identification of product, functionality and components are protected. However, during the process of recycling the product's components, identification

and functionality are lost. The purpose of recycling is to use used products and components. Some of component parts which has high quality may be used for producing original apart or may be used again for producing another parts (Thierry et al., 1995). According to Hazen and fellows (2011), some studies about recycling which includes the recyclable products such as rubber, paper, dye, cans and so on are popular green implement studies (Roy et al., 2006).

After used products and components are demounted as apart cycling starts and those parts are categorized by different materials. Those materials will be used in producing new products. For instance, the whole metal parts of a wasted car (75% of a car's average weight) can be recovered by recycling in Germany, England, USA and some other European countries (Thierry et al., 1995). To sum up all systems recycle. (Kralj, ve Markič 2007) The biosphere is a network of continually recycling materials and information in alternating cycles of convergence and divergence. In this sense, there are some opinions that RL is the closest field to recycling and environmental subjects (Daugherty et al., 2002).

3. Perceived Quality of Green Reverse Logistics

Although there has been done many of studies on green reverse logistic, there are not sufficient number of studies about perceived quality of GRL products' during and after sale (Kroll et al., 1999). Quality researchers found out that growing helps expanding the product's use, increasing investment and quality bringing higher growth rate by contributing to market share and affects strategically return on investment (Anderson ve Zeithaml 1984; Buzzell and Wiersema, 1981 ; Philips et al; 1983).

According to Hazen et al (2011) researches that done about products' perceived quality which are produced with RL management are not sufficient in literature moreover, more detailed advanced level researches must be done about quality difference between refurbished products or recycled products and new products (Prahinski and Kocabasoglu, 2006). It will increase importance of refurbished products to be foreseen being perfectly substituted and having no difference in terms of quality perception compared to new products. Many of studies point out GRL products and new products have no differences for demands and being substituted (Atasu and Cetinkaya, 2006; Bayindir et al., 2003). However, some researches show that GRL products are perceived as low quality by consumers for an unknown reason (Hazel et al., 2011), Vorasayan and Ryan, 2006). Academicians' quality perceptions of GRL products are analyzed in this research.

4. Logistics Diffusion

Diffusion, described as an idea, practice or project that is perceived as new by individual or other unit of adoption (Rogers, 2003). Diffusion is a process of spreading of product's using level in a specific population. Spreading GRL products, beside of source location, helps to minimize economic and environmental issues that caused by contaminant and contribute to sustainability.

Rogers (2003) is one of popular diffusion models of innovation (Sherry & Gibson, 2002). The innovation of diffusion model which is created by Roger is studied by integrating into disciplines (health, information, technology, education, economy, management etc.) (Hazen et al, 2011). Logistic diffusion is also searched in these disciplines (Cooper and Zmud, (1990); Premkumar et al., (1994); Chen et al., (2009); Germain et al., (1994); Patterson et al., (2004) ; Williams (1994)). This research purposed to explain logistic diffusion in order to use it in green reverse logistic products, be demanded, be used, and will be used by consumers. The relationship between consumers' quality perception and logistic diffusion are studied in the research. Certainly, these products' logistic diffusion is expected to be high as long as consumers' quality perception of GRL products are high.

5. Methodology

The objective of this study is to explore the relationship between the diffusion of quality perception and demographic characteristics to determine whether different perceptions according to demographic characteristics for these variables have. The research subject limits subject of this study. Therefore, study topic is limited to research topics. Study was conducted in Turkey on April and May of 2016, it was carried out on academics at the University of Gaziantep. Likert-type questionare was used as data collection methods in the study. Scales in the questionnaire used in the study is proven the validity and reliability of the scales by in the literature. To assess the variations, survey questions are derived from studies of Larson (1994), Yoo ve Donthub Naveen Donthub, (2001), Chen and Chang (2012), (Zeithaml (1988); Chen ve Chang (2013)). Yu-Shan Chen, Ching-Ying Lin, and Chia-Sui Weng (2015). The population consists of all academics in the study Gaziantep University. 1595 academics is working on April in 2016 at University of Gaziantep. Therefore, the number of working population is 1595. In this context, the sample of the study is elected simple random sampling by face-

to-face interviewing techniques and 233 interviews are analyzed. In this study; social sciences, basic sciences and health sciences examples of the involvement of all academics to provide a simple random sampling technique was used. In the context of the research examined a model that shows the relationships between the variables in Figure 1 are shown. As can be seen in the model, three basics hypotheses generally tested in the research. Accordingly, the hypotheses of the research;

H_1: There is a relationship between the perception quality of products of green reverse and logistics diffusion. .

