Citizens' Intent and Behavior Towards Recycling in the Municipality of Kavala

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ARTICLE INFO	ABSTRACT
	Purpose: This study examines the factors that tend to affect citizens intent and behavior towards recycling. There are several key factors that can influence this behavior, such as Individual perception and behavior towards recycling as well as the spatial planning of recycling bins and the recycling culture. **Design/methodology/approach:** Taking these variables into account a quantitative survey was carried out on a sample of 307 people in the municipality of Kavala from June 2018 to June 2019. The data were gathered through the use of a structured questionnaire implemented with the SPSS 20.0 and the techniques applied were Correlation Analysis, Regression analysis and ANOVA analysis. **Finding:** The results of the survey showed that "Recycling Behavior" and "Recycling Culture" are the factors that affect the behavior towards recycling the most according to the citizens of Kavala. On the other hand "Spatial planning of recycling bins" seems to be indifferent to the participants while "Individual perception about recycling" is the least agreeable factor. **Research limitations/implications:** One of the most basic and uncontrolled constraints is the objectivity of the responses given by the individuals who completed the questionnaires. It is worth mentioning the negative reaction of many male respondents when they were informed about the subject of the survey. In a way, the researcher tried to obtain the most objective answers possible through clarifying questions. In addition, some of the difficulties faced by the researcher were the negative responses about answering the questionnaire using as an excuse the lack of time, while individual cases of respondents (10) refused to participate in the research because its issue was not of their concern or interest. **Originality/value:** This survey shows citizens' behavior towards recycling following the implementation of recycling measures by the Municipality of Kavala.

1. Introduction

In recent decades, environmental protection worldwide has become a major issue. The main problem is urban waste management and an appropriate solution is recycling which also contributes to the development of local economies through job creation (Ezeah and Roberts, 2012).Recycling is also indicated as a solution to the problem of hazardous waste after disposal in special landfills (Connet and Sheeman, 2011).

At European Union level and after Directive 2008/98 composting, incineration and disposal co-form the solid waste hierarchy. Directive 2008/98 defines the hierarchy of prevention, reduction, re-use, recycling, recovery, treatment and disposal. At the same time, Directive 94/62 / EC on packaging waste was implemented, bearing in mind that it is legally required to increase recycling by 50% in plastic, paper and metal by 2020 and that in Greece the recycling rate is low (1.9%) and 80.6% of that is paper. Based on the above, waste management in Greece focuses on the creation and enhancement of environmental recycling programs (Abeliotis et al., 2010).

In Greece, environmental marketing surveys began in the mid-1990s (later than other Western countries). Following the recent economic crisis there is a strong research interest in understanding the impact of new conditions on environmentally friendly behaviors. Within this context, various theoretical approaches have been formulated and

tested through empirical research. These surveys revealed a number of key factors that influence citizens' behavior towards recycling.

2. Literature review and Research Hypotheses

2.1 Concept of behavior towards recycling

Modeling, the reward system, punishment, and trust boosting can -at social level- encourage new behaviors (Bandura, 1977).Adolescents create social incentives in the school environment, especially in the places where they socialize and create patterns. The key to building strategic leadership is understanding how behaviors diffuse across. Is it possible to change one behavior by observing another? Does it need anything more radical? (Brechwald and Prinstein, 2011)

Researchers targeting on the effects of the adolescent influence process is the reason we do not have enough evidence for creating social influence among adolescents (Brown et al., 2008).

Based on existing research, what others do and what is considered ethical is directly related to recycling behavior (Cialdini et al., 1990). For example managing the amount of garbage in an area increases the proportion of people who throw garbage in that area.

Essentially, social network analysis provides a social "map" that shows how attributes and behavior are distributed within a particular community in relation to the relationships between members. Recent studies reveal similarities or "clustering" in physical activity (Macdonald-Wallis et al., 2011), weight (de la Haye et al., 2010), drinking, and smoking behavior (Fujimoto and Valente, 2012). Demographics such as ethnicity, gender and age have also been shown to cluster socially (McPherson et al., 2001).

