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Hane Halkının Gıda İsrafı Yapmasındaki Aşamaların Belirlenmesi[1]

Öz

Üzerinde fazla durulmasa da gıda israfı dünyada ve Türkiye'de en önemli ekonomik sorunlardan biridir. Gıda israfı, hane halkının refahını azaltmakta; düşük gelirli kesimin gıdaya ulaşımını zorlaştırmakta; sürdürülebilir kalkınma hedeflerine ulaşılmasını engellemektedir. İsraf, İslamiyet'te yasaklanmış olmasına rağmen Müslüman toplumlarda da gıda israfının yaygın olduğu görülmektedir. Türkiye'deki gıda israfı, kendisinden daha zengin olan gelişmiş ülkelerden daha yüksektir. Sahip olduğu önem derecesine rağmen iktisat biliminde gıda israfının teorik yönü yeterince araştırılmamıştır. Gıda kaybı; üretimden hane halkına ulaştırılırken yapılabildiği gibi bizzat hane halkı tarafından da yapılabilmektedir. Hane halkı, gıda israfı yoluyla kendi hane refahını azaltmaktadır. Çalışmamızda amaç hane halkının gıda israfının aşamalarının belirlenmesidir. Bu amaçla uygulanan anket sonucunda gıda israfının planlama, alışveriş ve tüketim olmak üzere üç aşamada yapıldığı ortaya çıkmıştır. Yaş, eğitim, meslek ve gelir gibi demografik değişkenlerin de gıda israfını etkilediği görülmüştür. Çalışmamızın gıda israfı hakkında gelecekte yeni araştırmaların önünü açacağı; gıda israfına yönelik farkındalığı artıracağı düşünülmektedir.

Anahtar Kelimeler: Gıda İsrafı, İsraf, Tüketim, İslam Ekonomisi, Hane Halkı Refahı.

JEL Sınıflama Kodları: D11, D14.

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Determination of the Stages of Household Food Waste[2]

Abstract

Although not emphasized much, food waste is one of the most important economic problems in the world and Türkiye. Food waste reduces households' welfare, makes it difficult for low-income groups to access food, and prevents the achievement of sustainable development goals. Despite waste being prohibited in Islam, food waste is common even in Muslim societies. In Türkiye, food waste is higher than in developed countries which are wealthier than it. Despite its importance, the theoretical aspect of food waste has not been sufficiently researched in economics. Food loss can occur during transportation from production to the household or by the household itself. Households reduce their welfare through food waste. Our study aims to determine the stages of food waste in households. As a result of the survey conducted for this purpose, it was revealed that food wastage occurs in three phases: planning, shopping, and consumption. Demographic variables such as age, education level, occupation, and income were found to also influence food wastage. It is believed that our study will pave the way for future research on food wastage and increase awareness about this issue.

Keywords: Food Waste, Wastefulness, Consumption, Islamic Economics, Household Welfare.

JEL Codes: D11, D14.

[2] This study is derived from a part of Dilek KAYA's thesis titled "Food Waste from the Perspective of Islamic Economics, Determinants of Food Waste," which was prepared under the supervision of Prof. Dr. Serkan DİLEK at Kastamonu University, Institute of Social Sciences, Department of Economics.

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Introduction

More than 1 trillion dollars' worth of food is wasted every year worldwide, affecting 783 million people who suffer from hunger. This food waste covers approximately 30% of the world's agricultural land (UNEP, 2024, p.XI). Agricultural production needs to be increased to feed the growing world population; however, this demand for fertilizer, water, and energy resources leads to greenhouse gas production and global climate change. Reducing food waste will decrease fertilizer and clean water use while positively impacting the environment. Furthermore, households that waste food spend money on items they do not benefit from, which negatively affects their well-being. Food loss occurs in three stages: pre-harvesting, harvesting distribution stage, and household food waste. The importance of reducing food waste has been acknowledged globally as well as in Türkiye with various planned and implemented actions (FAO, 202, p.4-8). In Türkiye alone, it is estimated that each person wastes around 102 kg of food per year—a significant issue (UNEP, 2024, p.172).

The encouragement of consumption in a capitalist economy has led to excessive consumption thus increasing wastage (Durmuş, 2022, p.273). Although waste and food wastage are significant economic problems there are limited resources for their theoretical explanation (Dilek et.al.,2018; Khan, 2020; Çalışkan & Hatırlı, 2023). The concept of waste holds an essential place in Islamic economics due to its prohibition of wastefulness and stinginess (Sugözü, 2017, p199-200). However Islamic economists have not thoroughly examined Islamic consumption theory or widely accepted explanations (Dilek et.al.,2018, p34). It can be observed that most studies on waste follow three types: measuring dimensions (Tümer et.al.,2019; Ündevli et al., 2019; Ak & Görmüş, 2020; Terzi & Altunışık, 2016; Daysal & Demirbaş, 2001; Ertürk et al.,2015), examining Islamic law perspectives (Sugözü, 2017; Sancaklı, 2013; Yıldız, 2020; Saruhan, 2003; Eskikurt& Akgül, 2019; Kara, 2020; Cankılıç, 2020) and having a general view (Tekiner, 2021; Açıkalın& Erdoğan, 2004; Dölekoğlu, 2017). However, there is a lack of studies explaining economic theories according to wastage criteria or examining causative factors (Khan, 2020; Dilek et.al. 2019; Çalışkan& Hatırlı, 2023).

