

Investigation of Consumption Behavior of Families Related to the Generation of Waste

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Abstract: Although many studies have been done on the ecological responsibilities of consumers until now, from the marketers' point of view, the most important issue is the current consumption patterns and buying and using goods ecologically. Since a large proportion of household waste is related to food production and consumption, it is important to find out whether and to what extent, families consider waste management when buying foods and whether their actual choices are in any way influenced by waste concerns. This study focuses on influence of purchase choices of foods and household chemicals and on the amount and type of waste generated in the family. The purpose of the study is to investigate what influences the amount and type of waste generated in the family. The data were collected in 15 families in a residential area of Çankaya Municipality within Ankara Province. The families registered their purchases and the weight of bio degradable waste for two weeks. In depth interviews were also carried out. The collected data were evaluated and statistically analyzed. The families produced more biodegradable waste than non-biodegradable waste. The results of this study indicate that environmental concerns do not seem to influence the food and household chemicals purchase behaviors of families.

Key words: Household waste, recycling behavior, consumer behavior

INTRODUCTION

Household waste as an important environmental problem has attracted the considerable attention of both the academic circles and the popular media in our country and in all the countries, which completed their industrialization process, especially in the recent years. Most of the environmental problems were dealt with at the Earth Summit, which was held in 1992, but it mostly dwelt on household waste among these problems and the importance of the household waste management was emphasized. On the Agenda 21 of the Summit, mankind's need for living in harmony with the supportability capacity of the earth in terms of the environmental problems and the necessity for the sustainable economic and industrial activities were emphasized (Barr *et al.*, 2003).

That the environmental problems are experienced in the developed and developing countries intensively indicates the universal dimension of this problem and leads the people who live in these countries to understand-by experiencing them personally-the negative effects of the waste, they produce, on the environment. Moreover, it appears that very urgent local measures, rather than the global approaches, should be taken for the solution to the environmental problems, which are usually viewed as a universal problem (Choe and Fraser, 1998).

In Turkey, there has been a considerable increase in the amount of the household solid waste in the recent years. According to the data of the State Statistics Institute, the amount of the household solid waste is 0.9 kg per person in the summer months and 1 kg per person in the winter months in Turkey. The average of the summer and winter months is 0.97 kg per person daily. The total population produces approximately 65.000-70.000 tons of household solid waste in our country daily. This picture shows household solid waste is also an important problem for our country (Erozturk *et al.*, 2003).

Barr *et al.* (2003) state that unfortunately, such targets are limitedly achieved even in a developed country such as England today. In fact, recycling works most efficiently through the triangle of local government-household-industry, apart from the law, regulations or directions of the governments. Household, probably the most important one of this trio, is generally neglected and this situation considerably affects the success of the recycling activities.

The limited natural resources, individuals' efforts to raise their living standards despite this and the increasing spread of the consumptive patterns of living have gradually increased the need for energy. Energy production activities to meet the increasing need for energy have caused the risk of the exhaustion of natural resources. Therefore, as an urgent preventive measure

plan especially in the developed countries, the strategies of national waste management have been devised in the sustainable environment regimes, the studies on this subject have been done and the aims and responsibilities have been determined. A significant number of solution proposals, presented as a result of all these studies, have pointed to the recycling and reuse of waste (Tucker and Speirs, 2003).

Women's increasing participation in work life, longer working hours, urbanization and long distances between dwellings and places of work and shopping centres reduce the time and energy an individual needs. However, individuals never compromise their efforts to raise the standard of their economic lives, either. This situation has caused individuals and families to prefer ready-made consumer goods and it has become an additional factor which has led to the complexity of the amount and composition of packaging.

The most obvious fact is that industrialization and technological progress have led to a considerable increase in the volume of goods avoidable. Consumption has also been growing at a rapid rate and industrialized countries have developed a life style which generates the abundance of waste. Due to this enormous quantity of waste production the threats to the ecosystem are visible in many countries (Shanahan and Saljo, 1993).