Analysis of social networks shows the characteristics and behavior of the community but also among its members. Studies show similarities in fitness (Macdonald-Wallis et al. 2011), alcohol consumption and smoking (Fujimoto and Valente, 2012). The demographics appear to be grouped in social terms (McPherson et al., 2001).

2.2 Motivation towards recycling

According to Thogersen, two approaches to recycling incentives are identified at a global research level. Applied behavior analysis studies that consider man as selfish and exploiter and his attitude to be regulated by a system of rewards and punishment (Porter et al., 1995).On the other hand, attitude based on prior knowledge or behavioral predictions is considered to direct behaviors. The most prevalent of studies-based theories is the theory of planned behavior to deepen behavior towards recycling. In essence, it is a model that predicts behavior. (Barr, 2007).

The bibliographic gap of the consumer's perspective as a recycler is highlighted. As Tabanico and Schultz typically mentioned, "it's surprising that so little attention is being paid to the perspective of people who recycle" while in the US. social marketing is regularly used in environmental campaigns (Tabanico and Schultz, 2007)

In the EU Although Member States share common goals, recycling performance varies. Socioeconomic differences and even cultural differences contribute to this many landfills are typical and no attention is being paid to waste prevention or recycling policies.

Usually, the lack of adequate management resources is hidden behind the unyielding stance on ecology (O'Brien, 2013) which in turn creates urban and environmental problems (Antanasijevic et al., 2013).

In each case, the particularities of the place and the inhabitants must be taken into account (Ordoñez et al., 2015) while every participating household must work hard to embrace green tactics (KarimGhani et al., 2013). The basic measures for creating a recycling culture are:
- Administrative measures (Legislation)
- Financial measures (Tax incentives, rewards system)
- Natural measures (Recycling network installation and organized transport of MSW)
- Information (recycling events, information sessions)

Combining the above would help to involve citizens (Bernstad, 2014). While at other times instead of motivating a recycling program it can work as a barrier (KarimGhani et al., 2013).

2.3 Individual perception towards recycling

Many studies have dealt with the main features that influence the decision of the citizens to engage in recycling (Schultz et al., 1995). Recently Do Valle et al.,(2008) stated that "the theory of planned behavior is the basis on which we can model recycling decisions".As accepted by many studies (Boldero, 1995; Cheung et al., 1999; Mannetti, et al., 2004; Taylor and Todd, 1995; Terry, et al., 1999; White et al.,2009). The theory of planned behavior predicts recycling behavior and intention. While initially expected the theory of planned behavior to be indirectly influenced through rules of belief and control behaviors (Ajzen and Fishbein, 2005), there is increasing support for the effects of human personality on intention and behavior within the framework of theory of planned behavior (Norman and Conner, 2005)At the same time, it is established that in the context of the theory of premeditated behavior, human personality has a catalytic effect in many areas. (e.g., Fielding et al., 2008; Nigbur et al., 2010; Sparks and Shepherd, 1992; Theodorakis, 1994) and behavior (e.g., Bissonnette and Contento, 2001; Nigbur et al., 2010; Theodorakis , 1994).

2.4 Recycling Behavior

The field of psychology has at times formulated theories to interpret the change in ecological behavior. The model activation model (Schwartz, 1973), as well as the belief value theory (Stern, 2000), are seen as the catalyst for the behavior of personal beliefs. While according to Schwarz (1973), there is also a sense of moral compulsion to behave in a specific way. However, the most applicable theories are the theory of planned behavior and the pre-existing theory of reasoned action (Armitage and Conner, 2001). In the theory of planned behavior, intention controls the behavior and the degree of control that one considers to have over that behavior. The stronger this correlation, the more likely it is that the desired behavior will be triggered (Chen and Tung, 2010). Rules deeply influence behavior either by assuming that social and personal rules are independent or as studies have shown that they can be influenced by how social rules can influence recycling behaviors through personal rules (Bratt, 1999).