This study aims to identify the stages of food waste committed by consumers and examine whether demographic variables influence food waste. Food losses during production, distribution, and logistics will not be considered in this research. The study will provide insights into waste and the factors influencing food waste, contributing to our understanding of how the concept of waste fits within economic theory.

The research will commence with an explanation of the concept of waste and its theoretical background. We will then analyze the survey results conducted to determine the stages of food waste. The stages identified through Exploratory Factor Analysis (EFA) will be discussed, followed by hypothesis testing. Finally, we will discuss the findings obtain ed.

2- Consumption Theory and Wastefullnes

The Arabic word "waste" has multiple meanings and has been used in various contexts in the Quran (Abacı, 2016, p.191-192; Kaya, 2021, p.40). In Islamic economics, it refers to the "excessive use of elements such as money, goods, time etc., extravagance" (Çalışkan & Hatırlı, 2023, p.54-55). Waste or excessive consumption is prohibited in the Quran (Sugözü, 2017, p.199; Yıldız ,2020,p.95-97; Saruhan ,2003,p.642-643).

Western economic theory models developed based on Adam Smith's principles have largely overlooked the issue of waste. Traditional economic theory that explains consumer equilibrium using indifference curves and budget

lines – which represent baskets of goods that allow consumers to achieve higher utility levels moving away from the origin - does not consider excessive consumption or its consequences.

In Islamic economics' development studies have sought to integrate waste into theoretical frameworks as well. Dilek et al. (2018) attempted to explain waste using indifference circles approach where there is a saturation point for consumers after which their utility decreases with further consumption. This approach emphasized that both excessive and inadequate consumption reduce utility levels. Khan (2020) analyzed consumer behaviour across four dimensions: moderation, extravagance, waste, and niggardliness. These dimensions hold distinct meanings across different social strata. Instead of a single demand curve found in most economic books, Khan suggests four different demand curves.

New suggestions are needed to provide a theoretical explanation of waste or to further develop existing theories such as those proposed by Dilek et al. (2018) and Khan (2020). However, two key points must be considered in the proposals of the new consumption theory. According to Islam, people should avoid both excessive and inadequate consumption and should strive to find a middle ground (Kara, 2020, p.241; Kayhan, 2006, p.172; Erdem, 2017, p.13). Theoretical explanations should emphasize that people should adopt moderation in their consumption. Secondly, there are differences in human behavior assumptions between traditional economic theory and Islamic economics. Traditional economic theories are based on the assumption of Homo economicus— an individual characterized as asocial and unscrupulous who seeks to maximize personal benefits and profits without regard for society's interests (Dilek et al., 2017, p.636-638). In contrast, Islamic economics is based on the assumption of Homo Islamicus—an individual who considers not only his own interests but also those of society while living according to Islamic principles.

Waste depends on human needs and the quality of goods that meet these needs In Islamic economy three types of goods exist: necessary goods (zaruriyyât), comforting and facilitating goods (hâciyyât), and beautifying and maturing goods (tahsîniyyât). Necessary goods are vital for sustaining life while comforting and facilitating goods make life easier but do not ruin it when unavailable. Beautifying and maturing goods satisfy aesthetic feelings more than comfort (Yıldız, 2020, p.92-93). Various studies have found a positive relationship between consumer income levels and waste (Terzi & Altunışık, 2016, p.101). On the other hand, some studies have failed to detect a relationship between consumer income levels and waste (Aydın & Yıldız, 2011, p.177-178).

3- Food Wastefullness

Food loss can occur during the production and transportation of a product to the market, as well as due to consumer errors (FAO, 2020, p.8-9). Food falls into the category of essential goods (zaruriyyât), meaning that insufficient consumption prevents human life. Excessive consumption threatens human life by causing various health problems resulting from obesity. In other words, according to Islamic rules, both insufficient and excessive food consumption should be avoided and a middle path followed. Consumers waste food in three stages: planning, shopping, and consumption.

Planning: Consumers should plan for the goods and services they need for a certain period before shopping. Before shopping, consumers often experience uncertainty which requires research and planning to manage it (Kau et al., 2003,p .152; Akalın & Dilek ,2017 ,p .36-43). However, many consumers do not plan or make mistakes in their planning process. This leads to excessive consumption and failure to use all purchased goods. A conscious consumer should inspect

their food products before shopping—especially those nearing their expiry—create a list before shopping, and be mindful when purchasing items.

