Factors affecting food waste awareness in Turkey. The case of Çorum province

Güngör KARAKAŞ[*]

Abstract

Every year in the world, a significant amount of food is wasted at the consumption stage. Since food waste awareness is the determinant of food waste behaviours, the aim of this paper is to determine the effect of materialist values, personality, religious norm, food choice, food expenditure, recycling and environmental awareness on food waste awareness. Survey data were obtained from consumers in urban areas of Çorum in March, April and May 2019. Structural Equation Model was conducted to determine the factors affecting food waste awareness of consumers. According to the results of the path analysis, religious norms were influenced only by personality, while environmental awareness was influenced by food expenditure and recycling. Although recycling was positively affected by environmental awareness, food expenditure and food choice, it was negatively affected by materialist values. The most important way to reduce food waste is to raise environmental awareness. Consumers should be informed about the impact of recycling, food expenditures, materialistic values and food choice on the environment in order to increase environmental awareness of consumers.

Keywords: environmental awareness, food waste, materialist values, religious norm, recycling, Turkey.

Introduction

The relationship between global warming, energy use, food security and food waste has come to the forefront (Binyon, 2007; Forkes, 2007; Griffin *et al.*, 2009; Nellemann, 2009). Food waste is both an environmentally and economically important issue (Linder *et al.*, 2018; WRAP, 2011). Considering that the resources in the world are limited, the protection of these resources is of vital importance for the future of humanity. Since food waste makes a significant contribution to global climate change, explaining food waste behaviour becomes extremely important

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[*] Güngör KARAKAŞ is associate professor at the Hitit University, Çorum, Turkey; e-mail: gungorkarakas@hitit.edu.tr. ORCID 0000-0001-5236-2407

(Quested *et al.*, 2013). Food waste is more common especially in the consumption stages (Alamar *et al.*, 2018). It was revealed that consumers waste 35% of food (Chalak *et al.*, 2016). The lack of food waste awareness and environmental awareness, which is the predecessor of food waste behaviours, triggers food waste behaviour (Corsini *et al.*, 2018; Parfitt *et al.*, 2010). Since one of the important factors leading to food wasting behaviour is food waste awareness, it is important to determine the factors that affect food waste awareness.

The factors affecting food waste behaviours at household level consist of many complex components such as personality, religious norms, planning, subjective norms, environmental awareness, result awareness, purchasing behaviour, and food choice (Aktas *et al.*, 2018; Karakas, 2019). Personal characteristics are associated with environmental behaviours (Pettus and Giles, 1987). Individuals with high environmental concerns are more enthusiastic and extroverted, conscientious and mature than those with low environmental concerns (Borden and Francis, 1978). In a study conducted in the UK, it was stated that food waste behaviour is related to psychological differences (Swami *et al.*, 2011). In a study on 2,690 adults in Germany, the relationship between personality and environmental anxiety was examined using structural equation models (Hirsh, 2010). In addition, norm activation models and planned behaviour theory were used to explain consumer behaviour (Ajzen, 1991; Nardi, 2019; Schwartz, 1992; Zhang *et al.*, 2013).

Wasting food is considered both a moral problem (Henderson, 2004; Stuart, 2009) and a risk for food safety in the future (Nellemann, 2009). In a study, it was stated that behaviour is affected by attitudes and attitudes are affected by norms and beliefs (Hornik *et al.*, 1995; Stern, 2000). Waste is one of the norms banned in Islam (Quran 17.26-27). In the Islamic religion, waste is expressed as imbalance, injustice, persecution, overcoming the limit, pushing the boundary and concealing the truth (Kayhan, 2006). The cause and consequence of environmental destruction in the Islamic religion is expressed as: "Corruption and disorder have appeared on land and in the sea because of what the hands of people have (done and) earned. Thus, He causes them to taste the consequence of some of what they have done, so that they may return." (Quran 30.41). Religious values and attitudes have a critical importance in preventing waste (Aschemann-Witzel *et al.*, 2015). Since there is a recommendation in the Quran that those living according to the Islamic religion should not waste, they are expected to be more environmentally friendly and not to waste (Quran 6.141; 7.31). However, a study conducted in Egypt found that food waste increased especially during Ramadan (Elmenofi *et al.*, 2015). This result shows that religious values are ignored even in the month of Ramadan in Egypt.

