



Surveys

A proposed structural model for housewives' recycling behavior: A case study from Turkey

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ARTICLE INFO

Article history:

Received 10 December 2015

Received in revised form 2 May 2016

Accepted 1 June 2016

Available online 21 June 2016

Keywords:

Housewife

Recycling

Theory of planned behavior

Structural equation model

Consumer

Behavior

ABSTRACT

Recycling is a major factor in environmental behavior as it supports the conservation of natural resources and reduces the amount of solid waste. In addition to its environmental benefits, recycling is also an effective way to fundraise. Although recycling is commonplace in many countries, it is still relatively rare in Turkey. In this study, the attitudes and behaviors of housewives toward recycling were investigated using Ajzen's Theory of Planned Behavior (TPB) and the proposed Structural Equation Model (SEM). It was found that the Housewives' Recycling Model (HRM), obtained as a result of the analysis, could be employed to explain their recycling behavior. In particular, the research established that the positive ideas housewives have in terms of their perceived behavioral control and the individuals in their immediate social surroundings, whose opinions they value, have a positive impact on guiding their recycling behavior.

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1. Introduction

While population growth brings with it rapid urbanization, development in industry and technology increasingly leads to the exhaustion of natural resources. Consequently, unnecessary and excessive consumption also increases, leading to soaring levels of waste. In order for consumers to safeguard sustainable living in a conscious way, the '3Rs' have been adopted: reducing, reusing and recycling. Acknowledged by most developed countries, this classification is considered to help reduce the adverse effects on the environment by counteracting false or erroneous attitudes and behaviors. King and Lessdrenska (2010) defined these processes as follows: Reducing implies generating the lowest levels of waste possible, and reducing energy and water consumption as much as can be achieved, in order to save energy. Reusing implies an effort to reuse a product or energy, if feasible, rather than single-use. Recycling, in turn, is applied only to those materials and products that cannot be reused. In addition, another aspect of this three-way classification is recovery. Recovery implies the value created from the production of energy from solid waste, which cannot be reduced at source, reused or recycled. It should be kept in mind that for humans the conservation of nature and the environment is one of the most important tasks. Reducing the amount of garbage, through the utilization of waste that can be recycled, environmental pollution can be prevented. Furthermore, reusing waste can contribute to the economy.

Being one of the most important eco-friendly attitudes and behaviors, recycling is not only a crucial part of creating a sustainable future, but it is also recognized as an effective way of generating new resources.

All individuals should be sensitive about recycling. However, the attitudes and behaviors of family members who are more active in housework are even more important for achieving positive outcomes in recycling. Generally speaking, rather than being formally employed, the majority of the female population in Turkey is responsible for housework. According to a household labor force survey, the employment rate in 2013 among the population of 15 years of age or above was 65.2% for males and 27.1% for females. Taking the employment rates in the European Union into consideration, the highest and lowest women employment rates were observed in Sweden and Greece in 2013 with 72.5% and 39.9%, respectively and the average female employment rate in the European Union Member States (28 countries) was 58.8% (TUIK, 2014). These statistics indicate that a vast majority of female population in Turkey can be described as housewives, who work in the home. Moreover, for most of the families that adopt the traditional culture of family life in Turkey, in addition to chores such as cleaning, washing the dishes and doing the laundry, the decision on how to dispose waste materials is also taken by women, regardless of whether or not they are employed. Also, as on the whole in Turkey the kitchen is considered to be the living space for woman, cooking, the disposal of kitchen waste and recycling are also deemed to be their concern and responsibility.

In a world that is becoming increasingly globalized, the amount of waste is increasing due to reasons such as rapidly growing economy,

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technological developments, population growth, advances in industry, and increasing consumption. Approximately 25 million tons of domestic waste, 1.2 million tons of industrial waste, 100,000 tons of medical waste and 530,000 tons of e-waste have been generated in Turkey alone in 2014 (Yetim, 2014: 11).

While the US, Europe and a number of Asian countries, such as China, have been making progress for years in this area, in Turkey this process has a history of only a little over two decades. In keeping with the Regulation on the Control of Solid Waste, issued by the Ministry of Environment in 1991, recycling has become a statutory obligation for local administrations and the relevant industrial enterprises (Metin, www.evkultur.com). The minimization of domestic, medical, hazardous and non-hazardous waste, the separate collection of waste at source, interim storage, recycling, recovery and disposal are the processes carried out as part of waste management (Republic of Turkey Ministry of Science, Industry and Technology, 2014).

With regard to the implementation of these decisions, administrators should be methodical when responding to public demands and problem solving. The public perceives the effectiveness of these decisions and this in turn reflects on their behavioral intentions or moral motives (Berglund, 2006: 560; Huang et al., 2014: 107). Therefore, due to reasons such as a lack of household participation and qualified manpower, the irregular collection of garbage, use of inappropriate equipment for waste collection, an insufficient legal infrastructure and resource constraints, these decisions cannot be properly implemented (Ramayah et al., 2012: 141).