Shopping: After planning, consumers must be cautious during shopping in order not to waste money. They should pay attention to products on sale while preferring brands or markets that sell quality products at lower prices after checking them thoroughly for value. However, people often make mistakes for various reasons, which causes waste.

Consumption: Mistakes can also happen during the actual consumption after shopping due to blunders made during previous stages such as planning or while purchasing items People should cook only what is necessary consume it completely if possible store leftovers properly for future meals.

4- Method

A scale was prepared by the authors to determine the stages of consumers' tendency not to waste food. Before the scale was prepared, the survey permission was obtained with the decision numbered 18 of the Kastamonu University Social and Human Sciences Ethics Board dated 10.05.2023. Participants accessed the survey via Google Forms. As a result of the survey, 461 participants were reached, but surveys thought to be incomplete or incorrectly filled were eliminated and 444 were evaluated. Consumers in Türkiye were selected as the universe and the convenience sampling method was applied. While a 5% margin of error and a 50% probability of occurrence (p=50% and q=50%) are valid for a universe of 100 million, a sample selection of 384 people is sufficient (Küçük, 2016, p.95). The survey consists of two parts. The first part includes demographic questions and the second part includes questions about tendencies not to waste food. Exploratory Factor Analysis (EFA), hypothesis testing, and correlation analysis were performed in our study.

5- Findings

The first part of our research consists of demographic questions. Data on demographic questions are given in Table 1. More than 78% of the participants are 35 years old and under (18-25 years old: 32.4% and 26-35 years old: 46.2%). In terms of gender, it is seen that women reach 58.3% of the participants. It is also seen that the number of singles exceeds the number of married people (Singles: 55.9%). In terms of education, the majority of the participants have a bachelor's degree (63.7%). In terms of profession, those working in the private sector (37.4%) exceed the other groups. More than half of the participants (58.8%) live in their own homes. The majority of the participants also have an income slightly above the minimum wage of the period (8501-15,000 TL: 27.7% and 15,001-22,000 TL: 23.6%). Although the income profile of the participants is not very high, more than half (57.9%) stated that they can save. Participants with a household size of 4 people are close to one-third of the total participants (32.7%). Those whose food expenditure is between 2000 TL and 4000 TL exceeded 40% of the total participants (2001-3000 TL: 21.6% and 3001-4000 TL: 21.8%).

Table 1. Demographic Findings

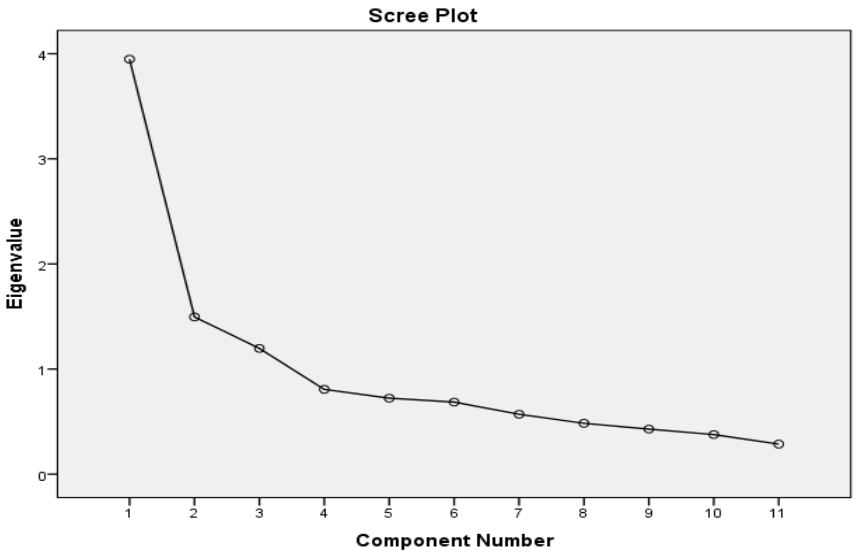
Age	F	%	Gender	F	%
18-25 Age	144	32,4	Male	185	41,7
26-35 Age	205	46,2	Female	259	58,3
36-45 Age	61	13,7	Total	444	100
46-55 Age	18	4,1	**Education**	**F**	**%**
56 +	16	3,6	Primary	17	3,8
Total	444	100	Secondary	17	3,8
Marital status	**F**	**%**	Lycee	73	16,4
Single-Widow	248	55,9	Bachelor	283	63,7
Married	196	44,1	Post Graduate	54	12,2
Total	444	100	Total	444	100
Job	**F**	**%**	**House**	**F**	**%**
Student	91	20,5	My house	261	58,8
Public	82	18,5	Rent	145	32,7
Private	166	37,4	Lodging-Other	38	8,6
Entrepreneur	16	3,6	Total	444	100
Retired	10	2,3	**Household Income**	**F**	**%**
Housewife	49	11,0	0-8500 TL	45	10,1
Other	30	6,8	8501-15.000 TL	123	27,7
Total	444	100	15.001-22.000 TL	105	23,6
Household number	**F**	**%**	22.001-29.000 TL	85	19,1
1 Person	18	4,1	29.001-36.000 TL	48	10,8
2 Person	68	15,3	36.001 TL and more	38	8,6
3 Person	109	24,5	Total	444	100
4 Person	145	32,7	**Food Consumption**	**F**	**%**
5 Person +	104	23,4	2000 TL and less	63	14,2
Total	444	100	2001-3000 TL	96	21,6
Can you save Money	**F**	**%**	3001-4000 TL	97	21,8
Yes	257	57,9	4001-5000 TL	64	14,4
No	187	42,1	5001-6000 TL	54	12,2
Total	**444**	**100**	6001 TL and More	70	15,8
			Total	**444**	**100**