Food waste behaviour is shaped by people's religious or materialistic values. Materialistic values can be recognized in three different ways: the first of these is to think of the tangible assets as an indication of success, the second to see the tangible assets as the centre of life, and the third to see the tangible assets as the centre of happiness (Ergen, 2016). In most studies, it is stated by many scientists (Banerjee

and McKeage, 1994) that materialists do not consider environmental protection as a fundamental value (Aschemann-Witzel *et al.*, 2015; Kilbourne and Pickett, 2008). Kilbourne and Pickett (2008) stated that the level of materialism has a negative relationship with environmental concerns. Hurst, Dittmar *et al.* (2013) also argued that materialism has a negative relationship with pro-environmental attitude and behaviour (Porritt and Porritt, 1984). In addition, materialism, which is seen as a personal value (Richins and Dawson, 1992), is opposed to environmentalism (Hirsh and Dolderman, 2007), and has a negative impact on consumer behaviour. Although many studies on adults suggested that materialism has negative effects on environmental awareness (Banerjee and McKeage, 1994; Kasser and Ahuvia, 2002; Kilbourne and Pickett, 2008; Slater, 1997), a study conducted on senior high school students in Istanbul suggested that the opposite was the case (Ergen *et al.*, 2015). The reason for this was expressed as the possibility that students were not directly involved in earning money or they did not have financial responsibilities.

Food prices and sales campaigns affect consumers' food choice and food expenditures. Shopping behaviour and eating habits can also lead to waste of food. In a study conducted in Greece, it was stated that shopping behaviour and eating habits were the reasons for waste (Ponis *et al.*, 2017). Other factors causing waste were the buying habits and psychological factors (Stancu *et al.*, 2016). It was stated that high-income consumers (Stefan *et al.*, 2013) and high-population households waste more food (Koivupuro *et al.*, 2012). The reasons for household waste include the purchase of surplus food, planning problems, lack of information, poor storage management, past expiration, over-preparation, and lack of skill in reassembling increased meals at new meals (Buchner *et al.*, 2012; Fox and Fimeche, 2013; Monier *et al.*, 2010; Parfitt *et al.*, 2010).

Waste behaviour can be examined under three headings: reduction, reuse and recycling (Barr, 2007; Rohr and Martin, 2012). Although reduction and reuse can be used more effectively in reducing food waste, recycling can be used to make the soil fertile. In this case, the problem of food waste can be solved in two ways: The first way to solve the food waste problem is to minimize the food consumption by household (Quested *et al.*, 2013). To this end, food purchasing planning, cooking techniques and storage must be well understood (Sakaguchi *et al.*, 2018). The second way to reduce food waste is to reuse the remaining food in different ways. In order to reach the zero-hunger target in the world, it is aimed to use the food in proper ways for nutritional purposes (Griggs *et al.*, 2013). If the remaining food cannot be reused after the meal, it must be recycled by composting. Recycling of purchased food packages is also beneficial in the long term from an environmental point of view. Recycling must be achieved for glass and plastic materials (Hopewell *et al.*, 2009; Huang *et al.*, 2007). Although paper packaging of food can be decomposed in a short time in nature, recycling it provides economic and environmental advantages.