Another most important change concerning the environment is the increase in the use of household chemicals. The research results show the list of detergents and cleaning agents with various compositions and properties gets bigger each year. For example, the products like air fresheners, disinfectants, drain unblockers and deodorisers have entered our lives quickly. Besides, these chemicals are not indispensable things in our domestic lives.

The increase in the amount of waste which has been produced by households in the last thirty years is 100% in weight and 150% in volume and the increase in this kind of waste is much more than that in the waste of other sources like industry and energy stations. With the growth of wealth in most of the societies and the rising flood of consumer goods, the amount of packaging material has also increased (Fegebank, 1988; Schwepker and Cornwell, 1991). Apart from the increase in the amount and volume of household waste, the change in the composition of waste is also significant.

The waste production as a complex problem must be dealt with on many, different levels and through different methods. One of the most important goals is to change the trend and achieve a decrease in the total amount of waste generation. Therefore the role of the household in this process is very significant. In future, it will be more

important to provide the cooperation of families in the attempts to create environmentally sound consumption behaviors (Shanahan and Saljo, 1993).

Everyday life in the households is managed by decision-making about production and consumption. In production and consumption processes in the household products are transformed into by-products which must be disposed of. The role of the family is very critical at this stage again.

Previous research: There has been evidence showing that the problem of waste to a great extent can be solved in the households. The fact that families are willing to change their consumption habits and waste management behaviors because their environmental concern have been already shown in some studies. The separation of paper, glass and aluminum cans have become quite common and in many studies in Sweden separation of waste in the household in order to recycle has shown that the amount of waste can be reduced by as much as 50% (Shanahan and Saljo, 1993). The results of a study in Ankara has also shown that 50% of the consumers surveyed were interested in separating domestic waste and that 67% indicated a willingness to buy products with green labels (Bayraktar and Babekoglu, 1993).

Also Ozkan and Bayraktar (2002) found that when the responsible consumption behavior were examined, it was observed that whenever the consumers have only one choice to make, they always prefer products which harm the environment in the least and whenever they find out the damage such products cause to the environment they do not buy them. It was also observed that they do not prefer products which contain chemicals. It was found that the consumers were not generally inclined to purchase products which have excessive wrapping and that the consumer who find their income to be lacking were inclined to do more so and that the sufficiency of income variable had a significant impact on this behavior. The rate of consumers who separated the household wastes and delivered them to the necessary centers, and who do not purchase with chemicals in them, and who sign petitions or participate in demonstrations for environmental reasons was found to be higher among the consumers with higher education.

Today, in our country, just like many developed countries, the application of current strategies of waste production is not effective. In fact, some primitive methods, especially open dumping sites, are still prevalent practices in the rural areas. However separating and recycling household waste on the spot are the strategies which reduce the need for dumping sites and which require low technology.

Although recycling offers financially effective and technically suitable solutions to the solid waste management issue, unfortunately, the rate of its acceptance is disappointing.

Van Liere and Dunlap (1980) investigated individuals' environmental concern levels and studied the demographic characteristics as explanatory variable. These researchers determined that young individuals with a high educational level who had a politically liberal tendency had a high environmental concern level. However, Oskamp *et al.* (1991) found out that the variance between the demographic characteristics and the environmental concern was at a low level and argued that the environmental concern had to be studied in terms of some specific environmental issues such as recycling behaviour.

In the first researches on recycling, it was suggested that financial factors were influential in starting and continuing this behaviour. It was stated that a financial incentive resource was generally necessary to motivate individuals who would join recycling activity and when this financial resource was used up (when the incentive disappeared), these individuals stopped their recycling behaviours (Geller *et al.*, 1982). However today's social recycling programmes have proved that it is not possible to use financial incentive because recycling products is more costly than their market prices. The need for finding non-financial permanent incentives to increase the participation in recycling behaviour has led several researchers to study inner motivations about this behaviour.