H_2: The quality perception related to green reverse logistics product varies according to demographic variables.

H_3: Opinions vary regarding the logistics diffusion according to demographic variables.
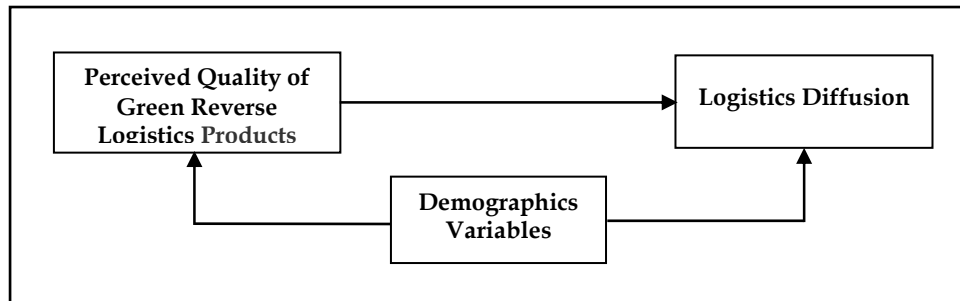

Figure: 5.1. Theoretical Model of the Study

5.1. Data Analysis and Findings

In this study to measure and analyze the variations, SPSS 22 for Windows is used. In this context the sample properties with frequency tables and the hypothesis were tested by factor analysis and then regression analysis the reliability test was performed.

The demographics of sample group by obtained findings are shown in Table 5.1.

Table 5.1. Demographic Characteristics of Participants

Age	Frequency	Percent	Cumulative Percent
<30	48	20,7	20,7
30–34	61	26,3	47,0
35–39	51	21,6	68,5
40–44	19	8,2	76,7
45–49	29	12,5	89,2
50+	25	10,8	100,0
Total	233	100	
Gender	Frequency	Percent	Cumulative Percent
Male	137	58,8	58,8
Female	96	41,2	100,0
Total	233	100	
Education Level	Frequency	Percent	Cumulative Percent
Graduate	13	5,6	5,6
Upper-Graduate	67	28,8	34,3
Doctorate	153	65,7	100,0
Total	233	100	
Marital Status	Frequency	Percent	Cumulative Percent
Single	80	34,3	34,3
Married(with children)	28	12,0	46,4

Evli (no child)	125	53,6	56,4
Total	233	100	
Income	Frequency	Percent	Cumulative Percent
3001-4000	59	25,3	25,3
4001-5000	51	21,9	47,2
5001-6000	56	24,0	71,2
+6000	67	28,8	100,0
Total	233	100	

As seen in Table 5.1. the majority of respondents are married (65.7%), men (58.8%) and young academics under 40 years (68.5%). In addition, the majority of respondents (65,7%) have doctoral degree and income levels over the 4000 Turkish Liras 74.7%) and are faculty members (74.7%)

Table 5.2. Results of Factor Analysis

	Quality	Diffusion
1=Lower, 2=Low, 3=No diffrence, 4=High, 5=Higher		
The performance of the product produced by the reverse logistics activities as compared to products produced with normal products,	0,852	
The reliability of the products produced by the reverse logistics activities, according to the normal product (failure rate)	0,659	
The durability of the products produced by reverse logistics activities compared to normal production (life),	0,835	
Overall quality of the product produced by the reverse logistics activities compared to normal production,	0,840	
1=Strongly Disagree, 2=Disagree, 3=Undecided, 4= Agree, 5= Strongly Agree		
I am willing to buy the product produced by the reverse logistics activities more than the normal products.		0,587
I want to spread products that produced with reverse logistics activities, according to the normal products as much as possible.		0,780
I buy the products with produced with reverse logistics activities if there is no price difference according to normal products.		0,775
I can use the products with produced with reverse logistics activities if there is no quality difference according to normal products		0,821
I can use the products with produced with reverse logistics activities if there is no risky situation according to normal products		0,806
I can use the products with produced with reverse logistics activities with peace of mind.		0,740

Total Variance Explained: % 64,351 Varimax Method: Main Components Analysis, Rotation Method : Varimax Rotation (KMO)

All the scales used in the study are evaluated with factor analysis concurrently. As it's seen in Table 5.2. factor weights resulted mostly high values and variations are loaded to 2 factors. This shows that; the interview questions used to assess the variations have wholeness, and variations are loaded accurately. Only two-question relevant with the perception of quality and diffusion variables removed from the analysis because are not loaded into each relevant variable.