The figures produced for Waste Disposal and Recycling Plants, a study conducted by the Turkish Statistical Institute in 2012 through surveys carried out at all certified recycling plants, or recycling plants operating on interim operating certificate, at storage, incineration and compost facilities being operated even without license by municipalities or on behalf of municipalities, indicate that:

- In 2012, there were 672 facilities in operation, 83 waste disposal facilities and 589 recycling plants.
- Twenty-four million tons of waste was disposed of at 80 sanitary landfills, where the total capacity was 480 million m³.
- Moreover, at 36 sterilization facilities with 116,000 ton/year capacity operating in 2012, 46,000 tons of medical waste was sterilized, and while 43% of the sterilized medical waste was disposed of at sanitary landfills, 57% were delivered to municipal dump sites.
- At three incineration facilities with a total capacity of 61,000 ton/year, 50,000 tons of waste, 47,000 tons of which were hazardous, and 3000 tons were non-hazardous, were processed.
- At six compost facilities with a total capacity of 389,000 ton/year, 159,000 tons of waste was processed and 26,000 tons of compost produced. Furthermore, at 32 co-incineration facilities with waste recycling licenses, energy was recycled through the incineration of 539,000 tons of waste. At 551 certified waste recycling plants, in turn, 9.5 million tons of waste metal, plastic, paper, etc. were recycled (TSI, 2012).

More than half of the waste generated in Turkey is of a recyclable nature (Ministry of Science, Industry and Technology 2014–2017: 7). The collection of activities such as separate collection, differentiated in terms of type, conversion into secondary raw materials or agricultural inputs through physical, chemical or biological processes of recyclable solid waste is called recycling (Republic of Turkey Ministry of Environment and Urbanization, Tekirdağ Governorate, Provincial Directorate of Environment and Urbanization, 2012).

Even though waste collection and recycling is the duty of government agencies, householders play a crucial role in terms of separating the recyclable domestic waste and disposing of it in the correct containers (Alpizar and Gsottbauer, 2015: 366). The recyclable items that go to waste is valued at around 1.5 billion TL per year. In this respect,

housewives, being much more culturally engaged in housework, play a crucial role.

In general, population attitudes and behaviors toward recycling could be affected by a country's socioeconomic conditions, the level of development and education, sources of income, life styles and culture. In Turkey, which is a developing country, the interest shown toward recycling has been increasing in recent years. Ranked 7th in the survey conducted by the Ministry of Development in 2011 on the socioeconomic development of provinces and regions, Eskişehir is a prominent city and the 25th largest city in the country. With a population of 826,216 (Republic of Turkey Ministry of Development, 2013), the city has two large and well-established universities, industrial organizations, cultural and artistic events.

The city center of Eskişehir comprises two large districts, namely Odunpazarı and Tepebaşı. The recycling services, which are under the auspices of these districts' municipalities, are carried out at the premises of two companies, Benli and Ak. In accordance with the Packaging Waste Management Plan drawn up by the municipality in January 2007, the Odunpazarı Recycling Project was implemented. The project provides services to 98,000 dwellings, as well as industrial sites, the organized industrial zone and all public institutions. The blue plastic bags, which are reserved for residents to dispose of their paper, plastic, metal and glass packaging waste are collected from their homes twice a week. Within the scope of Odunpazarı Recycling Project, since 2007, 80,731 tons of packaging waste have been stored separately at source. Taking into consideration the gains made by the country and the environment owing to the collection of this waste, the felling of 666,000 trees has been avoided, and 90,477 tons of oil and 409,435 Mwh of electricity have been saved, and the emission of 1428 million tons of CO₂ into the atmosphere has been prevented (Odunpazarı Municipality Projects).

Tepebaşı Municipality, in turn, has been pursuing recycling activities since 2009. While awareness-raising activities on packaging waste has been ongoing in all neighborhoods, the firm that provides recycling services has been carrying out its activities with 28 waste collectors in all 51 neighborhoods of the district. A control team was established to raise awareness among the population living within the municipal district and to control the process. Owing to the significance of women in this respect, two of the employees in this control team are female (Eskişehir Tepebaşı Municipality, 2016).

In light of these discussions, the intentions and behaviors of those housewives who spend much of their time doing housework (cleaning, cooking, etc.), a habitable environment is considered to be of great importance. The purpose of this study was to analyze the intentions and behaviors about recycling of 400 housewives, who live in Eskişehir, one of the metropolitan cities of Turkey. The data was collected using a face-to-face survey and aimed at revealing the reactions, opinions and behaviors of housewives concerning recycling. In the study, the relations between the attitudes, subjective norms, perceived behavioral control and recycling behaviors that affect recycling intentions were established using a TPB research model.

2. Literature Review, Conceptual Framework and Data

Oom Do Valle et al. (2005) examined the perceived behavioral control, an aspect of TBP, while including external and internal conditions in their study, which estimated participation in recycling by combining behavioral theories. Mosler et al. (2008) examined the intentions and behaviors that affect recycling of waste in a study conducted on 257 households in Santiago, Cuba, and discussed the development of environmentally responsible purchasing behavior. Similarly, in his study on recycling Barr (2007) revealed that there are statistically meaningful relationships between recycling behavior and subjective norms and facilitating factors.

Sidique et al. (2010a) examined the factors affecting recycling in Minnesota in their study, and showed that communication studies

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