

# **DOCTORAL THESIS**

Summary

## **STUDY REGARDING THE ENVIRONMENTAL BEHAVIOUR OF AGRIFOOD CONSUMERS**

Scientific Coordinator  
Prof. Univ. dr. Ioan PL IA

PhD Candidate  
S B U Florentina Simona

2015

## SUMMARY CONTAINED

|   |    |
|---|----|
| TABLE OF CONTENTS.....  | 3  |
| KEY WORDS .....   | 5  |
| INTRODUCTION .....  | 5  |
| Research problem .....  | 5  |
| Research objectives .....   | 6  |
| Research stages.....  | 6  |
| LITERATURE REVIEW .....   | 7  |
| CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY.....  | 8  |
| Proposed conceptual model .....   | 9  |
| Research hypotheses.....  | 10 |
| Methodology.....  | 11 |
| EMPIRICAL RESEARCH RESULTS .....  | 13 |
| Data univariate analysis.....   | 13 |
| The testing of the value distribution normality.....                                      | 15 |
| Scale reliability, factor scores and research model constructs' convergent validity ..... | 15 |
| Discriminant validity of the constructs .....   | 15 |
| Proposed model's internal consistency .....   | 16 |
| Testing the research hypotheses .....   | 17 |
| RESEARCH CONCLUSIONS .....  | 18 |
| Theoretical implications .....  | 19 |
| Managerial implications.....  | 19 |
| Research limits and future research opportunities.....                                    | 22 |
| SELECTED BIBLIOGRAPHY .....   | 23 |

## TABLE OF CONTENTS

|   |           |
|---|-----------|
| LIST OF TABLES.....   | 5         |
| LIST OF FIGURES.....  | 6         |
| LIST OF ANNEXES.....  | 7         |
| LIST OF ABBREVIATIONS.....  | 7         |
| INTRODUCTION.....   | 8         |
| A Research problem and objectives.....  | 9         |
| B Methods and paper structure.....  | 10        |
| <b>Capitol 1 ORGANIC AGRICULTURE.....</b>   | <b>15</b> |
| 1.1. Organic agriculture and environmental protection.....  | 15        |
| 1.2. Benefits of organic agriculture.....   | 18        |
| 1.3. Organic agrifood practices legislation.....  | 23        |
| 1.3. 1. Principles of organic agriculture.....  | 23        |
| 1.3. 2. Organic agrifood production legislation.....  | 25        |
| 1.3. 2.1. EU organic agrifood production legislation.....   | 26        |
| 1.4. Current state of organic agriculture.....  | 27        |
| <b>Capitol 2 ORGANIC AGRIFOOD PRODUCTS – A RESULT OF „CONVERGING INTERESTS” OF AGRICULTURE, ENVIRONMENT AND HEALTH.....</b> | <b>35</b> |
| 2.1. Defining organic agrifood products.....  | 35        |
| 2.2. Certifying organic agrifood products.....  | 37        |
| 2.3. Classifying organic agrifood products.....   | 41        |
| 2.4. Conceptual approaches to organic agrifood quality.....   | 43        |
| 2.5. The market for organic agrifood.....   | 20        |
| <b>Capitol 3 Organic agrifood consumer behaviour.....</b>   | <b>52</b> |
| 3.1. Basic notions and concepts.....  | 52        |
| 3.2. Consumer behaviour models.....   | 53        |
| 3.3. Factors influencing agrifood consumer behaviour.....   | 58        |
| 3.3. 1. Determining factors in the purchase and consumption organic agrifood products.....                                  | 59        |
| 3.3. 2. Restricting factors in the purchase and consumption of organic agrifood products .....                              | 66        |
| 3.4. Characteristics of organic agrifood products consumers.....  | 71        |
| 3.4. 1. Classifying organic agrifood product consumers.....   | 71        |
| 3.4. 2 The profile of organic agrifood product consumers.....   | 73        |
| 3.5. Environmentally-friendly behaviour.....  | 76        |
| 3.6. Healthy lifestyle.....   | 79        |
| <b>Capitol 4 EMPIRICAL RESEARCH METHODOLOGY.....</b>  | <b>82</b> |
| 4.1. Conceptual model design.....   | 82        |
| 4.2. Research hypothesis formulation.....   | 83        |
| 4.3. Construct operationalization and measurement scales used.....  | 84        |
| 1. Environmental concern.....   | 89        |
| 2. Lifestyle.....   | 92        |
| 4.4. Sampling and data collection plan.....   | 94        |
| 1. Elaboration of the sampling plan.....  | 94        |
| 2. Data collection.....   | 95        |
| 4.5. Data analysis plan.....  | 96        |
| 1. Data preparation for statistical analysis.....   | 96        |

|                  |   |            |
|------------------|---|------------|
| 2.               | Statistical data analysis plan.....   | 97         |
| <b>Capitol 5</b> | <b>RESEARCH RESULTS.....</b>  | <b>105</b> |
| 5.1.             | Sample structure.....   | 105        |
| 5.2.             | Univariate analysis. ....   | 108        |
| 1.               | General aspects of organic agrifood products consumption.....                             | 108        |
| 2.               | Measuring the level of environmental knowledge.....                                       | 130        |
| 3.               | Measuring environmental sensibility.....  | 132        |
| 4.               | Measuring the level of environmentally-friendly behaviour.....                            | 133        |
| 5.               | Measuring life style.....   | 135        |
| 5.3.             | Testing variable value distribution normality.....  | 136        |
| 5.4.             | Measurement scale reliability, factor scores and research model convergent validity ..... | 137        |
| 1.               | The „environmental knowledge” construct.....  | 138        |
| 2.               | The „environmental sensitivity”.....  | 143        |
| 3.               | The „environmental behaviour” .....   | 148        |
| 4.               | The „life style” construct.....   | 153        |
| 5.5.             | Construct discriminant validity.....  | 160        |
| 5.6.             | Proposed model internal consistency.....  | 161        |
| 5.7.             | Testing research hypothesis.....  | 163        |
|                  | <b>RESEARCH CONCLUSIONS.....</b>  | <b>189</b> |
| A                | Conclusions .....   | 189        |
| B                | Theoretical implications.....   | 190        |
| C                | Managerial implications.....  | 190        |
| D                | Research limits and future research propositions.....                                     | 192        |
|                  | <b>BIBLIOGRAFY.....</b>   | <b>194</b> |
|                  | <b>ANNEXES.....</b>   | <b>216</b> |

