



A STUDY ON THE APPLICABILITY OF REVERSE LOGISTICS IN FOOD ENTERPRISES

Asst. Prof. Mehmet AYTEKİN ,Lecturer Filiz ÇOPUROĞLU ,Lecturer Reyhan
SARIÇİÇEK

¹Gaziantep University Faculty of Economics and Administrative Sciences, TURKEY

²Gaziantep University İslahiye Faculty of Economics and Administrative Sciences, TURKEY

³Gaziantep University İslahiye Vocational High School, TURKEY

ABSTRACT

Increase in competition and emphasis to customer satisfaction have obliged companies to choose and provide right items for consumption and production, such as right place, right time, right condition and right cost, also recycling of products and right product flow. This is only possible with the development of logistics activities. Increasing customer satisfaction, complying with the law, reducing costs, full filling the requirements of social responsibility are them cost-effective ways of providing a competitive advantage in marketplace. In logistic activities, one of the key processes is reverse logistics activities. Reverse logistics is important in terms of businesses, consumers and the natural environment. The implementation of reverse logistics activities a systematic way has become ecologically, economically and legally imperative. Reverse logistics activities are included in the mission of many companies. Accordingly, the importance of reverse logistics worldwide is expected to increase further day by day. In our study, the concept of reverse logistics which is a systematic way of recycling products and allowing their turn to the starting point of the products and information is discussed. Reverse logistics activities of the food firms' operating in the manufacturing sector in Gaziantep Organized Industrial Zone are examined via survey method which measured the level of knowledge on this subject of business; there by the industry's current situation has been displayed. As a result of the current situation, a variety of suggestions on reverse logistics have been put forward.

Key Words: Product Recovery, Recycling, Reverse Logistics. Related Topics-Reverse Logistics, Supply Chain Management, Social Responsibility

LITERATURE REVIEW

Reverse logistics has been one of the important part of the world economy (Morgan et al., 2016:293). The research on reverse logistics has developed over the years and authors have assigned various reverse logistics definitions. The first definition of reverse logistics was found to be done by Murphy and Poist (1989) by pointing out the reverse flow of goods (Agrawal et al., 2015:73). Tibben-Lembke and Rogers (2002:271) defined reverse logistics “as the movement of product or materials in the opposite direction forth purpose of creating or recapturing value, or for the purpose of proper disposal”. All recovery actions in which a firm gains economic benefit directly or indirectly refer reverse logistics. This process is very both complicated, different and more expensive than forward distribution of a new product (Ramírez & Morales, 2014:954). It should be noted that reverse logistics is not a homogeneous subject but an umbrella term that covers a number of different operational cases (Bernon et al, 2011: 486).

Each company has to appoint the specific mix of reverse logistic activities for strategic decisions on reverse logistics. Through the growing importance of reverse logistics as a main factor to optimiser sources by means of decreasing the negative in fluence on costs, it is important to understand how these activities affect the costs of reverse logistics, with an aim to find out results on organisational performance (Ramírez&Morales, 2014:954). There are many economic drives for companies to implement reverse logistics; cost savings by less use of virgin materials; reduced transportation and disposal costs; and revenue generated by the use of salvaged materials are within the main economic reasons (Chileshe, 2016: 137). Reverse logistics can also develop customer loyalty, because customers respond positively to environmentally responsible actions by the company, so good will formed by reverse logistics could be a source of competitiveness (Hsu et al., 2016: 92). On the other hand, a company has to implement reverse logistics’ due to legislation. Legislation refers to any jurisdiction that makes it mandatory for companies to recover products produced by them or own accountability of product safter their end-of-life. Nowadays, there has been an increase of environmental legislation such as recycling quotas, manufacturer take-back responsibility and packaging regulation that have increased the interest on reverse logistics activities (Ravi&Shankar, 2015:875).

Some specific strategies as recommendations for companies to keep the reverse logistics as successful process are as follows: Customer satisfaction, eco-compatibility, strategic alliances, knowledge management, new technology implementation, value recovery (Antonyová et al., 2016:2). Specifically, reverse logistics create tangible and intangible value by helping firms (Hsu et al., 2016: 92);

1. Extract value from used/returned goods instead of wasting labor force, time, and to procure more raw materials,
2. Create additional value through increasing product life cycles,
3. Increase customer satisfaction and loyalty by caring for faulty goods and former chan disrepairs,

4. Get feedback to suggest improvements and enhance understanding of the real reasons for product

THE PURPOSE AND RADIUS OF THE RESEARCH

Reverse logistics, which is quite important for firms, consumers and environment, has crucial importance in the area of food production. Because, accurate reverse logistics practices can make a firm more competitive by reducing the cost of material diminishing the customer's risk when buying a product, diminishing the market response time, fulfilling social responsibilities and improving the environmentalist or greener image. In this study, literature on reverse logistics has been examined and academic articles dealing with reverse logistics applications have been classified in a systematic way. This work intends to explain how much the firms in food industry value reverse logistics activities besides their production activities. This study has focused on the reverse logistics activity of food production companies which are active in Gaziantep province. The purpose of the work is to state the current status of the industry by examining reverse logistics activities of the firms which operate in food industry in Gaziantep Industrial Zone and to measure the knowledge levels of the firms on the article reverse logistics.