Food waste, which causes environmental degradation, is regarded as a barrier to sustainable agriculture and the environment (Martin-Rios *et al.*, 2018). In some

studies, conducted in Europe, it was stated that there is a relationship between food waste and environmental degradation (Pellegrini, 2019; Reisinger *et al.*, 2011; WRAP, 2009). Food waste causes excess consumption of freshwater as well as fossil fuels. In agricultural production, food is produced as a result of using freshwater and energy, etc. The methane resulting from the decomposition of waste foods and the energy used to produce food leads to environmental degradation (Hall *et al.*, 2009). According to recent research, 20% of the global greenhouse gas emissions (Hertwich and Peters, 2009) and 92% of the global water footprint were related to agriculture and food (Baste *et al.*, 2012). It is a matter of awareness that food waste can cause serious damage to agriculture and the environment (Linder *et al.*, 2018). Reducing food waste is considered an important tool to address food security concerns (WRAP, 2011). For this reason, household environmental awareness is crucial to reduce domestic food waste in the world (Parfitt *et al.*, 2010). At the same time, environmental awareness and social norms develop positive attitudes in preventing food waste (Corsini *et al.*, 2018). Global warming (Griffin *et al.*, 2009; Hogg *et al.*, 2007; Stuart, 2009), food security (Nellemann, 2009), environmental degradation, deforestation (Forkes, 2007; Lundqvist *et al.*, 2008) and their economic consequences (Binyon, 2007) need to be well explained to society in order to reduce food waste and raise awareness at the household level. In the light of the existing literature, this research is very important in terms of revealing the factors that affect food waste awareness in Turkey.

The reduction of food waste in Turkey is an important goal in the long term. Identifying the factors influencing household food waste behaviour is an important step in developing the appropriate policies (Graham-Rowe *et al.*, 2015). In order to achieve this goal, it is vitally important to identify factors that affect household food waste awareness. Therefore, the aim of this study was to determine the factors affecting food waste awareness in Turkey. The effects of materialist values, personality, religious norm, food choice, food expenditure, recycling and environmental awareness on food waste awareness were investigated. In accordance with this purpose, conceptual model (Figure 1) and hypotheses of the research were as follows:

H1. Religious norm has a positive effect on food waste awareness;
H2. Environmental awareness has a positive effect on food waste awareness;
H3. Recycling has a positive effect on food waste awareness;
H4. Personality has a positive effect on religious norm;
H5. Food expenditure has a positive effect on environmental awareness;
H6. Food expenditure has a positive effect on recycling;
H7. Materialist values have a negative effect on recycling;
H8. Food choice has a positive effect on recycling;
H9. Environmental awareness has a positive effect on recycling.

Figure 1. The conceptual model
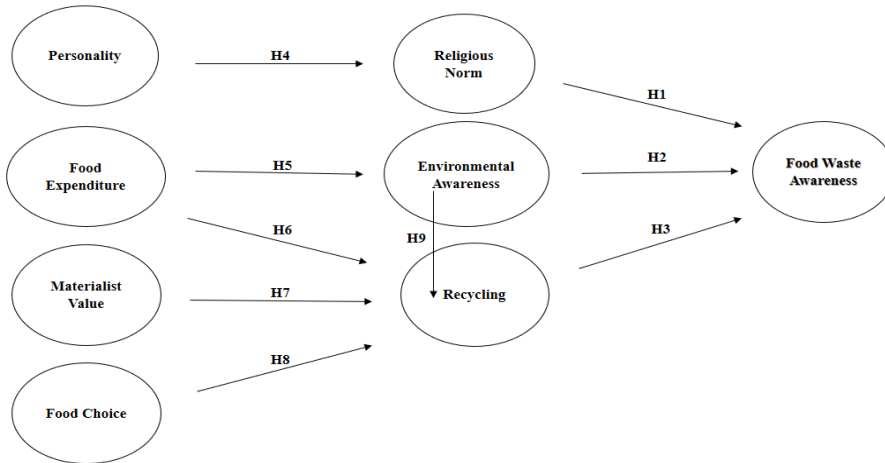
Source: Author's representation

1. Material and methods

A scale, which was previously tested for accuracy and reliability by Abdelradi (2018), was used in the study. In this scale, factors affecting consumer food waste awareness were determined using 43 items. These items were scored on a 5-point Likert scale ranging from "strongly disagree", "disagree", "neither agree nor disagree", "agree" to 'strongly agree'. The 5-point Likert type scale range (5-1=4) was calculated as 4. It was divided into 5 (4/5) and the coefficient of increase (0.8) was obtained. The scoring method is as follows:

From 1 to 1.80 - "strongly disagree", from 1.81 to 2.60 - "do not agree", from 2.61 to 3.40 - "neither agree nor disagree", from 3.41 to 4.20 - "agree" and from 4.21 to 5.00 - "strongly agree".