## **KEY WORDS**

Environmental behaviour, environmental knowledge, environmental sensitivity, lifestyle, influencing factors, organic agriculture, organic agrifood products

## INTRODUCTION

Every day we become more conscious of the necessity of adopting behaviors that protect the environment. Through our daily activities, we can help stop environmental degradation, safeguarding a healthy environment for future generations. The way we spend our money, our leisure time, the way we manifest our values and consumption choices, respectively our lifestyle, can be adapted to the new circumstances. Organic products represent a viable alternative to guaranteeing a good health both for humans and the environment. Organic product consumption in Romania is at relatively low levels, in comparison to other European countries (Sahota, in Willer and Lernoud, 2014, p.126), although there is a rising trend in the surfaces registered for organic agriculture (M.A.D.R. 2014). By avoiding proactive and strategic marketing activities, the Romanian industry has let consumers understand the organic concept as they pleased. Moreover, it can be observed that there is an evergrowing emphasis put on the consumption of organic products, which, on one hand, help maintain good health and, on the other, are „environmentally-friendly”. In this context, identifying elements that determine the adoption of a healthy lifestyle is an imperative.

The following paper pertains to the domain of consumer behaviour and researches some aspects of environmental behaviour, environmental knowledge, environmental sensitivity and lifestyle of organic agrifood products consumers.

### **Research problem**

The research problem is *measuring the perceived level of environmental behavior of organic agrifood products consumers and testing the effects of environmental knowledge and environmental sensitivity on environmental behavior, and on the lifestyle of consumers.*

The idea of approaching this research problem and of realizing the research has come from a thorough study of scientific literature. Hungerford and Volk (1990, in Chawla and Cushing, 2007, p. 2), Kaiser et al. (1999) and Zaiem (2005) have sought to research the causal link between environmental knowledge and environmental behavior. Dobscha and Ozanne (2001) have analyzed the mode in which environmental sensitivity influences the adoption of an environmental lifestyle. Kollumuss and Agyeman (2002) have realized a literature review regarding the barriers existent between the intention to adopt and the actual adoption of a healthy lifestyle. Thus, there is the possibility that manifesting environmental sensitivity on the part of individuals may not lead to direct adoption of a healthy lifestyle, and the relationship between the two to be mediated.

Zaiem (2005) has demonstrated the existence of statistically strong and significant relationships between environmental sensitivity and environmental behavior. This result

confirms the results of past research (Maloney and Ward, 1973; Grunert, 1993; Roberts, 1996, Li, 1997; Chan and Lau, 2000). Hughner et al. (2007) have shown that environmental concern referring to individuals' environmental sensitivity influences their behavior. Franj and Martinez (2006) have shown that environmental sensitivity and adoption of a healthy lifestyle have a positive effect on individuals in adopting environmentally friendly lifestyles.

Hughner et al. (2007) have shown that individuals consider the environmental behavior that they are adopting as contributing to the support of the national economy. Concern regarding the good of the national economy being an intrinsic component of individuals' lifestyle, we can say that environmental behavior influences the lifestyle of individuals. Stokols (1992) has shown that adopting an environmental behavior that transposes into a healthy lifestyle presents a series of benefits both on the side of the individual and of society as a whole.

Organic agrifood products represent a viable alternative for assuring good health, both for individuals and for the environment.

### **Research objectives**

Objectives are expressed as general and specific objectives.

*General objectives* guide the research as a whole. This research includes the following *general objectives*:

- 1: Measuring the perceived level of environmental behavior, environmental knowledge, environmental sensitivity and the lifestyle.
- 2: Identifying the relationship between different constructs of the research model

*Specific objectives* derive from the general objectives and represent the foundation of the research hypotheses. The *specific objective* of this research are:

- measuring the perceived level of environmental behavior;
- measuring the perceived level of environmental knowledge;
- measuring the perceived level of environmental sensitivity;
- measuring the lifestyle;
- testing the effects of environmental knowledge and environmental sensitivity on the environmental behavior of individuals, and their lifestyles;
- analyzing the intensity of the relationships between constructs using four control variables: consumers' level of informedness regarding organic agrifood products, gender, income and education level

### **Research stages**

In elaboration of this doctoral thesis two research approaches were used. In the first

phase of the research (the literature review and research methodology elaboration), *exploratory research* was used. It was used in order to define the research problem, formulating the aforementioned objectives and elaborating the hypotheses that were to be tested. In the second phase of the research, *descriptive research* was used. This research was aimed at describing the characteristics of the persons that have participated in the research, measuring the respondents attitudes towards the research model constructs and also testing the existence of statistically significant relationships between the measured constructs.

As two research approaches have been, two research methods being used also. Thus, in the first phase exploratory research was used, the method used being *documentary study*. Using this method, a literature review has been made, several (conceptual and empirical) articles by well-established authors in their domain having been studied and critically analyzed. In the literature review, different perspectives and approaches of the topics, that were to be treated in this thesis, were used and also the author tried to identify a series of hypotheses (validated or not in different contexts) which were to be tested in the research or which could be used as starting points in formulating the authors own hypotheses.