METHOD AND RESEARCH

Survey was used as a tool to collect data in this research. The survey was applied between the months June-July 2016. It was done by visiting food production firms and applying face to face survey method. Through literature review the questions in the questionnaire (Dirik, 2012) were prepared with the intension of picking out the reverse logistics activities of the firms. The questionnaire of the research consists of 13 questions. The first 3 questions of the questionnaire are about the answering participants' specialties and other 10 questions are about firms and the industry. Questionnaire consists of multiple choice and yes/no questions. There are 92 food firms operating in Gaziantep Industrial Zone. Convenience sampling is used to collect data from these firms. 36 of them participated in the survey. Out of those, 32 of them have applicable qualities. The data of the survey was compiled and analyzed with SPSS 22.0 software.

Table 1. Participants' Demographics

	f	%
Participants' Positions in Firms		
Principal\Head	14	43,8
Vice Principal	4	12,5
Head of Departments	13	40,6
Others	1	3,1
Total	32	100,0
Industrial Experience of the Participants		

1-5 years	3	9,4
6-10 years	10	31,3
11-15 years	7	21,9
21 years and over	12	37,5
Total	32	100,0
Education Levels of Participants		
Elementary	1	3,1
High School	7	21,9
University	24	75,0
Total	32	100,0
The Markets the Firms are Active		
Domestic\Local Market	8	25,0
Both International and Domestic\Local	24	75,0
Total	32	100,0

When looked upon the people that joined the research, it is observed that most of them are principals, heads or heads of departments. This tells us that the answering participants are at managing levels and therefore the answers are more accurate. Answering participants were asked about their experience in the industry. %37,5 of the participants had the work experience of 21 years and over. This datum shows us that answering participants were experienced in the industry.

As seen in the table, %75 of the survey respondents had a university degree. High education level of the participants' made the responses more accurate in the light of intellectual. Besides, the ones with higher education levels had more interest in the research and answered questions in a more sensitive way. %75 of the participating firms are active in both international and domestic/local markets.

Upon asking about reverse logistics, first things that came to minds of the firms' managers were listed and shown below in Table 2.

Table 2. Perception Levels of the Answering Participants about Reverse Logistics

	f	%
Recycle	10	31,3
It is reverse flow of used products towards production process for re-use.	3	9,4
It is the collection of products with the intension of destructing them to minimize their damage on environment.	4	12,5
It is a way to evaluate recycled products to determine usable ones and by doing so to lower resource use andto increase profit level.	15	46,9

Total	32	100,0
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While %46.9 of the answering firms conceive the term reverse logistics as “It is a way to evaluate recycled products to determine usable ones and by doing so to lower resource usage and to increase profit level” %31.3 of them conceive it as “recycle”. This question was included in the survey to evaluate the knowledge levels of the firms about the conception of reverse logistics.

Table 3. How Reverse Logistics Activities were Executed

	%
With the help of reverse logistics professionals (recycle experts etc.)	62,5
On their own	37,5
Total	100,0

The firms were asked about how they executed reverse logistics activities. While %62 of the participants executed reverse logistics activities with help of experts, %37 of them executed reverse logistics activities on their own.

Table 4. The Valuation of Waste and Waste that Valuated with Recycling

Waste Valuation Rates			Waste that Valuated with Recycling		
	f	%		f	%
Yes	17	53,1	Glass bottles	2	11,8
			Plastic cover	11	64,7
No	15	46,9	Aluminum	1	5,9
			Organic Waste	2	11,8
Total	32	100,0	Paper	1	5,9
			Total	17	100,0

While %53 of the answering firms manage recycling of waste, %46 of them are not capable of valuing waste. %64 of the firms recycle plastic cover, %11 of them recycle glass bottles and %11 of them recycle organic waste. The reason electronic and textile waste are not present is that the survey was applied to food manufacturing firms.

Table 5. Reuse of the Recycled Supplies

	f	%
Sales at secondary	14	82,3

markets		
Outlet sales	1	5,9
As donations	2	11,8

While %82 of the answering firms stated that they, at the end of recycling process, put the recycled materials up for sale in secondary markets, %11 of them stated that they donated the materials. Donation of food waste makes valuation of waste in the right way possible and it makes the reduction in environmental damage of waste.

Table 6. How Products are Recollected

	f	%
By taking directly to its origin	8	61,5
By using external sources	5	38,5
Total	13	100,0

13 of the firms that participated in the research put products into recycling processes. %61 of these firms recollect products directly from their origins and, %38 of them use external sources to recollect products. Recycled products were mostly applied decomposition and product alignment.

The participating firms were asked about how products return in reverse logistics activities. They were asked to answer with frequencies such as “Always, mostly, sometimes, rarely and never”.