Exploratory Factor Analysis (EFA) was applied to questions about tendencies not to waste food. During the exploratory factor analysis (EFA), Principal Components and Direct Oblimin methods were used. Questions thought to be about waste awareness, packaging, and packing factors, tendency to consume other goods, and questions with insufficient factor loadings were removed. To determine whether it was suitable for factor analysis, the results of the KMO and Bartlett tests were examined (KMO: 0.833; Bartlett: 1515.107 and sig: 0.000). The KMO and Bartlett test values show that the sample size was sufficient and suitable for factor analysis. The total variance results explained are given in Table 2.

Table 2. Total Variance Explained

Component	Initial Eigenvalues			Rotation sums of squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3,948	35,892	35,892	3,948	35,892	35,892
2	1,496	13,598	49,490	1,496	13,598	49,490
3	1,196	10,876	60,366	1,196	10,876	60,366

Three factors with eigenvalues greater than one were identified and these three factors explained 60.366% of the movements in the total variance. The three-factor structure was also checked from the Scree Plot (Figure 1) graph and the same result was obtained.



Graph 1. Scree Plot

The rotated component matrix is given in Table 3. The elements that make up the three factors are given in Table 3. The first factor is about waste during shopping. It consists of items M1, M2, M3, M4 and M5. When the AVE and CR values are examined (AVE: 0.5865 CR: 0.9902). It is seen that the conditions AVE>0.50, CR>0.80 and CR>AVE are met. Cronbach's alpha value is also 0.814. The scale has achieved component

validity.

The second factor is about waste during consumption after shopping. This scale consists of items M6, M7 and M8. The AVE value is calculated as 0.5401 and the CR value is also 0.9447. It is seen that the conditions AVE>0.50, CR>0.80 and CR>AVE are met. Cronbach's alpha value is also calculated as 0.737. The scale has achieved component validity.

The third factor is the waste scale regarding pre-shopping planning. This scale consists of items M9, M10 and M11. AVE value was calculated as 0.5101 and CR value was calculated as 0.9319. It is seen that AVE>0.50, CR>0.80 and CR>AVE conditions are met. Cronbach Alpha value was also calculated as 0.710. Scale component validity was provided.

Tablo 3. Rotated Component Matrix

	Components		
	1	2	3
M1. I try to buy food products that are on sale	,837		
M2. It is important that the food product I buy is economical.	,821		,427
M3. I try to do my food shopping at cheaper markets.	,778		
M4. I buy food products after checking their prices.	,755		-,496
M5. If I have to choose between two food product brands that I think are of the same quality, I would choose the cheaper one.	,647		
M6. I try to cook as much food as we need at home.		,757	-,362
M7. I finish all the food on my plate.		,735	
M8. I try to save the unconsumed food in our home to be consumed later.		,718	
M9. Before shopping for food, I check the products in the kitchen.			-,858
M10. I buy as much food as I can use.			-,751
M11. I make a list before I go food shopping.			-,597

The mean tendency not to waste during shopping is 4.18; the mean tendency not to waste during consumption is 4.38 and the mean tendency not to waste during planning is 4.26. The fact that the mean of all three is above 3.67 indicates that it is highly valuable, that is, the participants tend not to waste.

Hypothesis tests were applied for the effect of demographic variables on waste. The results of these hypothesis tests are also given below.

Age Factor:

The following hypotheses were made to examine the relationship between the age factor and the tendency not to waste.

H1: The tendency not to waste during shopping varies according to age.

Accepted (One Way Anova, sig: 0.016, F: 3.079).

Averages: 18-25 years old (4.10), 26-35 years old: (4.22), 36-45 years old: (3.95), 46-55 years old: (4.18), 56+ years old (4.60).

Groups with significant differences: 56+ years old vs. 18-25 years old (sig:0.027), 56+ years old vs. 36-45 years old (sig:0.01).

H2: The tendency not to waste during consumption varies by age.

Rejected (One Way Anova, sig:0.087, F:2.316).