In the second phase, where descriptive research has been used, the method used being *cross-sectional study, sample survey*. With the help of this research method different characteristics of interest of a sample extracted from the reference population were measured . The research method was chosen so that the research objectives were achieved (measuring the perceived level of environmental behavior, environmental knowledge, environmental sensitivity and the lifestyle, and identifying the relationship between different constructs of the research model).

The measuring instrument used for the research was that of the cross-sectional study, namely the *questionnaire*. For this research a questionnaire composed of 32 questions has been employed.

Regarding the structure of the paper, it is composed of 6 chapters that can be split into two parts. The first part, made of three chapters, is the result of the literature review on the topic of interest. These chapters provide the theoretical basis needed for projecting, realizing and interpreting the results of the empirical research. The second part presents matters regarding the empirical research methodology, the analysis and interpretation of the results, and final conclusions, implications and the limits of the research.

## **LITERATURE REVIEW**

**The first chapter** of the thesis is dedicated to *organic agriculture* – a model for agricultural practices that aim at sustainable development. In this chapter, firstly, the relationship between agriculture and environmental protection is discussed. Next, is given a

review of the benefits of organic agricultural practices as they are presented in the organic agriculture and organic agrifood products literature. The chapter continues with describing the main guidelines that regulate organic agriculture: Codex Alimentarius (developed by the Food and Agriculture Organisation of the United Nations –FAO– and World Health Organization –WHO) and “The Basic Standards” established by the International Federation of Organic Agriculture Movements (IFOAM). The chapter includes also a presentation of the present state of organic agriculture.

**Chapter 2** of the thesis is dedicated to *organic agrifood products* and begins with a definition of the concept, which is absolutely necessary as, in everyday speech, there exists a certain confusion regarding this term. Following in the chapter there is a discussion on organic agrifood product certification, as a warranty of the difference between organic agrifood products and conventional agrifood products. Further, there are presented classifications of organic agrifood products, by different criteria (e.g. agricultural sector of origin; the degree of processing etc.), as well as the proposition of a new classification of organic agrifood products by their attributed logos. In the second part of this chapter there are presented a few conceptual approaches regarding the quality of organic agrifood products. The chapter ends with a presentation of the market for organic agrifood products market.

**Chapter 3** is called “*Organic agrifood consumer behavior*”. The chapter begins with a presentation of some notions and basic concepts regarding this subject. Further in the last chapter of the first part, consumer behavior models are presented and analyzed, starting with the general models of consumers’ purchasing decisional process and continuing with models specific to the organic agrifood products consumer. In this context the Engel-Blackwell-Miniard model (1995) is presented, developed starting from the Engel-Kollat-Blackwell (1968), and also the Steenkamp Model (1997) which is a simple version of the Engel-Blackwell-Miniard model, which underlines aspects specific to foodstuff products. Further, factors influencing the organic foodstuff products consumer behavior are presented, determining factors of organic agrifood products purchase and consumption, and restricting factors of organic agrifood product purchase and consumption being distinctly presented. In the same chapter a profile of the organic agrifood products consumer is presented, among generalities regarding environmental behavior and aspects regarding individuals’ lifestyles.

### **CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY**

The research framework is based on models provided by past research, but does not copy any of the models in entirety, but it introduces in a model a new construct, respectively lifestyle. The testing of the conceptual model has been realized through an empirical research made on a sample of organic foodstuff consumers living in Romania,

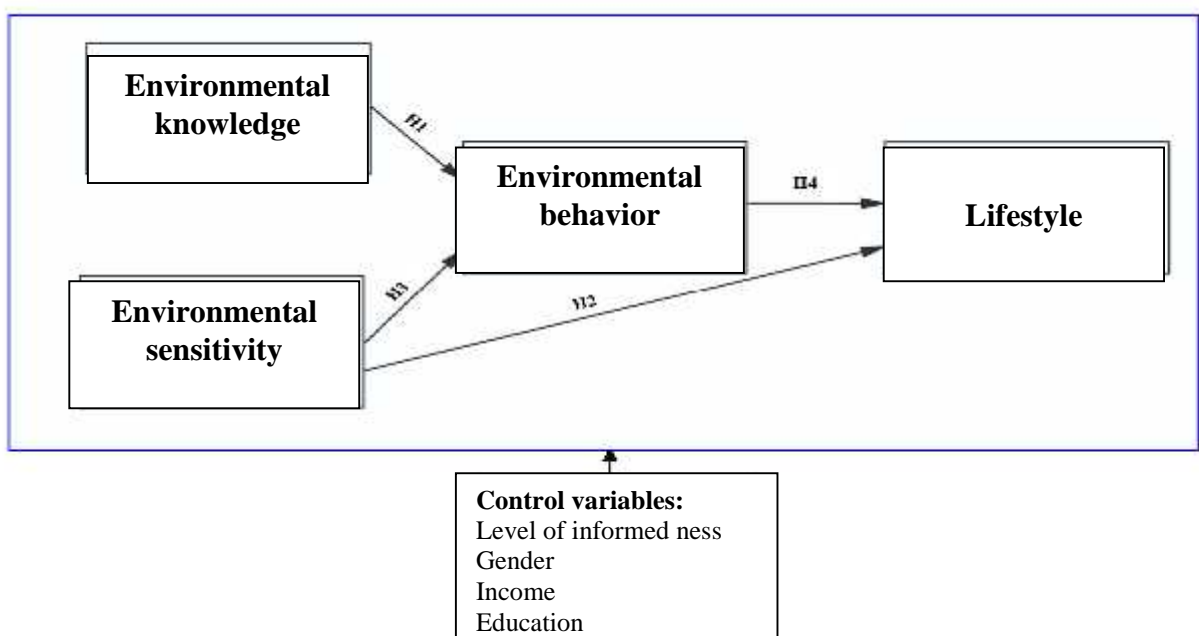


mostly from the Western region. The proposed conceptual model integrates a series of constructs and concepts in order to clarify the empirical inconsistencies regarding the structural characteristics (determining factors and consequences) of the *environmental behavior* construct. Also, through this conceptual model it was sought to identify and validate a structure of the *environmental behavior* construct which would best reflect observed empirical data.