2.5 Spatial planning of recycle bins

From the beginning of human history, there was garbage produced mainly by human activities but also animals. Rapid growth especially after the industrial revolution increased the rate of waste production especially in urban areas (Gutberlet, 2003) while Parrot et al., (2009) found discrepancies regarding the layout of recycling bins and the needs of residents-recyclers. The greater the distance from a bin, the less they use it. The same was found in Zia and Devadas (2008) surveys. A new model based on urban waste forecasting was proposed by Karadimas and Loumos (2008) using Arcgis technology and the appropriate use of land data (Road, Residential, parking, factories) and spatial design of recycling bins through GIS achieved a 30% reduction in the number of recycling bins, from 162 to 112.While according to Erkut et al., (2008) and on the receipt and disposal of recyclables in central Macedonia, although national planning has shown more promising results, regional recycling planning is preferred.

2.6 Recycling Culture

The culture of our society is strongly consumerist (McCraken, 1986). The pleasure and purpose of society is consumption. This has caused significant ecological problems such as rising global temperatures, air and water pollution, and a decrease in available planet resources (United Nations Radio, 2011; United States Environmental Protection Agency, 2011).According to the United Nations Environment Program (2007), the resources available are no longer sufficient to sustain the earth's population. And it is necessary to transform society from consumer to conservation society where environmental policies would be the norm with the introduction of a reward for the ecological behavior of the citizen. The transition to such a society would certainly not have taken place without intense controversy (Nolan, 2013).

From all the above mentioned the hypotheses defined are:

H1: There is a positive relationship between Individual perception towards recycling and Motivation towards recycling.

H2: There is a positive relationship between Recycling Behavior and Motivation towards recycling.

H3: There is a positive relationship between Spatial Planning of recycling bins and Motivation towards recycling.

H4: There is a positive relationship between Recycling Culture and Motivation towards recycling.

3.   Research Methodology

3.1 Sample and data Collection

In order to reach the objectives of this study, a research was conducted between the months of June 2018 and June 2019. A structured questionnaire was used as the research instrument. The study's target population were inhabitants of the Kavala Municipality. The total sample consists of 307 people. The researcher used the mall intercept method (Bernand, 2011) and found himself at central locations in the area where he distributed the questionnaires. A self-managed questionnaire was used. The researcher was present during the completion of the questionnaires and so the respondents were facilitated to clarify any questions. Analyzing the answers, 48.3% were men and 51.7% women, and in the age groups 18-25, 14.8% of 26-35 22,6% 36-45 in 33,5%, 46-55 in 20,0% 56-65 in 6,1% and 65-78 3.0% .From the sample, 40.4% were not married, 48.3% married, 9.6% divorced and 1.7% widowed. 86 of the respondents had minor children, 1 minor 23.0% , 2 minors 12.6% and 3 minors 1.7%. Of the sample, 21.3% were civil servants, 36.5% were private employees, 17.4% were freelancers, 9.6% were unemployed, 5.7% were retired, 1.7% were householders and 0.4% were unskilled or skilled worker, while the educational level range from elementary school certificate, 2.6% high school / high school certificate, 23.0% ,technical school or IEK, 14.3% , in higher education, 46.1% and in postgraduate or doctorate, 13.9%.

3.2 Instrument Development

The aim of the questionnaire is to examine the variables of attitude in relation to the recycling of the inhabitants and the degree of satisfaction with the recycling applied in the respective municipality. The questionnaire was developed by Professor Mrs. Kamenidou Irene, (questions 1 to 8, 10, 14 to 23) and the research student (questions 9 to 9b, 11 to 13). Overall, the questionnaire consists of three (3) sections and contains twenty-three (23) questions. The first section (questions 1-8) focuses on citizens' attitude and behavior in relation to recycling. The second section (Questions 9-13) examines the citizen's view of Local Authorities and Recycling, while the third section refers to Demographics. The

answers that respondents are asked to give in terms of design vary. Questions Q1, Q2, Q3, Q4 and Q5 require the choice of a response from the ones offered. Instead, Q7 and Q8 are based on the Likert scale (5 = strongly agree, 4 = agree, 3 = Neutral, 2 = disagree and 1 = strongly disagree), Question Q9 relates to unanimity) or the respondent's refusal (No). If the respondent agrees with the content of the question, he / she is asked to answer question Q9a with the graduated five-level scale where 5 = Very good, 4 = Good, 3 = neither good nor bad, 2 = Bad, 1 = Very bad. If, however, Question Q9 gives the respondent a negative answer, it is referred to Question Q9b where one of the three (3) answers given is to be selected. Q10requiresat least one response from the ones offered. Questions Q11 and Q12 seek a positive or negative answer. The last question of examining the identifying variables, Q13 seeks to select the respondent between two (2) choices. Finally, the questions Q14- Q23 refer to the demographic data of the survey.