The research data was obtained from individuals living in the urban area of Çorum province, Turkey. The target population of the research consists of 297,224 consumers. In the study, the sampling technique was used because it is a difficult and expensive job to conduct surveys with every consumer in such a large population. This research was conducted using the non-probabilistic sampling method. With the convenience sampling method, which is one of the non-probabilistic sampling methods, a survey was conducted with 400 people living in Çorum.

The research was conducted in March, April and May 2019 through a questionnaire prepared using web-based Google forms. The questionnaire and the link were directed to consumers living in different districts of Çorum through social media, e-mail and face-to-face interview techniques. The data obtained from the questionnaires were analysed with IBM SPSS Statistics version 22-package program.

The Kaiser-Meyer-Olkin test (KMO) was used to determine whether the number of samples was sufficient before measuring the factors affecting consumers' food waste awareness. In order to perform Exploratory Factor Analysis (EFA), a correlation between the variables is required. For this purpose, the correlation coefficients of factors affecting food waste awareness were calculated (Akoglu, 2018) and the KMO test was performed. The EFA is not appropriate if the KMO test value is below 0.50 (Field, 2009; Karakas, 2018). If the KMO test results are 0.5-0.7, it is considered 'moderate', 0.7-0.8 'good', 0.8-0.9 'excellent' and values above 0.9 'the best' (Büyüköztürk, 2018; Karakas, 2018, 2019).

Structural Equation Modelling (SEM) was used to determine the factors causing food waste awareness. The EFA was used primarily in the SEM (Karakas *et al.*, 2017). All items were subjected to Principal Component Analysis and rotated using the varimax rotation method. The variables whose communality value was less than 0.50 were excluded from the analysis. The reliability of the obtained factors was measured using Cronbach Alpha (α) coefficient (Gliem and Gliem, 2003). Average Variance Extracted (AVE) values higher than 0.50 and Construct Reliability (CR) values higher than 0.70 indicate the internal consistency of the factor (Bacon *et al.*, 1995; Fornell, 1981; Fornell and Larcker, 1981). Therefore, AVE and CR were calculated (Yadav and Rahman, 2017). After verifying the reliability, construct validity, internal consistency, the fit index values of the factors were calculated. Direct and indirect effects of factors affecting the food waste awareness were measured by path analysis method.

2. Results

Descriptive socio-demographic information on the participants is given in this section. 74% of the participants were female, and 26% were male. 35% of the participants were 18-25 years old, 32.8% were 26-35 years old, and 32.3% were 36 years old and over. The average income of consumers was calculated as $694. 37.5% of the participants' income level was less than $376, 33.5% $377-752, and 29% higher than $753 (Table 1).

Table 1. Demographic characteristics of participants

Age	Frequency	Percent
18-25 years	140	35
26-35 years	131	32.8
36 and over	129	32.2
Total	400	100
Number of people living in household		
1-2	81	20.2
3-4	219	54.8
≥5	100	25.0

Total	400	100.0
Income $ (U.S. Dollars)		
≤ $376	150	37.5
$377-752	154	33.5
≥ $753	116	29.0
Total	400	100
Education		
Primary education	23	5.8
High school	67	16.7
Higher education	310	77.5
Total	400	100

Note: *1 US dollar= 5.32 Turkish Lira on March 1, 2019.
Source: Author's calculations

The average number of people living in the household of the participants was 3.63. 20.3% of the respondents had households of 1-2 people, 54.8% had 3-4 people, and 25% had 5 or more people. 5.8% of the participants were primary school graduates while 16.8% graduated high school and 77.5% college (Table I).