De Young (1986) who studied this subject, stated that recycling behaviour was related to personal satisfaction. The factors of individual motivation for recycling activities which the research results show are as follows:

- Being economical (preferring behaviours which are not wasteful)
- Being self-sufficient
- Living individual awareness in Living individual awareness in environmental activities
- Feeling personal satisfaction like being part of a programme

In an other research, the individuals said that the most important motivation factor to participate in recycling activities was to help to protect natural resources (De Young, 1988-1989).

In the researches to investigate households' behaviours of recycling household waste, Oskamp (1991) found out that most of the participants (80%) regarded recycling behaviours as a very effective method of

reducing garbage and more than half of them (55%) believed that the local governments would ensure the success of recycling behaviours. Moreover many participants seemed to be willing to pay more garbage tax to the local governments to support recycling. While 41% of the participants was in a recycling programme, 58% of them said that they separated household waste with their own methods in their homes. The research also determined that the participants had recycled five different materials for the last five years (92%, aluminium; 79%, newspaper; 48%, glass; 39%, plastic; 7%, other materials).

People's lacking knowledge of how to realize recycling, the shortage of dumping sites for recycling and the transportation of materials to recycling centres are among the most important problems of recycling activities.

Several studies done in various units of settlement (dwellings, apartment complexes, office buildings and dormitories) have indicated that the proximity of recycling containers to those places increases the recycled amount.

In a research conducted in Sweden in 1998, it was found that the families who lived in independent houses produced 9.2 kg of waste weekly and the families who lived in flats in multi-storey buildings produced 5.7 kg of waste weekly (Olsson and Rettzner, 1998). In Switzerland, it was observed that there were some differences between the rural and urban areas, in terms of households' behaviours about waste. Although the families who lived in the rural areas had more opportunities for recycling, they preferred burning paper and packaging products in their homes.

Another study, considering households' behaviours of separating waste, determined that the behaviours of separating waste of the families who lived in the rural areas, though they were farther from the recycling facilities, were similar to those of the ones who lived in the urban areas (Linden and Kanyama, 2003).

In the developed Western countries, it is mentioned that inappropriate conditions (external factors, storing, transportation etc) and lack of knowledge do not any more limit recycling behaviours in recycling programmes. However, in earlier years, it was determined that inappropriate conditions and lack of knowledge, among the external factors, considerably decreased the rate of participation in this behaviour. We can say that inappropriate conditions and lack of knowledge decrease the rate of participation in this behaviour in Turkey.

Research problem and objectives: Consumers get more interested in the food they buy and especially in their everyday habits about consumption and their effects on the environment day by day (Smith, 1990).

Environmentally friendly consumption activities can be defined as those consumption activities that have a less negative or more positive effects on the natural resources. Consumers can behave in a more environmentally friendly way by changing the patterns through which they acquire, use and dispose of products (Pieters, 1991).

Packaging is the most important factor in the increase of the environmental pollution in terms of solid waste. According to the opinion polls in some countries, among the most serious problems before the local governments, the solid waste issue comes second just after the development of education. While the earth is polluted very fast, the pressure on developing environmentally friendly packaging and its use increases in the business world. The important question at this point is about what are marketers and consumers' reactions to voluntary limitations instead of the comprehensive regulations concerning packaging. Moreover, another question is whether marketers can find a significant mass of consumers interested in the environment. Although many studies have been done on the ecological responsibilities of consumers until now, from the marketers' point of view, the most important issue is the current consumption patterns and buying and using goods ecologically (Schwepeker and Cornwell, 1991).

Since a large proportion of household waste is related to food production and consumption it is important to find out to what extent families consider waste management while buying foods and household chemicals and whether their choices are in any way influenced by environmental concerns.

The purpose of this study is to investigate the role of the household in the generation of waste and to what extent to which environmental concerns can influence consumer choices of products.