SECTION 1: RECYCLING AND WASTE MANAGEMENT
1. Household waste collection
2. Frequency of waste disposal
3. Disposal separation
4. Accomplishment of recycling
5. Information about Recycling
6. Active participation in recycling(it consists of 9 items)
7. Factors mobilizing society towards recycling (it consists of 7 items)
8. Recycling Behavior (it consists of 19 items)

SECTION 2: CITIZENS' VIEW OF LOCAL AUTHORITIES AND RECYCLING
9. Accomplishment of recycling by the municipality followed by 9a)City level recycling rating and 9b) Stagnation of recycling by the Municipality of Kavala
10. Reference to types of recycling bins
11. Co-citizen participation in recycling
12. Agreement to pay per garbage weight
13. Choice of Municipality or Private Company for Recycling

SECTION 3:DEMOGRAPHICS
14. Gender
15. Age
16. Marital Status
17. Family Members
18. Occupation
19. Educational level
20. Number of people working in the family
21. Number of family members who have been fired since 2010
22. Total net monthly family income
23. Place of residence

3.3 Validity and Reliability of Research Instrument
Tests were performed to establish Content Validity, Construct validity and reliability of the research instrument.

The process of operationalizing a theoretical construct to create a measure of this construct is important in determining the validity of the resultant measure. Validity is commonly assessed as content validity and constructs validity, reflecting internal and external validity (Lissitz and Samualson, 2007). Content validity examines whether the measure reflects the construct in both content and scope. Construct validity examines whether the measure of a construct operates as predicted by theory and depends on content validity. Both of them are necessary to test theory and neither is sufficient on its own; for example, a measure may achieve the predicted relationships but differ in content from the theoretical construct. This is especially the case when alternative theoretical models are available that contain closely related constructs such as the over 100 different perceived control constructs (Skinner, 1996).Researchers used Exploratory Factor Analysis(EFA) to study the relationship between variables through factors. Principal Component Analysis was conducted while Varimax rotation of orthogonal rotation of the axis method was used. Varimax rotation seeks to increase the variances of the factor loadings, resulting in both large and small factor loadings (Kaiser,1958).

The researcher used the two most popular data inspection techniques for EFA,Bartlett's test of sphericity (Bartlett, 1950) and the Kaiser-MeyerOlkin (KMO) Measure of Sampling Adequacy (Dziuban and Harris, 1973; Kaiser, 1970). Both of these methods test whether sufficiently large relationships exist within the dataset of interest to perform EFA. For the determination of the factors number the eigenvalue criterion was used and factor loadings where checked. After running a factor analysis with the 19 items used to determine attitude and behavior towards recycling, a factor model was created with 4 distinctive factors. Another factor analysis was performed for the 9 items about making people active participants in recycling that created a factor model with 2 distinctive factors. The third factor analysis about what people think would make them to support environmentally friendly solutions created a factor model with 2 distinctive factors. The subsequent results of factor analysis are presented in tables 1, 2 and 3 .

Table 1 : Factor analysis for 19 items of behavior towards recycling

Items	Loadings	Factors
I don't produce much trash to recycle	0.719	Individual perception towards recycling
Recycling is very complex	0.662	
I'm tired of looking for recycling bins	0.596	
I do not have space in my home to recycle separately each recycled product.	0.579	Eigenvalue :5.092
To be honest. to date I haven't thought about recycling seriously	0.670	
I haven't had the information needed for recycling to date	0.699	
Why does the state expect from me? What does the state do to gather the garbage?	0.683	
I like to look at my convenience and make my life easier	0.624	
I would support a recycling effort from the community / municipality / village I live in	0.758	Recycling Behavior
I think that recycling is important for the resources of the state	0.618	Eigenvalue :2.615
I think I have an ecological consciousness	0.672	
I get personal satisfaction when I recycle packaging or paper	0.749	
I believe that recycling is essential for future generations	0.565	
I buy products whose packaging is reusable	0.382	
I would like to recycle but unfortunately there are no special recycling bins close to me	0.670	Spatial Planning of recycling bins
I think there are several recycling spots here where I leave	0.735	Eigenvalue :1.351
Recycling must be learned from a young age as it is a matter of education	0.822	Recycling Culture
Recycling is important because it reduces the amount of trash going to the ground	0.410	Eigenvalue :1.108
If I had the information I needed, I would also recycle	0.705	
KMO and Bartlett's Test Kaiser-Meyer-Olkin Measure of Sampling Adequacy. :0.841 Bartlett's Test of Sphericity Approx. Chi-Square :1761.767 Df :171 Sig. :.000		