3. Analysis results

The first step in the EFA is the measurement of sample adequacy. The KMO test result (0.758) showed that the sample size was adequate ($P<0.01$). Initially, 43 items were included in the EFA. As a result of the EFA, 16 of the items were excluded from the analysis because the common variance values were less than 0.50 and the cross-load weight was higher than 0.30. As a result of the EFA, an 8-factor structure explaining 68.91% of the total variance was obtained (Figure 2).

Figure 2. Scree plot of factor and items
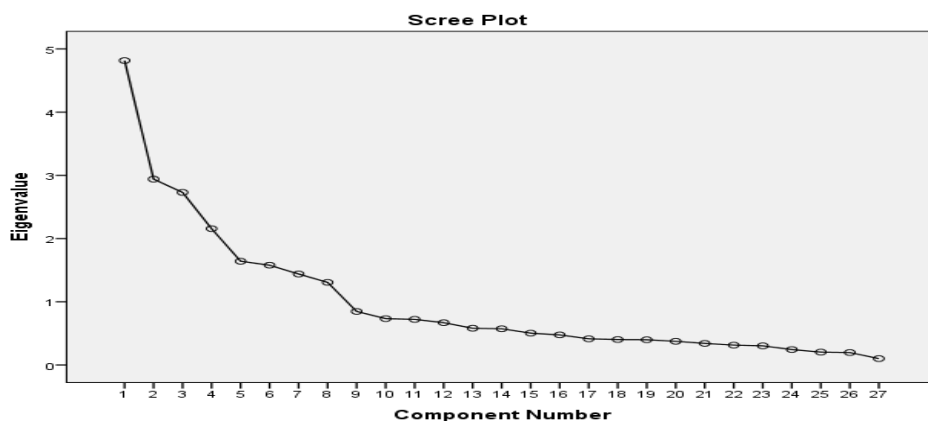
Source: Author's representation

The factors obtained from the EFA were named: "Recycling", "Materialist Value", "Food Waste Awareness", "Religious Norm", "Food Choice", "Environmental Awareness", "Food Expenditure" and "Personality". These factors and their explained variances were calculated as 9.709% for recycling, 9.314% for materialistic values, and 9.183% for food waste awareness, 8.947% for religious norm, 8.476% for food choice, 8.216% for environmental awareness, 7.944% for food expenditure and 7.121% for personality (Table 2).

Table 2. Results of the EFA

	Standard loading	Variance explained%
Recycling		
"Waste paper should be recycled."	0.916	
"Waste glass bottles should be recycled."	0.898	9.709
"Waste plastic packages should be recycled."	0.891	
Materialist Values		
"I would be happy if I could afford to buy more."	0.827	
"Some of the biggest successes of life include the acquisition of goods."	0.788	9.314
"My life would be better if I had some things I do not."	0.764	
"I admire people who own houses, cars and expensive clothes."	0.739	
Food Waste Awareness		
"Cooked food more than needed."	0.801	
"Food leftover on a plate after a meal."	0.757	
"Saved food and eventually not used."	0.751	9.183
"Opened products (cans, sauces, etc.) and haven't used."	0.712	
Religious Norm		
"A religious person cares about the environment."	0.910	
"A religious person doesn't consume food excessively."	0.880	8.947
"A religious person balances between food, drink and his/her needs."	0.847	
Food choice		
"It is important that the consumed food is rich in vitamins and proteins."	0.768	
"For me, it is important that the food we consume contains no hazardous ingredients as dioxins, pesticides."	0.757	8.476
"It is important for me that the food I consume is of good quality."	0.682	
"For me, it is important that food I consume is low in fat."	0.677	
Environmental Awareness		
"Humans treat the environment very badly.	0.829	
"If things continue the way they are, an ecological catastrophe will follow."	0.810	8.216
"Interfering with nature often produces disastrous consequences."	0.718	