The proposed model is a causal model because it allows the investigation of causal relationships that manifest between the independent and dependent variables. In this conceptual model, the *environmental behavior* construct is the main construct investigated and has a unidimensional structure. Regarding the exogenous variables, these are represented by two constructs, namely the *environmental knowledge* and *environmental sensitivity*. Finally, as is presented in Figure 1, *lifestyle* is a resulting variable.

In this research an integrative model has been developed, a model combining determining factors of *environmental behavior* with *Environmental behavior* itself and which specifies the way in which these could influence the *lifestyle* of actual and potential organic agrifood consumers in Romania. Also, in this conceptual model, the intensity of the relationships between the investigated constructs is analysed with the help of four control variables: consumers' level of informedness regarding organic agrifood products, gender, income and education level.

### Proposed conceptual model



**Figure 1: Conceptual model of individual's environmental behavior**

Source: Adaptation after Zaiem (2005) and Fraj and Martinez (2006)

## Research hypotheses

The literature review allowed the formulation of a set of research hypotheses that aims to encompass the causality relationships between the different constructs included in the conceptual model of individuals' environmental behavior.

These research hypotheses were developed in order to test the effects of *environmental knowledge* and *environmental sensitivity* on individuals' *environmental behavior*, and *lifestyle*. A number of four research hypotheses have been formulated.

H<sub>1</sub>: There is a direct, positive and statistically significant link between environmental knowledge and individuals' environmental behavior

H<sub>2</sub>: There is a direct, positive and statistically significant link between environmental sensitivity and individuals' lifestyle.

H<sub>3</sub>: There is a direct, positive and statistically significant link between environmental sensitivity and individuals' environmental behavior.

H<sub>4</sub>: There is a direct, positive and statistically significant link between environmental behavior and individuals' lifestyle.

A secondary hypothesis, aiming to evaluate the link between the exogenous variable (*environmental sensitivity*), the central construct (*environmental behavior*) and the resulting variable (*lifestyle*), has been formulated along other sixteen other secondary hypotheses. These secondary hypotheses focus on the effects of control variables (consumers' level of informedness, gender, income and education level) on the links between the constructs included in the conceptual research model.

H<sub>1a</sub>: The link between environmental knowledge and environmental behavior is stronger among individuals with a high degree of informedness than for individuals with a low degree of informedness.

H<sub>1b</sub>: The link between environmental knowledge and environmental behavior is stronger among women than for men.

H<sub>1c</sub>: The link between environmental knowledge and environmental behavior is stronger among individuals with a higher level of income than among individuals with medium or low levels of income.

H<sub>1d</sub>: The link between environmental knowledge and environmental behavior is stronger among individuals with higher education than among individuals without higher education

H<sub>2a</sub>: The link between environmental sensitivity and individuals' lifestyle is mediated by environmental behavior.

H<sub>2b</sub>: The link between environmental sensitivity and individuals' lifestyle is stronger among individuals with a high level of informedness than among individuals with lower

levels of informedness.

H<sub>2c</sub>: The link between environmental sensitivity and individuals' lifestyle is stronger among women than among men.

H<sub>2d</sub>: The link between environmental sensitivity and individuals' lifestyle is stronger among individuals with a higher level of income than among individuals with medium or low levels of income.

H<sub>2e</sub>: The link between environmental sensitivity and individuals' lifestyle is stronger among individuals with higher education than among individuals without higher education.

H<sub>3a</sub>: The link between environmental sensitivity and environmental behavior is stronger among individuals with a high degree of informedness than for individuals with a low degree of informedness.

H<sub>3b</sub>: The link between environmental sensitivity and environmental behavior is stronger among women than among men.

H<sub>3c</sub>: The link between environmental sensitivity and environmental behavior is stronger among individuals with a higher level of income than among individuals with medium or low levels of income.

H<sub>3d</sub>: The link between environmental sensitivity and environmental behavior is stronger among individuals with higher education than among individuals without higher education.

H<sub>4a</sub>: The link between environmental behavior and individuals' lifestyle is stronger among individuals with a high degree of informedness than for individuals with a low degree of informedness.

H<sub>4b</sub>: The link between environmental behavior and individuals' lifestyle is stronger among women than among men

H<sub>4c</sub>: The link between environmental behavior and individuals' lifestyle is stronger among individuals with a higher level of income than among individuals with medium or low levels of income.

H<sub>4d</sub>: The link between environmental behavior and individuals' lifestyle is stronger among individuals with higher education than among individuals without higher education.

## **Methodology**

**Construct operationalization and measurement scales used.** The measurement of all of the proposed model's constructs (fig. no.1) was made based on respondents' opinion on the matters analyzed, using measurement scales used and validated by past research.

## **Sampling plan and data collection**

The **statistical population** from which the sample was extracted is made of all the persons over the age of 15, living in Romania and which the researcher could reach. In order to respond to all the questions in the questionnaire, the persons making up the statistical population must meet two additional conditions: to have heard of organic agrifood products and to consume this category of products. Failing to meet these conditions does not lead to the elimination of the person from the statistical population. Thus, persons who have not heard of organic agrifood products are guided towards the final part of the questionnaire, having to further complete only Sections B, C, D and E of the questionnaire and also the profiling questions. Persons who declare that they do not consume organic agrifood products will be solicited to first expose the motives they do not consume this category of products, and secondly they will be guided towards the final part of the questionnaire, to complete questions in Sections B, C, D and E of the questionnaire and also the profiling questions.