Table 2 : Factor analysis for 9 items of Motivation towards Recycling

Items	Loadings	Factors
If there were bins near my house and I wasn't looking to find them in the surrounding area	0.483	Citizens' view of the relationship of the authorities towards recycling
If there was organized transportation of the garbage from my house by my local government	0.567	
If there were some financial incentives	0.832	
If there were any other incentives	0.856	Eigenvalue : 2.688
If law required it	0.663	Motivation towards recycling
If I had more space at home	0.389	
If I had the corresponding ecological education from a young age	0.485	
If others did it also	0.576	Eigenvalue : 1.168
If the cleaning staff were not constantly on strike forcing me to stay with many bags of garbage instead of one	0.666	
KMO and Bartlett's Test Kaiser-Meyer-Olkin Measure of Sampling Adequacy. :0.733 Bartlett's Test of Sphericity Approx. Chi-Square :413.565 Df :36 Sig. :.000		

A reliability test which measures the internal consistency, was performed. The consistency is measured using Cronbach's alpha (often symbolized by the lower case Greek letter α) is commonly used to examine the internal consistency or reliability of summated rating scales (Cronbach, 1951).

The number of test items, item interrelatedness and dimensionality affect the value of alpha. There are different reports about the acceptable values of alpha, ranging from 0,70 to 0,95. (J. Vaskea et al., 2016)

Some researchers worry that the sample value of Cronbach's alpha for a response variable or a predictor variable in a statistical analysis might be unacceptably small (we have both heard of numerous reports where manuscripts were rejected simply because the sample value of Cronbach's alpha was below 0,7). However, there is no universal minimally acceptable reliability value. An acceptable reliability value depends on the type of application, and furthermore, the focus should be on the population reliability value and not on the sample reliability value (Bonnet and Wright, 2014).

Table 3 : Reliability Analysis of behavior towards recycling

Factors	Cronbach's Alpha
Individual perception towards recycling	0.843
Recycling Behavior	0.735
Spatial Planning of recycling bins	0.604
Recycling Culture	0.504

As shown on table 3 , two indices are greater than 0.7. Spatial planning of recycling bins and Recycling Culture are less than 0.7 and contain an excess of error.

Table 4 : Reliability Analysis of motivation towards recycling

Factors	Cronbach's Alpha
Citizens' view of the relationship of the authorities towards recycling	0.691
Motivation towards recycling	0.524

On table 4 one index is marginally accepted and Citizens perception towards recycling contains an excess of error.
A test for discriminant validity: Discriminant validity means that a latent variable is able to account for more variance in the observed variables associated with it than a) measurement error or similar external, unmeasured influences; or b) other constructs within the conceptual framework. If this is not the case, then the validity of the individual indicators and of the construct is questionable (Farrell, 2010).

Table 5: Test for Discriminant Validity of behavior towards recycling

	1	2	3	4
Individual perception about recycling	**0.843***			
Recycling Behavior	0.431	**0.735***		
Spatial Planning of recycling bins	0.589	0.261	**0.604***	
Recycling Culture	0.155	0.376	0.349	**0.504***

Table 6: Test for Discriminant Validity of motivation towards recycling

	1	2
Citizens' view of the relationship of the authorities towards recycling	**0.691***	
Motivation towards recycling	0.502	**0.524***

*=Cronbach's Alpha Value

4.   Data analysis – Results

The means and standard deviation for all the factors used in the analysis of behavior towards recycling are presented in table 5. According to the results, Recycling Behavior and Recycling Culture have the highest level of agreement among the citizens. Spatial Planning of recycling bins seems indifferent to most of the people while individual perception towards recycling seem to be the least agreeable factor.