Food expenditure		
"The price of food is very important to me at the time of purchase."	0.893	
"I always compare the prices of products on a purchase."	0.772	7.944
"For me, it is important that the food we consume is economic."	0.752	
Personality		
"I am known as a disciplined person."	0.841	
"I am known as an organized and careful person."	0.831	7.121
"I am known as a trustworthy person."	0.625	

Source: Author's representation

The recycling factor was the most important factor explaining the total variance. This factor demonstrated the sensitivity of the consumers to the recycling of waste paper, plastic waste and waste glass bottles (Table 2). Among all factors, the highest average score belonged to the recycling factor. The mean score of the recycling factor was calculated as 4.695 (Table 3). It was determined that consumers strongly agree with all statements of recycling factor.

The mean score of the religious norm factor was calculated as 3.790. Although it seems that consumers have participated in religious norm expressions, it can be said that consumers were not in consensus because the standard deviation of the religious norm factor was the highest compared to other factors. The mean score of the materialist values was calculated as 2.819. This shows that consumers were undecided about materialist values. The highest standard deviation after the religious norm factor was the materialist value factor (Table 3).

Food choice and, then, food expenditure actually have an important function in preventing food waste. If the consumer has a plan to make a decision to buy food, there is less food waste, but if the consumer does not have a plan, there is more food waste. The fact that the mean score of the food expenditure factor (4.216) was higher than the mean score of the food choice factor (4.058) means that consumers were more interested in the economic dimension than in food choice.

The mean scores of the personality, the food expenditure, the food waste awareness and the environmental awareness factors indicated that all consumers strongly agreed with these statements. As the standard deviation of the environmental awareness factor among these factors was the lowest, it can be said that consumers were more sensitive and had a consensus on environmental issues. In addition, the environmental awareness factor had the highest mean score (4.722).

The relationship between the factors was examined by using Spearman's Rho Correlation. The highest correlation was found between recycling and environmental awareness. Similarly, there was a positive correlation between environmental awareness and food waste awareness (Table 3). These two situations can be interpreted as both recycling and food waste awareness would increase with increasing environmental awareness.

Table 3. Spearman's Rho correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Personality	1,00							
(2) Materialist Values	.017	1.00						
(3) Food Expenditure	.218**	.099*	1.00					
(4) Food Choice	.296**	.100*	.299**	1.00				
(5) Religious Norm	.121*	.008	.101*	.021	1.00			
(6) Environmental awareness	.057	-.058	.218**	.187**	.133**	1.00		
(7) Food Waste Awareness	.089	.022	.234**	.122*	.299**	.369**	1.00	
(8) Recycling	.099*	-.101*	.258**	.311**	.079	.436**	.308**	1.00
Mean	4.363	2.819	4.216	4.058	3.790	4.722	4.414	4.695
Standard Deviation	.579	.896	.719	.662	1.089	.418	.622	.527

Note: *$P < 0.05$, **$P < 0.01$; 1-1.80; strongly disagree, 1.81-2.60; disagree, 2.61-3.40; neither agree nor disagree, 3.41-4.20; agree, 4.21-5.00; strongly agree.
Source: Author's calculations

Based on Spearman's Rho Correlation analysis, there was a positive correlation between recycling and food waste awareness (Table III). Although there was a weak positive correlation between personality, food expenditure and food choice, a weak positive correlation was found between personality, religious norm and recycling. Although there was a weak negative correlation between materialist values and recycling, there was a weak positive correlation between materialist values, food expenditure and food choice. In addition, there was a weak positive correlation between religious norms and food waste awareness, but there was a strong positive correlation between recycling and environmental awareness. There is also an expected positive relationship between food choice and food expenditure (Table 3).

The Cronbach Alpha (α) coefficient was calculated to determine the reliability of the factors. According to the results, all factors were reliable. The AVE and the CR were calculated to prove that (Fornell and Larcker, 1981) the items were related and measured in a single conceptual structure (Table 4).