Table 7. How Products Return

How Products Return	Always	Mostly	Sometimes	Rarely	Never
	%	%	%	%	%
Returns at the end of material use.	6,3	15,6	12,5	6,3	
Warranty returns.		12,5	9,4	15,6	3,1
Commercial returns.		3,1		15,6	21,9
Returns due to defective production.	3,1	9,4	12,5	15,6	

Returns because products became waste.	3,1	3,1	15,6	9,4	9,4
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In Table 7, the application frequencies of returns during firms' reverse logistics process are given. Every possible way of return was evaluated within itself according to usage frequencies. As a result, "Returns at the end of material use" has the highest percentage with %15,6 in "Mostly" section; on the other hand, with %3,1 the statements "Commercial Returns" and "Returns because products became waste" have the least frequencies. If the statement "Never" was to be evaluated within itself, with %21,9 "Commercial returns" has the highest and with %3,1 the statement "Warranty returns" has the least frequencies.

Table 8. The Reasons for Applying Reverse Logistics

The Reasons for Applying Reverse Logistics	Agreement Degree
Reverse Logistics is mandatory according to laws.	3,07
Important for accomplishing social responsibilities.	3,76
Helps reduce the resources.	3,84
Reduces the amount of input (resources etc.).	3,84
Provides economical increments in value.	3,92
A profitable investment.	4,07
Provides firms advantages for competitions.	4,23
Gives environment-friendly look.	4,30

As seen above, Table 8 provides us with the knowledge why firms think they should apply reverse logistics. Values are sorted from low to high and as the values get higher they get close to "Most agreed" statement Therefore, according to this table, the statement "Gives environment-friendly look" has highest degree and considered as "Most agreed"; and the statement "Reverse Logistics is mandatory according to laws" has the least degree as a result it is considered "Least agreed".

Table 9. Evaluating the Statements about Reverse Logistics

Some Statements about Reverse Logistics		
It brings in products that completed their life cycles to re-use.	3,71	1,22
It reduces process number in stock production.	3,81	1,06

Important for the economy of firm. It makes firms more active in environmental issues	3,81	1,17
It provides customer satisfaction.	3,90	0,89
It increases the value of products.	3,93	1,04
It has strategic importance.	3,96	0,74
It focuses on maximum profit.	3,96	0,76
It makes firms gain environmentalist look.	4,15	0,91
It multiplies proficiency.	4,18	0,78
It provides valuation of the waste.	4,25	0,62
It helps reduce the expenses.	4,31	0,64
It prevents waste damage environment.	4,50	0,56

As seen in Table 9, the statement “It prevents waste damage environment” by having the highest average is closest to the statement “Most agreed”. “It provides the valuation of waste” and “It helps reduce the expenses” are other statement with high averages. The general opinion of the firms on this statement is towards the statement “Most agreed”. Out of all statements about reverse logistics, the least agreed statement inclined that firms go with is the statement “It brings in products that completed their life cycles for re-use”. The reason for this is that in food industry products which have completed their life cycles are almost impossible to bring in for re-use. Firms consider that reverse logistics plays an important role in preventing waste from damaging environment, valuating waste, reducing expenses and in profit making. Therefore, reverse logistics, reduces environmental damage and provides firm a better financial context.

CONCLUSION

As firms care about customer satisfaction and having an environmentalist look with manufacturing less damaging products for people and environment, reverse logistics enacts competition to a strategic level. To compete in this way, especially in non-government firms, reverse logistics has become compulsory. With reverse logistics activities, elements used in food industry such as organic food, plastic cover, glass bottle and paper will be recycled and by doing so damage on environment and expenses of firms will be reduced, hence firms will profit out of this process. Companies especially operating in the food sector by recycling organic waste and selling them to feed mills will help firms profit economically and help them reduce damage given to environment by their products.

Gaziantep, with its large capacity of industry and trade contributes to state economy at significant levels. Most of the food manufacturing firms operating in Gaziantep Industrial Zone, operate on both domestic/local markets and on international markets; and most of these firms have the experience of 21 years and over. Furthermore, most of the answering participants are university graduates, educated and experienced. However, most of these firms were identified not applying reverse logistics. Application of reverse logistics will provide firms advantages in social and economic aspects and help them acquire a positive image in the mind of the

consumers where customer satisfaction is at utmost importance. The research has concluded that firms suffer from the lack of knowledge on reverse logistics. This lack of knowledge will be resolved by raising consciousness of firms about reverse logistics and making necessary arrangements to support “reverse flow” in production processes of firms. Although with the new laws recycling became mandatory in Turkey, for the lack of material returns, firms cannot acquire enough waste to put them through recycling and profit from this hard and expensive process thus reverse logistics activities cannot be operated economically. It is a faulty situation that firms consider reverse logistics activities only as a profitable purpose. Reverse logistics activities reduce environmental damage and it is one of the most effective ways to leave upcoming generations a clean world. For these reasons, firms should be trained about reverse logistics and awareness should be raised.

There was no work conducted about Gaziantep’s reverse logistics activities and operation of distribution channels, the contribution of this work to the literature is the information it provides for this subject matter.

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