Averages: 18-25 years old (4.27), 26-35 years old: (4.35), 36-45 years old: (4.42), 46-55 years old: (4.61), 56+ years old (4.70).

H3: The tendency not to waste during planning varies by age.

Accepted (One Way Anova, sig:0.000, F:5.121).

Averages: 18-25 years (4.09), 26-35 years: (4.38), 36-45 years: (4.09), 46-55 years: (4.14), 56+ years (4.37).

Groups with significant differences: 26-35 years and 18-25 years (sig:0.000), 26-35 years and 36-45 years (sig:0.029).

Statistically significant differences were found in the tendency not to waste during shopping and the tendency not to waste during planning according to age. It is seen that the average of the elderly (46-55 and 56+ age groups) is higher in the tendency not to waste during consumption. However, this difference is not statistically significant.

Gender Factor

The following hypothesis tests were conducted for the effect of gender on the tendency not to waste.

H4: The tendency not to waste during shopping varies by gender.

Rejected. Independent Sample T test. Sig:0.097 and F: 2.760

Means: Male (4.08), Female (4.20)

H5: The tendency not to waste during consumption varies by age.

Rejected. Independent Sample T test. Sig:0.882 and F: 0.022

Means: Male (4.34), Female (4.37)

H6: The tendency not to waste during planning varies by age.

Rejected. Independent Sample T test. Sig:0.115 and F: 2.500

Means: Male (4.16), Female (4.28)

Since all three hypotheses were rejected, it was concluded that gender is not a determining factor on the tendency not to waste.

Level of Education

The following hypothesis tests were conducted for the effect of education on the tendency not to waste.

H7: The tendency not to waste during shopping varies according to the level of education.

Accepted (One Way Anova, sig:0.003, F:4.167).

Averages: Primary school (4.53), Secondary school (4.58), High school (4.31), Undergraduate (4.07), Postgraduate (4.13)

Groups with significant differences: Secondary school and undergraduate (sig:0.06), secondary school and postgraduate (0.031)

H8: The tendency not to waste during consumption varies according to the level of education.

Rejected (One Way Anova, sig:0.061, F:2.274).

Averages: Primary School (4.74), Secondary School (4.64), High School (4.31), Undergraduate

(4.34), Postgraduate (4.33)

H9: The tendency not to waste during planning varies according to the level of education.

Accepted. (One Way Anova, sig:0.015, F:3.141).

Averages: Primary School (4.25), Secondary School (4.58), High School (4.34), Undergraduate (4.22), Postgraduate (4.01)

Groups with significant differences: Secondary School and Postgraduate (sig:0.019), High School and Postgraduate (sig:0.049).

It was observed that the tendency not to waste during shopping and planning has a significant difference according to the level of education with a 5% margin of error. It was observed that the tendency not to waste during consumption has a significant difference at the 10% level. It was observed that the average tendency not to waste decreases as the level of education increases.

Marital status:

The results of the hypothesis tests conducted to investigate the effect of marital status on the tendency not to waste are also given below.

H10: The tendency not to waste during shopping varies according to marital status.

Rejected. Independent Sample T test. Sig:0.093 and F: 0.008

Means: Single (4.11), Married (4.20)

H11: The tendency not to waste during consumption varies according to marital status.

Rejected. Independent Sample T test. Sig:0.143 and F: 2.158

Means: Single (4.27), Married (4.37)

H12: The tendency not to waste during planning varies according to marital status.

Accepted. Independent Sample T test. Sig:0.000 and F: 14.990

Averages: Single (4.16), Married (4.33)

According to these results, only the tendency not to waste during planning is affected by marital status. Married people have a higher shopping planning average and therefore waste less.

Profession:

The following hypothesis tests were conducted to investigate the effect of profession on the tendency not to waste.

H13: The tendency not to waste during shopping varies by profession.

Accepted (One Way Anova, sig:0.000, F:8.043).

Averages: Student (4.16), Public (3.95), Private (4.19), Entrepreneur-tradesman (4.39), Retired (4.28), Housewife (4.38), Other (4.00)

Groups with Significant Difference: Public employee and housewife (sig:0.038)

H14: The tendency not to waste during consumption varies by profession.

Rejected (One Way Anova, sig:0.080, F:1.864).

Averages: Student (4.28), Public (4.31), Private (4.31), Entrepreneur-tradesman (4.45), Retired (4.76), Housewife (4.56), Other (4.47)

H15: The tendency not to waste during planning varies by profession.

Rejected (One Way Anova, sig:0.422, F:1.004).

Averages: Student (4.23), Public (4.15), Private (4.21), Entrepreneur-tradesman (4.39), Retired (4.30), Housewife (4.41), Other (4.24)

A significant difference was found between public employees and housewives in the tendency not to waste during shopping. Apart from this, there is no difference in the tendency not to waste between professions.