Table 4. Reliability, construct validity and internal consistency of the factors

Factors	α	Criterion	CR	Criterion	AVE	Criterion
Recycling	0.802	>0.70	0.93	>0.70	0.81	>0.50
Materialist Value	0.792	>0.70	0.86	>0.70	0.61	>0.50
Food Waste Awareness	0.769	>0.70	0.84	>0.70	0.57	>0.50
Religion	0.870	>0.70	0.91	>0.70	0.77	>0.50
Food Choice	0.720	>0.70	0.81	>0.70	0.52	>0.50
	0.765	>0.70	0.83	>0.70	0.62	>0.50
	0.769	>0.70	0.85	>0.70	0.65	>0.50

Environmental Awareness Food Expenditure Personality	0.701	>0.70	0.81	>0.70	0.60	>0.50

Note: α; Cronbach Alpha, CR; Construct Reliability, AVE; Average Variance Extracted
Source: Author's calculations

As a result of the analysis, the AVE coefficient of the factors was higher than 0.50, and the CR coefficient was higher than 0.70, indicating that the reliability, construct validity and internal consistency of all factors (Bacon *et al.*, 1995) were achieved (Table 4). To strengthen the goodness of fit, covariance was calculated between some items under the same factor. In order to measure the goodness of fit, NFI, CFI, IFI, TLI, RMSEA and X^2/DF values were calculated, and fit values were given in Table IV. It is clear that an X^2/DF of 1.531 and a RMSEA of 0.036 means adequate fit. In addition, NFI, CFI, IFI and TLI were also acceptable (Fan *et al*., 1999; Fornell, 1981; Hu and Bentler, 1998; Kline, 2015). As a result of the fit analysis, it was seen that the whole model had a perfect fit (Table 5).

Table 5. Fit indices criteria and results

Fit Indices	Criterion	Finding	Fit Indices	Criterion	Finding
NFI	$0.90 \leq NFI <1$	0.906	TLI	≥ 0.90	0.959
IFI	$0.90 \leq IFI <1$	0.966	RMSEA	≤ 0.08	0.036
CFI	$0.93 \leq CFI <1$	0.965	X^2/DF	$X^2/DF<5$	1.531

Source: Author's calculations

Path analyses were performed to determine the effects of variables on the food waste awareness. According to the results of the path analysis, it was determined that environmental awareness, recycling and religious norm had a direct effect on the food waste awareness and other variables had an indirect effect (Figure 3).

According to the results of the analysis, in the case of a one-unit increase in the environmental awareness factor, the recycling factor and the religious norm factor increased the food waste awareness factor by 0.351, 0.140, 0.135 units respectively (Figure 3).

Figure 3. The path analysis
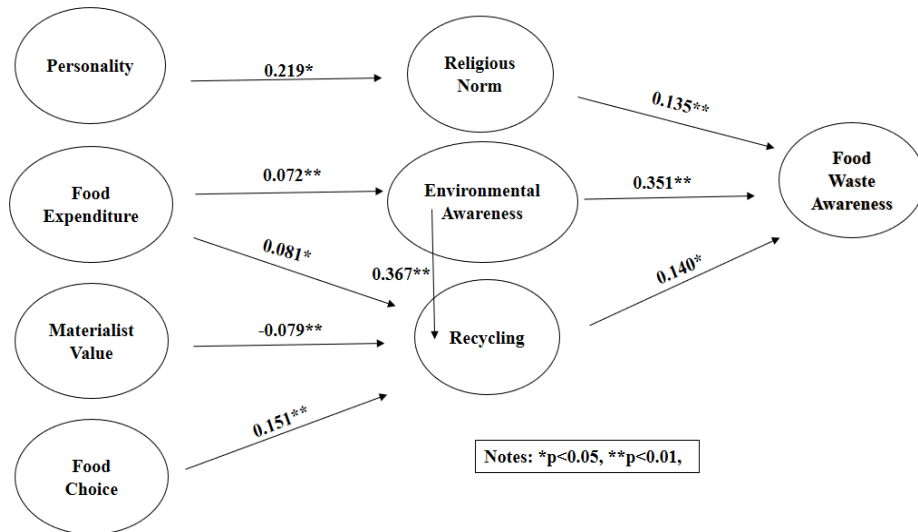
Source: Author's representation