The **research area** was represented, theoretically, by the whole territory of Romania, taking into account the fact that the administration of the questionnaire was made partially on-line. Nonetheless, a great number of the questionnaires being administered personally, through interview operators, it must be taken into account that the operators' activity has been restricted exclusively to the county of Arad, predominantly in the municipality of Arad.

The **sample dimension** that resulted from the two modes of administration was of 990 respondents.

**Data collection** from respondents was made through a questionnaire (32 questions divided in six sections: section A – General aspects regarding the consumption of organic agrifood products, section B – Environmental knowledge, section C – Environmental sensitivity, section D – Environmental behavior, section E – Lifestyle, section F – Respondent profile). The questionnaire was administered both through interview operators and on-line, expecting to obtain a participation rate as high as possible.

**Data analysis plan.** In realizing the statistical analysis of the data collected through the questionnaire the following steps have been taken:

1. Examination of the questionnaires in order to eliminate or correct data that might negatively influence the quality of the collected data set from the selected sample;
2. Variable coding in SPSS;
3. Collected questionnaire data input into the program
4. Statistical processing of data using SPSS (17.0) and AMOS.

In the statistical analysis of the data, the main objective is the testing of the formulated research hypotheses and validating the proposed conceptual model. In order to

analyze the data statistically the following steps have been taken:

1. *Univariate data analysis* – using absolute frequencies, relative frequencies, valid relative frequencies (for nominal variables) and relative frequencies, mean and standard deviation (for metric variables).

2. *Testing the value distribution normality of the variables* – Skewness and Kurtosis indicators being used (asymmetry and kurtosis parameters).

3. *Measuring the reliability of the measurement scales used* – Alpha Cronbach ( ) coefficient was determined.

4. *Determining factor scores* – in this stage, firstly, the opportunity of applying factorial analysis was checked using the KMO (Kaiser-Meyer-Olkin) indicator and the Bartlett sphericity test. Secondly, exploratory factor analysis was employed for the four scales used to measure the proposed model’s constructs.

5. *Testing the validity of the constructs included in the research model* – testing the validity was made under two aspects: convergent validity and discriminant validity (using the Pearson linear correlation coefficient).

6. *Testing the research hypotheses* – was made through structural equation modeling (SEM) using AMOS.

## EMPIRICAL RESEARCH RESULTS

In the „Respondent profile” section of the questionnaire the following variables have been analyzed: gender, age group, highest level of education graduated, civil status, number of children in the family and average net monthly income.

**Tabel 1**

**Sample structure**

| Profile variables                           | Profile variable category               | Relative frequency |
|---|---|--------------------|
| <b>Gender</b>                               | Male                                    | 41,52              |
|   | Female                                  | 58,48              |
| <b>Age group</b>                            | 15 – 25 yo                              | 23,03              |
|   | 26 – 35 yo                              | 21,52              |
|   | 36 – 45 yo                              | 25,05              |
|   | 46 – 60 yo                              | 19,90              |
|   | Over 60 yo                              | 10,51              |
| <b>Highest level of education graduated</b> | Primary education                       | 0,91               |
|   | Secondary education                     | 8,70               |
|   | Highschool education                    | 49,75              |
|   | University education                    | 26,90              |
|   | Postgraduate education                  | 13,75              |
| <b>Civil status</b>                         | Married                                 | 52,32              |
|   | Not married                             | 31,72              |
|   | Living with partner but are not married | 6,46               |
|   | Divorced                                | 5,15               |
|   | Widowed                                 | 3,64               |
| <b>Number of children in the family</b>     | No children                             | 51,22              |
|   | One child                               | 28,50              |

|                                   |                          |       |
|-----------------------------------|--------------------------|-------|
|                                   | Two children             | 15,72 |
|                                   | Three children           | 4,16  |
|                                   | More than three children | 0,41  |
| <b>Average net monthly income</b> | Under 500 RON            | 7,47  |
|                                   | 500 – 1.000 RON          | 24,55 |
|                                   | 1.001 – 2.000 RON        | 34,34 |
|                                   | 2.001 – 3.000 RON        | 18,69 |
|                                   | 3.001 – 4.000 RON        | 7,78  |
|                                   | Over 4.000 RON           | 6,06  |

Data **univariate analysis** was employed for a number of objectives. Thus, univariate analysis was used to *describe general aspects of organic agrifood products consumption* (the notoriety of the concept of „organic product”, the notoriety of the specific label used to label organic agrifood products, the organic agrifood products consumption behavior, situations when organic agrifood products are necessary, information sources used when they intend to buy organic agrifood products, the notoriety of organic agrifood product brands etc.) and also to *measure the level of the four constructs included in the research model* (Environmental knowledge, Environmental sensitivity, Environmental behavior and Lifestyle)

Section B of the questionnaire has been dedicated to the „*environmental knowledge*” construct. This construct was operationalized using 10 items measured on a five step Likert scale. Eight out of ten proposed items proposed for the operationalization of the construct got mean scores higher than 4,00 which indicates the respondents’ agreement, in some cases total agreement with the statements put up for testing. These results reflect a fairly good degree of environmental knowledge (pollution, nature conservation, risks arising from environmental degradation, ecosystem components and organic product recognition). Standard deviations have rather small values (between 0,70787 and 0,88468) which shows that respondents opinions regarding the items operationalising this construct are rather homogenous.

Section C of the questionnaire was dedicated to the „*environmental sensitivity*” which measures the degree of emotion an individual attaches to environmental issues. This construct has been operationalized using 10 items measured on a five step Likert scale. Six of the ten items got mean scores over 4,00. One statement stands out, „Natural areas should be given more attention” (which got a mean of 4.5431), showing that people are very sensitive when it comes to protecting natural areas. This statement also got the most homogenous responses, having the lowest standard deviation (0,60165).