MATERIALS AND METHODS

The sample consists of 15 voluntary families with children living in a middle socio economic neighborhood in Ankara. The data were gathered between 15th June and 10th July. The families registered their food purchases and household chemicals and the weight of biodegradable and non biodegradable waste for two weeks. During a period of weeks the households registered foods and household chemicals which they bought, type of packaging and weight of biodegradable and non-biodegradable waste. After the end of the registration period, detailed interviews were carried out with women in families. The interviews covered purchase, food and household chemicals. The analysis of data covers a description of

purchase behavior, food habits and waste management in the households. The collected data were evaluated and statistically analyzed by using simple correlation method.

RESULTS

The average family had 3 members with children ranging from 1 to 28 years of age. All women with two exceptions (retired) were employed outside the home. More than half of the women had university degree and the rest had secondary school degree. The monthly income of the families were ranging from middle-low to middle-upper. Except three families samples were homeowner and had private cars.

Although each family had its individual ways of coping with the provision of food and shopping behavior, some common features has emerged. Generally all families did their major shopping once a week but supplementary purchases were during the week. Especially cleaning products, household chemicals and grain etc, were bought in large quantities once a month or three or four times a year at supermarkets such as Migros, Real and Begendik. On the other hand the traditional corner shops were preferred for daily purchases.

Decision on selection products was generally made by women but the main needs of family were determined by all family members. Especially shopping at big supermarkets was done made by participation of all family members and considered as a recreational activity for families. Families preferred shopping at small shops and supermarkets which were near the place where they lived. Another common shopping behavior was the purchase of fresh vegetables ($20.2 \text{ kg}^{-1} \text{ week}$) and fruits ($18.4 \text{ kg}^{-1} \text{ week}$) at traditional open markets (Table 1). The widely consumed products such as meat, bread, vegetable and fruit were bought unpackaged but products such as chicken and frozen meat were bought in plastic or cardboard packages. While milk, mineral water and beer were bought in returnable glasses the other beverages such as concentrated fruit juices were bought in tetra pack packages. But some families with young children prefer to buy milk in tetra pack packages for the reason of sterility. The results of the study have shown that the quality was the most important factor when choosing the foods. The families prefer glass as a packaging material for its nice look and healthy characteristics.

When choosing detergents, washing chemicals the effect and the price were often mentioned as important qualities while packaging and the effect on the environment did not seem to influence the families' choices of detergents.

Table 1: The most consumed foods by families during the registration period

Foods	Amount (two weeks)	Type of packaging	Place to buy	Person who buys
Bread	28	Unpacked	Corner shop, supermarket	Children, woman
Milk	9.2 liter	Returnable bottle	Corner shop, supermarket	Children, woman
Vegetable (Fresh)	20.2 kilos	Unpacked	Open market	Man, woman
Fruit (Fresh)	18.4 kilos	Unpacked	Open market	Man, woman
Meat	4.2 kilos	Unpacked	Butcher, supermarket	Man, woman
Coke	3.7 liter	Returnable plastic	Supermarket, hypermarket	Children, woman
Fruit Juice	2.7 liter	Tetra pack boxes	Supermarket, hypermarket	Children, woman

Table 2: Some demographic characteristics of families and information collected during the registration period

Families	Family size	Age of children	Waste (kilos)		Total waste	Total bio-degradable
			Biodegradable	Non-biodegradable	(kilos)	(%)
1		23	13.5	2.5	16	84
2	3	1	35.5	222	57.7	62
3	3	2	21.5	5	26.5	81
4	4	21, 13	37	5	42	88
5	4	16, 8	30	14	44	68
6	3	28	9.5	4	13.5	70
7	3	3	12.5	8	20.5	61
8	3	4	24.5	6.5	31	69
9	3	15	23.5	5	28.5	82
10	4	18	31.5	12	43.5	72
11	3	30	18	2.5	20.5	88
12	5	2, 17, 18	24	9	33	73
13	3	2	30	7	37	81
14	4	915	28	6	34	82
15	4	1621	31	6	37	84
			Mean: 24.6	Mean: 7.6	Mean: 32.2	Mean: 76%

WASTE PRODUCTION

Generally, separating waste in the households does not seem to have caused any major problems for the participating families. But limited spaces for keeping separated waste in their household and the lack of collectors for glass and plastic bottles near the places where they lived seemed to be common problems for families.