Household Income

The following hypothesis tests were conducted to obtain information about the tendency not to waste according to household income.

H16: The tendency not to waste while shopping differs according to household income.

Accepted (One Way Anova, sig:0.042, F:2.196).

Averages: 0-8500 TL (4.53), 8501-15000 TL (4.36), 15001-22000 TL (4.10), 22001-29000 TL (3.94), 29001-36000 TL (3.95), 36001 TL and above (3.89)

Groups with significant differences: 0-8500 TL and 15001-22000 TL (sig:0.013); 0-8500 TL to 22001-29000 TL (sig:0.000); 0-8500 TL to 29001-36000 TL (sig:0.002); 0-8500 TL to over 36001 TL (sig:0.000); 8501-15000 TL to 22001-29000 TL (sig:0.000); 8501-15000 TL to 29001-36000 TL (sig:0.013); 8501-15000 TL to over 36,001 TL (sig:0.005).

H17: The tendency not to waste during consumption varies according to household income.

Rejected (One Way Anova, sig:0.384, F:1.057).

Averages: 0-8500 TL (4.43), 8501-15000 TL (4.42), 15001-22000 TL (4.37), 22001-29000 TL (4.36), 29001-36000 TL (4.18), 36001 TL and above (4.27)

H18: The tendency not to waste during planning varies according to household income.

Rejected (One Way Anova, sig:0.141, F:1.655).

Averages: 0-8500 TL (4.38), 8501-15000 TL (4.24), 15001-22000 TL (4.26), 22001-29000 TL (4.23), 29001-36000 TL (4.22), 36001 TL and above (3.97)

Significant differences were found at the 5% level in the tendency not to waste during shopping according to household income. However, no significant differences were found during consumption and planning according to household income.

6- Correlation analysis

A correlation analysis was conducted to determine the relationship between the tendency to not waste in the shopping, consumption and planning stages. A positive 1% significant relationship was found between the tendency to not waste in all three stages. The correlation coefficient between the tendency to not waste during planning and the tendency to not waste during shopping is higher than 0.400, which is medium. Other relationships are between 0.200 and 0.400, which is weak.

Tablo 4. Correlation Matrix

	Shopping	Consumption	Planning
Shopping	1	,261**	,409**
Consumption	,261**	1	,306**
Planning	,409**	,306**	1

7- Conclusion and Discussion

The world population is increasing and the adequacy of agricultural production to feed this population is being discussed. However, increasing food waste is also gaining importance. Our study aims to determine the tendencies not to waste food and the stages of food waste. For this purpose, a survey was applied to 444 participants throughout Türkiye.

As a result of Exploratory Factor Analysis (EFA), it was concluded that food waste occurs during shopping, consumption, and planning. Scales regarding the tendency not to waste in these stages were obtained and it is possible to use these scales in subsequent studies on waste. When the correlation analysis was performed on the three stages of waste, significant relationships were determined at the 1% level.

In our study, it was found that the tendency not to

waste food is quite high. The average tendency not to waste during shopping is 4.18; the average tendency not to waste during consumption is 4.38 and the average tendency not to waste during planning is 4.26. However, this result is not consistent with UNEP (2024, p.172), which estimates that food waste is higher in Türkiye than in most countries. In addition, various studies have found that food waste is high in Türkiye (Tekiner et.al. 2021, p. 125; Tümer et.al. 2019, p.436; **Ündevli** et.al. 2019, p.182). There may be two reasons for this. First; The majority of food losses occur during production, food, distribution, and logistics. Our research only addresses food waste by consumers. Second; Our research was conducted on Google Forms. Therefore, the majority of participants are young, educated, and urban residents. Face-to-face research with more diverse samples will contribute to the literature.

Data has been obtained indicating that the age factor may affect protection against waste. It has been observed that the 56 and over age group has high levels of waste avoidance defects during consumption, shopping, and planning. This group should be cut off from working (retired, housewives) and provided with time to shop. In addition, the economic difficulties experienced by the elderly in the past (economic crises, natural disasters, etc.) may cause them to be more careful about waste. However, in the survey we conducted via Google Forms, we offer quite a wide range of options to the 56 and over age groups (only 16 people). Therefore, discoveries that will ensure a greater connection to a group of 56 and over will contribute to the illumination of the durability of waste at an age when it is broken. Our findings are consistent with studies that have found that young people have higher waste (Aydın and Yıldız, 2011, p.174; Hamilton, 2005, p.14). No difference in waste change was detected in terms of gender. However, Koivupuro et al. (2012, pp. 188-189), Akmeşe and İlyasov (2022, p.10) It has been obtained that the waste records of productions such as these obtain higher levels of data. The fact that our study was conducted on Turkish conditions may be the reason for this result. It has also been proven that there is a waste-proof effect at the level of education. It is seen that the waste loss of the segment with a low education level is higher. A significant difference was found between the waste records of secondary school graduates during shopping and the averages of undergraduate and graduate segments. A significant difference was found between secondary school and postgraduates and also between high school and post graduates during planning. This study of ours is not compatible with studies that find findings that waste will decrease at the level of education (Dilekoğlu & Ateş, 2022, p.51). Examining the gaps between the level of education and the protection of waste reveals the need for new research. If new developments reveal that the rights to waste increase as the level of education increases, it is important to rearrange education policies and content.