Table 7 : Basic measures of behavior towards recycling

Factors	Mean	St.Deviation	Coefficient of variation
Individual perception towards recycling	2.33	1.188	50.98%
Recycling Behavior	4.05	0.897	22.14%
Spatial Planning of recycling bins	2.86	1.157	40.45%
Recycling Culture	4.03	0.952	23.62%

The means and standard deviation for all the factors used in the analysis ofmotivation towards recycling are presented in table 6. According to the results, "Citizens' view of the relationship of the authorities towards recycling and motives for recycling" have the highest level of agreement among the citizens. "Citizens perception towards recycling" seems almost indifferent.

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Table 8: Basic measures of motivation towards recycling

Factors	Mean	St.Deviation	Coefficient of variation
Citizens' view of the relationship of the authorities towards recycling	3.66	0.935	25.54%
Motivation towards recycling	3.22	0.897	27.85%

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The coefficient of variation shows that the extent of variability of the mean score is in satisfying levels. Thus ANOVA is used to determine whether statistically significant differences exist. As shown in the following tables for gender, age, income and education there are some differences between groups in some factors.

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Table 9: ANOVA, Gender and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	0.807	0.370
Recycling Behavior	0.500	0.480
Spatial Planning of recycling bins	0.200	0.655
Recycling Culture	1.197	0.112

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No statistically significant differences exist between gender and behavior towards recycling.

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Table 9 .1: ANOVA, Gender and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	5.610	0.018
Motivation towards recycling	0.073	0.787

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Specifically more women over men are dissatisfied from "Motivation towards recycling"(F=5.610, sig=0.018<0.05)

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Table10: ANOVA, Age and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	0.986	0.426
Recycling Behavior	4.049	0.001
Spatial Planning of recycling bins	1.093	0.364
Recycling Culture	0.907	0.476

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Specifically more citizens in the age range of 46-55 are satisfied from "Recycling Behavior", while less satisfied are those in the age range of 18-25.(F=4.049,sig=0.001<0.05)

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Table 10.1: ANOVA, Age and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	2.298	0.045
Motivation towards recycling	1.033	0.398

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More citizens in the age range of 36-45 are satisfied from" Citizens' view of the relationship of the authorities towards recycling", while less satisfied are those who are from 18 to 25 years old.(F=2.298,sig=0.045<0.05).

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Table 11: ANOVA, Education and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	3.488	0.008
Recycling Behavior	1.630	0.167
Spatial Planning of recycling bins	1.755	0.138
Recycling Culture	5.344	0.000

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High school graduates are more satisfied with "Individual perception towards recycling" and "Recycling Culture" while less satisfied are Postgraduate students or doctorate owners.(F=3.488,sig=0.008<0.05), (F=5.344,sig=0.000<0.05)

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Table 11.1: ANOVA, Education and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	3.528	0.008
Motivation towards recycling	1.359	0.248

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High school graduates are more satisfied with" Citizens' view of the relationship of the authorities towards recycling" while less satisfied are technical school or IEK graduates.

The correlation between the factors identified by the research will be examined to determine the correlation intensity and if the correlation is considered statistically significant at the 5% level.

Table 12 :Correlation among Factors.

Factors	Citizens' view of the relationship of the authorities towards recycling	Motivation towards recycling
Individual perception towards recycling	Pearson Correlation =0.277	Pearson Correlation = 0.329
	Sig = 0.000	Sig = 0.000
Recycling Behavior	Pearson Correlation =0.082	Pearson Correlation =0.109
	Sig = 0.153	Sig = 0.056
Spatial Planning of recycling bins	Pearson Correlation =-0.383	Pearson Correlation =-0.172
	Sig = 0.000	Sig = 0.002
Recycling Culture	Pearson Correlation =0.269	Pearson Correlation =0.262
	Sig = 0.000	Sig = 0.000

Table 13 shows the correlation between the factors. Analytically by factor there is a small positive linear correlation between the factor "Citizens' view of the relationship between the authorities towards recycling" and "Individual perception towards recycling".A marginally moderately negative linear correlation between the factor "Citizens' view of the relationship between recycling authorities" and "Spatial Planning of recycling bins" and a small positive linear correlation between the factor "Citizens' view of the relationship between the authorities towards recycling" and "Recycling Culture". Correlation between "Citizens' view of the relationship between the authorities towards recycling" and "Recycling Behavior" is rejected due the significance level of 0.05.