The food expenditure and the recycling were effective on the environmental awareness, which is the most effective factor in the food waste awareness. While a one-unit increase in the food expenditures caused 0.072 units increase in the environmental awareness, a one-unit change in the recycling factor caused 0.262 units change in the environmental awareness factor. The recycling factor was affected by four factors: The most important of these was environmental awareness. It was found that a one-unit increase in the environmental awareness factor caused a 0.367-unit increase on the recycling factor. It was determined that a one-unit increase in the food expenditure and the food choice caused 0.081 and 0.151-unit increase on the recycling factor, respectively.

Unlike all the factors included in the study, a one-unit increase in the materialistic values had a negative effect on the recycling factor and a 0.079-unit decrease on the recycling factor. The materialist values, food expenditure, food choice and personality had an indirect effect on the food waste awareness. Personality was determined as the only factor affecting religious norms. A one-unit change in personality factor caused a 0.219 units change in religious norms. In the light of these findings, all hypotheses of the research were accepted (Figure 3).

Discussion and conclusions

As a result of this research carried out in Çorum province, three factors that directly affect food waste awareness were determined. These factors were environmental awareness, recycling and religious norm, in order of importance.

The factors with an indirect effect on food waste awareness are personality, food expenditure, materialist values and food choice, respectively. Only the materialist values of these factors had an indirect negative effect on food waste awareness while the other three factors had indirect positive effects. The findings obtained support the previous studies. For example, Abdelradi (2018) stated that 'materialist values had a negative effect on environmental awareness' and, in this study, it was found that materialist values negatively affected recycling. According to the results of this research, the effect of materialist values was similar to Kilbourne and Pickett's (2008) research. Kilbourne and Pickett (2008) showed that materialism has a negative effect on environmental beliefs. The fact that recycling and environmental awareness has a two-way positive direct effect on each other, and that these two factors have a positive direct effect on food waste awareness reveal the necessity of raising environmental awareness and recycling. In addition, environmental awareness is critical for reducing food waste, as environmental awareness is effective both on recycling and on food waste awareness.

In order to develop effective policies to minimize food waste, this study was conducted to determine the factors that affect consumers' food waste awareness. It is also vital to develop local solutions for food safety and sustainable agriculture. Considering that religious norms are one of the most important determinants of recycling intention (Lakhan, 2018) and that attitudes are influenced by beliefs and norms (Hornik *et al.*, 1995; Stern, 2000), it can be said that religious norms can be used to raise awareness of food waste. For religious people, religious norms can lead to a positive environmental behaviour. For this reason, environmental issues should be explained using religious norms. In addition to global climate change (Griffin *et al.*, 2009; Hogg *et al.*, 2007; Stuart, 2009), food security, food safety (Nellemann, 2009), environmental degradation, deforestation (Forkes, 2007; Lundqvist *et al.*, 2008) and their economic consequences (Binyon, 2007), the society should be informed about the need to prevent food waste at the household level.

Quested *et al.* (2013) found that people are not yet conscious about the link between food waste and its environmental impact. Therefore, the relationship between environmental pollution and food waste should be explained to consumers. Moreover, in order to reduce food waste, activities that create environmental awareness should be emphasized by linking with materialist values, recycling, food choice, and food expenditure. Promoting food consumption reduction is vital for sustainable agriculture, environment and, especially, food security, as excessive consumption causes many environmental, social, economic and health damages. The way to reduce food consumption is to increase environmental awareness, food waste awareness and recycling awareness and turn it into behaviour.

Since the limitation of the study is the province of Turkey/Çorum, it can be said that the findings are only relevant to the region. In this respect, using samples from different provinces of Turkey in future studies on this subject may provide more scientific, confirmatory and generally accepted results.

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