When marital status was examined, it was determined that married people's attitudes towards not wasting during planning were statistically (5%) higher. Married couples probably plan together about the needs of the house and shopping. However, no difference was found between the tendency to not waste during shopping and consumption according to marital status. There are also studies in the literature where no difference was found according to marital status (Akmeşe & İlyasov, 2022, p.10). It is thought that new research on waste during planning will contribute to the literature.

It was observed that housewives' tendency towards not wasting during shopping was higher than the average of other occupational groups. In fact, a significant difference was found between them and public employees. It is thought that housewives can spend more time on shopping and planning than other occupational groups. Although there is no significant difference between them and other occupations, it is seen

that housewives' tendency towards not wasting during planning was higher.

Evidence was found that household income also has an effect on waste. Low-income groups (0-8500 TL and 8501-17,000 TL) have a higher propensity not to waste than other groups. Our findings are consistent with studies that find that food waste increases as income increases (Tümer et.al. 2019, p.436; Aydın & Yıldız, 2011, p.179). Terzi & Altunışık (2016, p.100) attributed the higher propensity of Arab participants to waste than Turkish and Indonesians to income.

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Ethics Statement

The author(s) did not report ethical committee approval as the research content does not require.

References

1. Abacı, H., (2016), Giyim-Kuşamda İsraf. II. Uluslararası Helal Ürün Ekonomisi Sempozyumu (Giyim-Kuşam), 190-211
2. Açıkalın, S., & Erdoğan, L. (2004). Veblen'ci gösteriş amaçlı tüketim. Sosyal Ekonomik Araştırmalar Dergisi, 4(7), 1-18.
3. Ak, Ö, Görmüş, Ş. (2020). Muhafazakâr kesimin aşırı tüketim alışkanlıklarını belirleyen nedenler ve israf boyutu: Türkiye Malezya karşılaştırması. İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi, 19(39): 1485-1500.
4. Akalın, G., & Dilek, S. (2007). Belirsizlik altında tüketicilerin kararları. Uluslararası Yönetim İktisat ve İşletme Dergisi, 3(6), 33-48.
5. Akmese, H., & İlyasov, A. K. (2022). Açık büfe servis sisteminde gıda israfı: Rus misafirler üzerine bir inceleme. Journal of Global Tourism and Technology Research, 3(1), 1-14.
6. Aydın, F., & Yıldız, Ş. (2011). Sivas ilinde ekmek tüketim alışkanlıkları ve tüketici dinamiklerinin belirlenmesi. Atatürk Üniversitesi Ziraat Fakültesi Dergisi, 42(2), 165-180.
7. Cankılıç, İ. (2020). Kur'an-ı Kerîm'de İsraf Kavramı ve İnançla İlişkisi. Uludağ Üniversitesi İlahiyat Fakültesi Dergisi, 29(2), 597-629.
8. Çalışkan, D., & Hatırlı, S. A. (2023). İsraf Ekonomisinin teorik analizi. Selçuk Üniversitesi Akşehir Meslek Yüksekokulu Sosyal Bilimler Dergisi, (15), 53-64.
9. Daysal, H. & N. Demirbaş., (2021). Tüketicilerin gıda israfının önlenmesine yönelik tutum ve davranışlarının belirlenmesi: İzmir ili örneği, Ege Univ. Ziraat Fak. Derg., 58 (2): 253-261, https://doi.org/10.20289/zfdergi.717528
10. Dilek, S., Küçük, O., Işık, S., & Çakmak, F. (2018). An Islamıc Approach To Consumption Theory. International Journal of Islamic Economics and Finance Studies, 4(2), 33-42.
11. Dilek, S., Küçük, O., & Özdirek, R. (2017). Homo Economicus mu? İslami İnsan mı?. Uluslararası Ekonomik Araştırmalar Dergisi, 3(4), 635-641.
12. Dilekoğlu, S., & Ateş, E. (2022). Gıda israfının belirleyicileri: Sosyoekonomik değişkenler açısından bir değerlendirme. Tarım Ekonomisi Dergisi, 28(1), 41-53.
13. Dölekoğlu, C. Ö. (2017). Gıda kayıpları, israf ve toplumsal çabalar. Tarım Ekonomisi Dergisi, 23(2), 179-186.
14. Durmuş, H. (2022). Aşırı tüketim ve israf; çözüm olarak orta yollu tüketim. International Journal of Islamic Economics and Finance Studies, 8(3), 272-298.
15. Erdem, E. (2017). Müslüman Bireyin İktisadi Davranış Hususiyetleri ve İslam Piyasa Geleneği. İslam İktisadı ve Piyasa. Editör: Yusuf Enes Sezgin, Firdevs Bulut. İktisat Yayınları.
16. Ertürk, A., Arslantaş, N., Sarıca, D., & Demircan, V. (2015). Isparta ili kentsel alanda ailelerin ekmek tüketimi ve israfı. Akademik Gıda, 13(4), 291-298.
17. Eskikurt, A., & Akgül, M. (2019). Kur'ân-ı Kerîm'de İsraf Wasting ın Quran. The Journal of Academic Social Science, 26(26), 527-537.
18. FAO. (2020). Türkiye'nin Gıda Kayıpları ve İsrafının Önlenmesi Azaltılması ve Yönetimine İlişkin Ulusal Strateji Belgesi ve Eylem Planı. https://www.tarimorman.gov.tr/ABDGM/Belgeler/Uluslararas%C4%B1%20Kurulu%C5%9Flar/G%C4%B1dan%C4%B1%20Koru%20Strateji%20Belgesi%20ve%20Eylem%20Plan%C4%B1.pdf date:07.07.2024
19. Hamilton, C., Denniss, R. & Baker, D. (2005). Wasteful consumption in Australia. The Australia Institute Discussion Paper Number 77.
20. Kara, S. H. (2020). Kur'an-ı Kerim Işığında İsraf ve Cimriliğin İktisadi Sonuçları. İslam Ekonomisi ve Finansı Dergisi, 6(2) 237-272