Table 5.3. Reliability Correlation, Mean, Standard Deviation and Correlation Analysis

	Alpha	Mean	S.Dev.	Perceived Quality	Diffusion
Perceived Quality	0,832	2,7092	0,75068	1	
Diffusion	0,864	3,7618	0,77783	0,371**	1

In Table 5.3. reliability of the research variables (alpha values), mean, standard deviation and correlation analysis results are given. As seen in the table, cronbach's alpha values were high. According to results of the correlation analysis, there is relation between the perception of quality and diffusion variables and satisfactorily significant at the 0.01 level.

Tablo 5. 4. Regression Analysis Results for Logistics Diffusion

Independent Variables	Standardized Coefficients Beta(β)	Sig. (ρ)
Perceived Quality	0,371	0,000

F :0,369   R²: 0,138   Adjusted R²: 0,134 ρ: 0,000
Std. Error of the Estimate: 0,72383 Durbin-Watson: 1,404

In the study "There is a relationship between the perception quality of products of green reverse and logistics diffusion" hypothesis was tested by regression analysis. As seen in Table 5.4 there is a relationship between the perception quality of products of green reverse and logistics diffusion s significant at the 1% level by statistically. Therefore, this hypothesis is supported by the research results. According to this result, academicians' perception of the quality of green reverse products increases, the opinions of green reverse logistics products and the diffusion (purchasing, using, and want to more spreading) is also increasing.

Table 5. 5 T-Test

Perceived Quality of Green Reverse Logistics Products						
	N	Mean	Std. Dev.	df	t	Sig.
Male	137	2,675	,7502	231	-,826	,409
Female	96	2,757	,7526	234,203	-,826	
Diffusion of Green Reverse Logistics Products						
Male	137	3,809	,7842	231	1,107	,269
Female	96	3,694	,7676	237,310	1,111	

Male and female academics participating in research do not differ in perceived quality of green reverse products and logistics diffusion by statistically. Namely, there is no difference in quality perception of these products for men and women in the survey. Both groups have a similar level of perceived quality. On the other hand, the respondents see as same level both perceived quality of green reverse products and normal products. The average value of this variable found close to 3 (no difference), while men's average is 2.675 and women's average 2.757, respectively. So the perceived quality of the normal product and which produced green reverse activities do not perceived differently. There is no difference between men and female for about opinion of diffusion of green reverse logistics as seen in Table 5.5. by statistically. So opinions regarding the diffusion of the product under investigation is the same in for men and women by statistically, too. On the other hand, opinions regarding the diffusion of these products are positive. The average values of this variable close to 4 (I agree), the average is for women 3,694 and male 3,809. Therefore, research participants are willing to point the diffusion of green reverse logistics product. They stated that the realization of diffusion of these products.

Table 5. 6. F-Testi Analyse for Perceived Quality

		df	Mean Square	F	Sig.
Education Level	Between Groups	2	,048	,086	,918
	Within Groups	230	,564		
	Total	232			
Age	Between Groups	15	1,025	1,867	,101
	Within Groups	227	,549		
	Total	232			
Marital Status	Between Groups	2	1,420	2,573	,078
	Within Groups	230	,552		
	Total	232			
Income Level	Between Groups	3	,477	,851	,467
	Within Groups	229	,560		
	Total	232			

There is no difference in demographics characteristics of the respondents for their perceived quality of green reverse logistics products as seen in the Table 5.6. Namely, perceived quality of green reverse products of the respondents is the same as for education level, age, marital status and income level. This result does not support that (H₂ Hypothesis) "The quality perception related to green reverse logistics product varies according to demographic variables." There is no difference perceived quality of green reverse logistics according to demographic variables. In addition, perceived quality of the average value of the group by

demographic characteristics are between 2.61 and 3 (no difference), respectively. Therefore context of in this study; the quality of green reverse logistics products according to demographic variables, are seen on the same level with the quality of the normal product. That it is thought that be no difference between the normal products with these products.