Section D of the questionnaire was dedicated to the „*environmental behavior*” construct which is made of two types of behavior (behavior towards the environment and the propensity to buy and pay a higher price for organic products). This construct was

operationalized using 8 items measured on a five step Likert scale. In this construct, average scores for the eight items have rather lower values, the average scores exceeding 4,00 only for two statements. People manifest a high degree of readiness to contribute to protecting the environment, at least regarding the packages of the products they buy. The participants in this research show a moderate propensity to buy organic products and pay a higher price for them.

Section E was dedicated to the „*lifestyle*” construct. This section is composed of 20 items regarding a balance lifestyle, a healthy diet, environmental concern and protection, which are measured on a 5 step Likert scale. Environmental protection and concern are the defining elements of respondents’ lifestyle. A healthy diet is also rather important in defining the respondents’ lifestyle. Concern towards achieving a balanced lifestyle is also an important component of respondents’ lifestyle.

The **testing of the value distribution normality** was made using Skewness and Kurtosis coefficients. Results analysis shows that none of the items analyzed respect the normal value distribution. Value distribution normality being more important for small samples and less important for samples of or over 100 subjects (a condition met by the present research, the sample size being 990 subjects) value distribution normality was not considered as a significant impediment for the following statistical analyses.

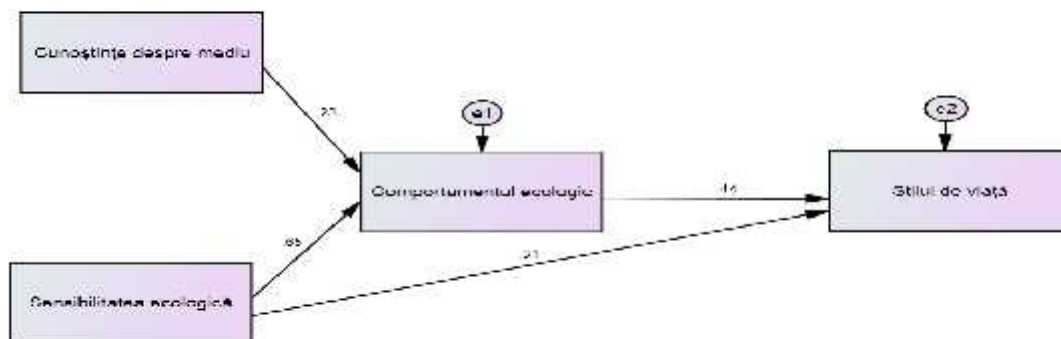
**Scale reliability, factor scores and research model constructs’ convergent validity.** For each construct, it has been showed that the measurement scales used were reliable (Alpha-Cronbach coefficients having registered values over the upper limit of 0,7) and after applying factor analysis, factor loadings of the retained items are over the limit of 0,5 in all cases. Also, all constructs are valid under the aspect of convergent validity, the correlation between items of each construct being statistically significant ( $p < 0,01$  in all cases).

**Discriminant validity of the constructs.** The Pearson correlation coefficient was first determined. In this analysis all questionnaire items for which convergent validity was tested in the previous step were included. Analyzing the data, it was observed that item E4 („Environmental deterioration will be irreversible if necessary measures are not taken”) component of the „Lifestyle” construct correlates stronger with the „Environmental sensitivity” construct than with the construct it composes. Thus, item E4 was ruled out from the statistical analysis. After eliminating item E4 from the „Lifestyle” construct, the Pearson correlation coefficient has been recalculated for each item-construct pair. Analyzing the data, it was observed that item E2 correlated rather strongly with the „Environmental behavior” construct as well (the Pearson correlation coefficient being 0,618, at  $p = 0,0000$ ). This

situation can be described as one of multicollinearity. In order to eliminate multicollinearity, item E2 was also ruled out from the statistical analysis. The process of calculating the linear correlation Pearson coefficient for each item-construct pair was repeated. This time, analyzing the data, it was observed that, for each item in the analysis, the linear correlation Pearson coefficient has a maximal value when the item is correlated with the construct it composes (these correlations are statistically significant, at  $p$  value=0,000). Considering this, it can be stated that all four constructs (“Environmental knowledge”, “Environmental sensitivity”, “Environmental behavior” and “Lifestyle”) analyzed have discriminant validity.

Considering that all measurement scales are reliable (confirmed by the Alpha-Cronbach reliability coefficient for each scale) and all constructs are valid (showing both convergent and discriminant validity), the testing of the validity of the research hypotheses and of the proposed conceptual model can begin (Cortina, 1993).

**Proposed model’s internal consistency.** The model proposed in this paper (see Fig. 2) is developed on the basis of the results obtained after going through the first four steps of the plan for data statistical analysis. In this paper, constructs included in the proposed conceptual model were considered to be observable variables because they were initially aggregated with the help of confirmatory factor analysis in SPSS. This model includes *two exogenous variables*: (1) Environmental knowledge and (2) Environmental sensitivity, and *two endogenous variables*: (1) Environmental behavior and (2) Lifestyle.



**Figure 2: The model proposed in this research**

Testing the internal consistency of this model using general and partial base indicators was done with the AMOS program.