21. Kau, A. K., Tang, Y. E. ve Ghose, S., (2003), Typology of Online Shoppers. Journal of Consumer Marketing, 20(2), 139-156.
22. Kaya, S. (2021). Çevre Sorunları Bağlamında Kur'an Temelli İsraf Anlayışı ve Vicdani Boşluğun Telâfisi Meselesi. Sürdürülebilir Çevre Dergisi, 1(1), 37-48.
23. Kayhan, V. (2006). Kur'ân'a göre İsraf ve İktisat. Dinbilimleri Akademik Araştırma Dergisi, 6(3), 149-195.
24. Khan, M.A. (2020). Theory of Consumer Behavior: An Islamic Perspective. MPRA Working Paper. Paper no:104208. https://mpra.ub.uni-muenchen.de/104208/ date:07.07.2024
25. Koivupuro, H. K., Hartikainen, H., Silvennoinen, K., Katajajuuri, J. M., Heikintalo, N., Reinikainen, A. & Jalkanen, L. (2012). Influence of socio-demographical, behavioural and attitudinal factors on the amount of avoidable food waste generated in Finnish households. International Journal Consumer Studies, 36(2), 183-191
26. Küçük, O. (2016). Bilimsel Araştırma Yöntemleri. Ekin Yayınları
27. Sancaklı, S. (2013). Hadisler çerçevesinde israf olgusunun analizi. Journal of the Faculty of Divinity, 4(1), 45-86
28. Saruhan S.M. (2003). İslam Ahlakında İsraf ve Cimriliğin Tedavisi, İslami Araştırmalar Dergisi, 16(4), 640-66.
29. Sugözü, İ.H. (2017). İslam Ekonomisi ve Adil Ekonomik Düzen, Turkish Studies Academic Journals, 12 (8):185-210.
30. Tekiner, İ. H., Mercan, N. N., Kahraman, A., & Özel, M. (2021). Dünya ve Türkiye'de gıda israfı ve kaybına genel bir bakış. İstanbul Sabahattin Zaim Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 3(2), 123-128.
31. Terzi, H., & Altunışık, R. (2016). Müslüman Tüketicilerin İsraf Kavramına Bakışı: Türkiye, Katar ve Endonezya Ölçeğinde Kültürlerarası Bir Mukayese. Journal of History Culture and Art Research, 5(2), 86-103.
32. Tümer, E. İ., Aytop, Y., & Yavuz, K. B. (2019). Ekmek İsraf Etme Durumunun ve İsrafta Etkili Olan Faktörlerin Belirlenmesi: Kahramanmaraş Kent Merkezi Örneği. Türk Tarım ve Doğa Bilimleri Dergisi, 6(3), 432-439.
33. UNEP (2024). Food Waste Index Report. UN Environment Programme. https://www.unep.org/resources/publication/ food-waste-index-report-2024 Date:07.07.2024
34. Ündevli, A., Kadam, G., Bekdik, Y. L., Yılmaz, H. İ., & Çobanoğlu, F. (2019). Gıda İsrafının Belirlenmesi: Aydın İli Örneği. Turkish Journal of Agricultural Economics, 25(2), 169-184
35. Yıldız, A. (2020). İslâm Ahlâkı Açısından İnfak, İsraf ve İstidraç kavram örgüsü. The Journal of Social Sciences, 38(38), 86-109.