Table 2 on average, the families each generated 24.6 kilos of biodegradable and 7.6 kilos of non-biodegradable waste, the average total amount of waste was 32.2 kilos. In a similar study in Sweden the amount of the average waste generated was 16 kilos. Waste ranged from 13.5 to 57.7 kilos. The family size and age and number of children were not found to be directly related to the total amount of waste generated. The family with 5 members and produced 33 kilos of waste, while family with 3 members produced 57.7 kilos. The correlation for the relationship between family size and waste production is found to be negative ($p > 0.05$, $r = 0.377$).

The families produced 3 times heavier biodegradable waste (24.6 k) than no biodegradable waste (7.6 k). This makes an average for the biodegradable fraction of 76.4% and in Sweden the average for biodegradable fraction of 58 %. In this study newspapers, bottles, tins, batteries and other hazardous waste are considered to be in no biodegradable waste groups.

The comparison between the results of this study and the one in Sweden showed that families in our country produced considerably higher weight of biodegradable products than families in Sweden.

The results of the interview showed that families believed that they were affected by environmental pollution. The environment protection activities were also found very important by families and they felt to be ready to limit individual consumptions.

The results indicated that families were willing to change their consumption behavior. For instance, they were willing to pay more to protect the environment, to cut down on the use of electricity to share their cars with others and etc. On the other hand families want to be informed of the subjects such as waste management, purchase and use of products and energy conservation.

CONCLUSION

The results of this study indicated that environmental concerns do not seem to influence the food and household chemicals purchase behaviors of families. The amount of waste generated and the ratio of biodegradable and non-biodegradable waste are not directly related to the size of the family that is seemed to be related to a broad range of variables including that the life style of the families. Probably one of the most interesting findings in this research is that participation in the experiment,

families become aware of the amount of the waste they generate and the relationship between consumption and waste.

To check this dramatic advance in terms of the environmental problems, families have two important duties. We can sum up them under two general headings: Avoiding waste and reducing waste.

Avoiding waste: As responsible individuals, we can fulfil our duties not to increase the environmental problems by preferring simply wrapped goods.

- Preferring goods which have reduced packaging or which are not wastefully packaged.
- Avoiding twice packaged goods (materials covered with plastic and cardboard like laminated cardboard), especially if packaging is not recyclable.
- Avoiding a combination of packaging (plastic, for example, toothpaste packets).
- Preferring deposit-refund goods.
- Doing environmentally sensible, more selective shopping.
- Preferring durable and repairable goods, avoiding waste; for example, not buying small electric devices (electric toothbrush, egg boiler etc).
- Avoiding single-use goods (paper plate, plastic fork, spoon etc).
- Using a shopping basket instead of plastic bags.
- Avoiding problematic goods which have components harmful to the environment (detergents containing phosphate, deodorants containing chlorocarbon).

Reducing waste: Families can have some practices which will reduce waste while buying goods as well as avoiding waste:

- The ones who have a house with a garden can produce fertilizer from their own organic waste. They can act responsibly about the use of goods which contain harmful materials and pollute the environment too much.
- They can prefer goods which can be used again through small processes after the first use.

They can also contribute to the environment, when necessary, by preferring second-hand goods which are in a good condition.

Understanding the relationship between consumption habits and waste production requires a broad interdisciplinary approach of the household as the unit of analysis. The most important task is to create a

consciousness of the relationship between the influences on environment and environmental behavior through education, counsel and knowledge and to achieve the cooperation of families.

If we want to change environmental behavior we have to spread knowledge and give advice step by step so that the individual is able to integrate the recommended behavior into their action. In this manner education programs about consumption, environment and waste management starting from early stages of education including primary, secondary schools will help sensitize the consumers to the necessity of individual responsibility. And also families should be persuaded to avoid choosing products with unnecessary packages or environmentally harmful products by the media and local authorities.

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