Concerning the factor "Motivation towards recycling", there is a small positive linear correlation between the factor "Motivation towards recycling" and "Individual perception towards recycling" .Also, there is a small negative linear correlation between the factors "Motivation towards recycling" and "Spatial Planning of recycling bins" as well as a small positive linear correlation between the factors" Motivation towards recycling"   and "Recycling Culture". Correlation between "Motivation towards recycling"   and "Recycling Behavior" is rejected due the significance level of 0.05.

A regression analysis was performed."Motivation towards recycling" was used as the dependent variable, while "Individual perception about recycling"," Recycling Behavior" "Spatial Planning of recycling bins" and "Recycling Culture" were used as the independents. The results indicate that the data are appropriate for regression analysis since the F-statistics is significant(F=18.685,Sig.F=0.000<0.01). The regression model was also tested for the autocorrelation and Colinearity. The Durbin − Watson index of autocorrelation is 1.855 indicating that there is not serious problem of autocorrelation in the model. The V.I.F indexes of Colinearity are smaller than 5 and thus none of the variables has a problem of colinearity.

Table 13: Regression Coefficients

Independent Variables	Beta	t	Sig.
Individual perception towards recycling	0.352	6.462	0.000
Recycling Behavior	0.248	3.292	0.001
Spatial Planning of recycling bins	0.082	0.193	0.847
Recycling Culture	0.187	3.083	0.002

Table 12 presents the standardized coefficients Beta of the variables from which we can conclude that three independent variables positively affect the dependent variable. "Individual perception towards recycling" (beta=0.352) affects more the "Motivation towards recycling" followed by "Recycling Behavior(beta=0.248) and "Recycling Culture"(beta=0.187). "Spatial Planning of recycling bins" does not affect the dependent variable(beta=0.08 sig=0.847).

Table 14 : Hypotheses Testing Results

Hypotheses	Decision
H1: There is a positive relationship between Individual perception towards recycling and Motivation towards recycling	Accepted
H2: There is a positive relationship between Recycling Behavior and Motivation towards recycling	Accepted
H3: There is a positive relationship between Spatial Planning of recycling bins and	Not Supported

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Motivation towards recycling	
H4: There is a positive relationship between Recycling Culture and Motivation towards recycling	Accepted

5.   Conclusions

The primary objective of this study was to investigate the factors that tend to affect citizens' intent and behavior towards recycling in the municipality of Kavala, Greece. As a result, "Individual perception towards recycling" , "Recycling Behavior", "Spatial Planning of recycling bins" and "Recycling Culture" are the most important factors influencing citizens towards recycling. Motivation towards recycling indicated two factors the "Citizens' view of the relationship of the authorities towards recycling" and "Motivation factors towards recycling". This study focused on the citizens of the municipality of Kavala, which started the use of recycling in recent years while the country was undergoing a major economic crisis. Most of the respondents separate recyclables from garbage and only a minor percent of citizens is unaware of the Municipality's recycling program. Almost a third of the sample states that recycling in this municipality is at a good or very good level. This study proves the positive relationship of" Individual perception towards recycling", "Recycling Behavior" and "Recycling Culture" with "Motivation towards Recycling". The impact of "Spatial Planning of recycling bins" is not supported because of non-significance. All factors maintain a small Pearson correlation except "Citizens' view of the relationship of the authorities towards recycling" and " Motivation towards recycling" with **"Recycling Behavior".** The findings can help local authorities to establish policies to encourage recycling and the creation of a recycling culture through key administrative measures. This study is focused on the general population of Kavala, future researchers could investigate the intent and behavior towards recycling in other cities that have not implemented recycling means or have implemented them in the recent years.

6.   References

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