Table 2

## The proposed research model suitability

| Indicators    | Optimum indicator value      | Source                                 | Values of the proposed model |
|---------------|------------------------------|--|------------------------------|
| $\chi^2$ (df) | $0 < \chi^2$ (df) $< 2 * df$ | Schermelleh-Engel <i>et al.</i> , 2003 | 0,366 (2)                    |
| p             | $0,05 < p < 1$               | Pugesek <i>et al.</i> , 2003           | 0,833                        |
| $\chi^2/df$   | $0 < \chi^2/df < 2$          | Schermelleh-Engel <i>et al.</i> , 2003 | 0,183                        |
| RMSEA         | $0 < RMSEA < 0,5$            | Bollen and Curran, 2005                | 0,000                        |
| NFI           | $0,95 < NFI < 1$             | Marcoulides and Schumaker, 2001        | 0,999                        |
| CFI           | $0,97 < CFI < 1$             | Marcoulides and Schumaker, 2001        | 1,000                        |
| PNFI          | the higher the value         | Schermelleh-Engel <i>et al.</i> , 2003 | 0,200                        |
| AIC           | the lower the value          | Schermelleh-Engel <i>et al.</i> , 2003 | 36,366                       |
| ECVI          | the lower the value          | Schermelleh-Engel <i>et al.</i> , 2003 | 0,472                        |
| TLI           | $TLI > 0,95$                 | Marcoulides and Schumaker, 2001        | 1,032                        |

The  $\chi^2$  value of 0,366 is in the optimum interval of [0,4), and the significance level is superior to the lower allowed limit of 0,05, being 0,833. Considering that the value of  $\chi^2$  is sensitive to sample dimension, the  $\chi^2$  test being more relevant at estimating the adequacy of the model in the case of large sample dimensions (Mulaik *et al.*, 1989), it is recommended that an analysis of the descriptive indicators be made in order to decide if the model is to be accepted or rejected (Schermelleh-Engel *et al.*, 2003). Regarding the descriptive indicators of the model, in Table 2 it can be observed that the model fits in the intervals that indicate acceptable adequacy of the model (RMSEA=0; CFI=1; PNFI=0,200; NFI=0,999; TLI=1,032). Thus, it can be stated that the proposed research model is in accordance with the empirical data.

## Testing the research hypotheses

| Hypotheses /Result  |
|---|
| $H_1$ <b>Confirmed:</b> registered a statistically significant effect ( $p=0,000$ ) between the two variables analyzed  |
| $H_{1a}$ <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with a low degree of informedness ( $\beta = 0,231$ ) than among persons with a high degree of informedness ( $\beta = 0,192$ ). |
| $H_{1b}$ <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among women ( $\beta = 0,223$ ) than among men ( $\beta = 0,211$ ), the link being statistically significant in both cases ( $p=0,000$ ).     |
| $H_{1c}$ <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with lower income ( $\beta = 0,236$ ) than among persons with a higher income ( $\beta = 0,182$ ).                               |
| $H_{1d}$ <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with secondary education ( $\beta = 0,275$ ) than among persons with university education ( $\beta = 0,140$ ).                   |
| $H_2$ <b>Confirmat :</b> registered a statistically significant effect ( $p=0,000$ ) between the two variables analyzed   |

|  |
|--|
| <p><i>H<sub>2a</sub></i> <b>Rejected:</b> registered a statistically significant effect (p=0,000) between the two pairs of variables analyzed (SENS_ECO – COMP_ECO, respective COMP_ECO – STIL_VIA), but the intensity of the direct link between SENS_ECO and STIL_VIA is stronger than the one mediated by COMP_ECO, also being statistically significant (p=0,000).</p> |
| <p><i>H<sub>2b</sub></i> <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among persons with a high degree of informed ness ( =0,414) than among people with a lower degree of informed ness ( =0,296), the link being statistically significant in both cases (p=0,000).</p>  |
| <p><i>H<sub>2c</sub></i> <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among women ( =0,315) than among men ( =0,273), the link being statistically significant in both cases (p=0,000).</p>  |
| <p><i>H<sub>2d</sub></i> <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among persons with higher income ( =0,319) than among persons with lower income ( =0,287), the link being statistically significant in both cases (p=0,000).</p>   |
| <p><i>H<sub>2e</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with secondary education ( =0,309) than among persons with university education ( =0,294).</p>  |
| <p><i>H<sub>3</sub></i> <b>Confirmed:</b> registered a statistically significant effect (p=0,000) between the two variables analyzed.</p>  |
| <p><i>H<sub>3a</sub></i> <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among persons with a high degree of informedness ( =0,548) than among people with a lower degree of informedness ( =0,525), the link being statistically significant in both cases (p=0,000).</p>  |
| <p><i>H<sub>3b</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among men ( =0,611) than among women ( =0,566).</p>   |
| <p><i>H<sub>3c</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function has the same value in both cases ( =0,588), the link being statistically significant in both cases (p=0,000).</p>  |
| <p><i>H<sub>3d</sub></i> <b>Confirmed:</b> the standardized coefficient value of the regression function is greater among persons with university education ( =0,653) than among persons with secondary education( =0,544), the link being statistically significant in both cases (p=0,000).</p>  |
| <p><i>H<sub>4</sub></i> <b>Confirmed:</b> registered a statistically significant effect (p=0,000) between the two variables analyzed.</p>  |
| <p><i>H<sub>4a</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with a low degree of informedness ( =0,414) than among persons with a high degree of informedness ( =0,328).</p>  |
| <p><i>H<sub>4b</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among men ( =0,458) than among women ( =0,446).</p>   |
| <p><i>H<sub>4c</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with lower income ( =0,465) than among persons with lower income ( =0,420).</p>   |
| <p><i>H<sub>4d</sub></i> <b>Rejected:</b> the standardized coefficient value of the regression function is greater among persons with secondary education ( =0,449) than among persons with university education ( =0,443).</p>  |

## RESEARCH CONCLUSIONS

In the following paper the theme of antecedents and consequences of adopting environmental behavior on individuals' lifestyles has been approached. The elements

determining the adoption of environmental behavior, on the side of individuals, have been identified. Also, the extent to which manifesting environmental behavior has a direct and positive effect on individuals' lifestyles has been researched.