Table 5.7. F-Test for Diffusion

		Df	MeanSquare	F	Sig.
Education Level	Between Groups	2	2,175	3,805	,024
	Within Groups	230	,572		
	Total	232			
Age	Between Groups	5	3,094	5,835	,000
	Within Groups	227	,530		
	Total	232			
Marital Status	Between Groups	2	,239	,405	,667
	Within Groups	230	,589		
	Total	232			
Income Level	Between Groups	3	1,763	3,092	,028
	Within Groups	229	,570		
	Total	232			

As it seen in the Table 5.7. there is difference in educational status of respondents, age and income level according to the opinions of diffusion of green reverse logistics products by statistically. Namely, context of this study opinions of diffusion differ in educational level and income level significant at the 5% (ρ:,024) , for age significant at the level 1% (ρ:,000) by statistically. On the other hand there is no difference in marital status for these products. This result support that (H₃ Hypothesis) "Opinions vary regarding the logistics diffusion according to demographic variables." Namely, there are differences of opinion regarding the diffusion of green reverse logistics product according to demographic variables. Literature support that significant relationships were found between demographic characteristics and purchasing behavior of environmentally friendly product like GRL products (Aytekin and Büyükahraz, 2014). Tukey test was performed to understand where this difference for demographics. There is difference between participants with a bachelor's degree and who have a doctoral degree significant at the level 5% opininions according to diffusion of green reverse logistics products. There is no difference between other educational levels. In this study participants who have a doctoral degree support than participants with a bachelor's degree for diffusion. There are differences between the groups according to the age variable. There is difference between age with less than 30 years old; the 30-34 and 35-39 significant at 5% level. Also, there is difference between age with younger than 30 years old and age 40 to 44 years old significant at 5% level. Age of the big ones, want diffusion of green reverse logistics more than the small ones. There is difference between participants according to income level about the opinion of diffusion. There is difference about views of participants who have 4001-5000 Turkish Liras income and over the 6000 Turkish Liras. Participants with higher income levels want more diffusion of green reverse logistics products. On the other hand views on the diffusion of this product is based on positive demographics. Because the average value of variable close to 4 (agree). Therefore, participants want to opinion of the diffusion of green reverse logistics products and the realization of diffusion.

Conclusions and Suggestions

In this study, the relation of perceived quality of green reverse logistics products and diffusion were examined on 233 academics at University of Gaziantep, in Gaziantep, in Turkey. Also academics' behavior and views about perceived quality of green reverse logistics products and diffusion according to demographic characteristics were analyzed on these variables. In the this study context, the following conclusions were reached by performing analysis

The majority of this study consists of married (63.7%), male (58.8%), under the age of 40 (68.5%), with a doctoral degree (65.6%) and have income over the 4000 TL (74.7%) academics. In the context of this study, there is a relationship between the perception quality of products of green reverse and logistics diffusion significant at 1% level. It means as the perception of the quality of these products increases, the diffusion of reverse logistics of products increase, too. In other words, if there is a high perception of quality of green reverse logistics products, buying, and using these kinds of products will become more widespread.

There is no difference according to perceived quality green products and diffusion between male and female academics in the study. Namely, in the context of this study, views on the quality perception and

diffusion according to gender are similar to same level. Also, according to gender, that they believe that there is not a difference of quality between them have been identified. However, views on the diffusion of these products in research; it is also supported by both groups. Therefore, the diffusion of these products, men and women want the same level of realization. In this study, there is no statistically difference in the quality perception of green reverse logistics and normal product quality has been found according to demographic characteristics (education level, age, marital status and income level). Namely, quality of green reverse logistics products is observed in this study is seen on the same as level with the quality of the normal product, according to the demographic variables. The reason of the quality perception according to demographic characteristics did not differ in the study is the sample may be from same occupational group. Because perception of quality is different according to demographic characteristics has been proved in several studies in the literature. Educational status of the respondents, age and income level is different according to the views on the diffusion of green reverse logistics products but no difference by marital status was detected. Respondents in this study with doctoral degree support   diffusion more than having a bachelor's degree. Age of the big ones, want diffusion of green reverse logistics products more than the small ones. Participants with higher income levels want more diffusion of green reverse logistics products. In addition, they want to realize the general diffusion of green reverse logistics product according to demographic variables. This study related to the perception of quality   was made for only one occupational group. Subsequent studies can be extended for industrial consumers or to cover different occupational groups. In addition, variables can be added to new research. For example, the relationship between quality, risk and diffusion can be examined in a new study. In this study, the diffusion of green reverse logistics to provide a positive contribution to the quality perception of these products has been found. Therefore, businesses can improve the quality perception of customers for these kinds of products or if consumers' perceived quality of these products is high, the diffusion of these products will increase. If diffusion of these kinds products increase, both businesses and consumers will be profitable and environmental sensitivity will increase.

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