- This research has sought the development of a conceptual model that would most fairly reflect the organic agrifood consumers' behavior. Starting from prior approaches and conceptualizations of individuals' environmental behavior, a conceptual model has been developed including two antecedents and one consequence of this concept. The two chosen antecedents are different in nature, one of the antecedents focusing on cognitive aspects pertaining to a decisional process (environmental knowledge), while the other includes affective aspects that guide consumers' choices (environmental sensitivity). The research results have revealed that *both elements have a positive and direct impact on environmental behavior.*

- The research reveals that *environmental sensitivity has a stronger influence on environmental behavior than environmental knowledge.* This result indicates the great importance of affective aspects in the adoption of an environmental behavior by individuals.

- In this research, the relationship between environmental behavior and individuals' lifestyles was analyzed from a relatively new perspective, environmental behavior being an antecedent of the lifestyles adopted by individuals. The research has confirmed empirically that *environmental behavior has a direct, positive and significant effect on individuals' lifestyles.* Thus, it can be suggested that, in order for individuals to adopt a healthy lifestyle, environmental behavior has to be manifested beforehand.

- Environmental sensitivity has a direct, positive and statistically significant effect on the adoption of healthy lifestyles by individuals. Thus, sustaining a high level of environmental sensitivity in the population will determine to a greater degree the adoption of a healthy lifestyle on the side of individuals.

- The operationalization of most of the constructs included in the proposed conceptual model was made using scales widely recognized in the scientific literature. In this paper it was demonstrated that the *measuring scales used for the operationalization of the environmental knowledge, environmental sensitivity, environmental behavior and lifestyle constructs are valid likewise in the context of an emerging economy.*

- The results of our research have shown, also, that researchers in the domain of organic products consumer behavior should take into account different control variables. It was demonstrated that *the intensity of the relationships between the constructs included in the proposed and validated conceptual model varies with gender, income, education or informedness.*

- *The link between environmental sensitivity and lifestyle is stronger among persons*

*with secondary education, comparatively to persons who have finished university education.* A possible explanation for this result is that persons with university education although conscious of the importance of adopting a healthy life style and manifesting environmental sensitivity, they lack the necessary time to adopt a healthy lifestyle due to job responsibilities. Another explanation could be that in the case of people with university education, unlike persons with secondary education, cognitive arguments for adopting a healthy lifestyle are also needed besides emotional arguments (environmental sensitivity).

- The relationship between environmental behavior and lifestyle is not mediated by neither of the control variables used in this research. In this sense, it is possible that once individuals manifest a high level of environmental behavior, they implicitly adopt healthy lifestyle and that aspects such as gender, income, informedness or education no longer play a role. This possibility is pertinent considering that a healthy lifestyle implies, most of the times, among other aspects the adoption of an „environmentally-friendly” behavior.

### **Theoretical implications**

The theoretical implications of this research represent an incremental contribution to the existing body of knowledge on organic products consumer behavior.

- After employing the research the proposed conceptual model was validated, in an emergent economy, its results providing insights for future research to refine the conceptual model and investigate dynamically the relationship between the constructs included.

- It was demonstrated that the intensity of the relationships between the constructs included in the proposed and validated conceptual model vary with gender, income, education or informedness. Future theories and models should take these aspects into account.

- It was demonstrated that most of the scales used for measuring the constructs investigated are valid in the context of an emergent economy as well. Thus, future empirical research, that are to be employed in similar contexts, can make use of these measuring instruments.

### **Managerial implications**

Based on empirical research results, a series of managerial implications useful for organic agrifood products producers, processors, distributors and retailers has been formulated.

- The results of the research reveal that both environmental knowledge and environmental sensitivity have a positive and direct impact on environmental behavior. In this respect, organic agrifood products producers and processors should invest temporal and financial resources in sustaining a high level of environmental knowledge and environmental sensitivity. Thus, actions such as: *(1) raising public awareness regarding the problem of*

*pollution and its consequences; (2) encouraging the population to use more materials that are biodegradable; (3) informing the public on ways to economize on different energy sources (4) educating the population to adopt „environmental” conduct” should be employed.*

- The results have revealed that environmental sensitivity has a greater impact on environmental behavior than environmental knowledge. Consequently, producers, processors, distributors and retailers of organic products should invest in raising the environmental sensitivity manifested by individuals by: *(1) highlighting the negative effects that agrifood products obtained in a pesticide intensive agricultural system have on the human body; (2) organizing debates on environmental protection; (3) raising public awareness regarding the benefits of organic products both for health and the environment (4) organizing actions, in collaboration with the government, that seek the environmental education of the population.* Consequently, clear highlighting of the benefits of buying and consuming organic products through promotion should be a goal of producers and distributors of this category of products.

- Also, it was observed that manifesting a high level of environmental sensitivity among individuals will determine them to adopt a healthy lifestyle. Thus, organic agrifood producers, processors, distributors and retailers should encourage the adoption of environmental behavior in the population and promote its relationship with a healthy lifestyle. Some of the actions they could employ is: *1) labeling organic products as „environmentally friendly” and showing that consumption of such products is the key to a healthy life; (2) showing that through the consumption of organic products consumers help protect the environment; (3) use biodegradable packaging and (4) to keep a high price for organic products comparatively to conventional ones.*

- Considering that environmental sensitivity implies the intervention of the government in environmental pollution control as well as the concern regarding „agrifood products „contaminated” with pesticides, organic products producers can use a number of alternatives of action. Firstly, they could *create nationwide campaign aiming at reducing pollution.* These campaigns should be implemented in partnership with the Government or the Ministry of Environment. Secondly, they could raise *public awareness regarding the medium and long-term effects both on the body and the environment of the consumption of agrifood products that come from pesticide intensive agricultural systems.* Lastly, they could *inform the population regarding the importance and benefits, both for the environment and the individual, of consuming organic agrifood products.*

- If the objective is to encourage a healthy lifestyle that implies the consumption of organic agrifood products the *persons who should be environmentally sensitized, according to the results of this study, are women, with high income and high levels of*

*informedness*. In addition, *persons with university education and high levels of informedness* are also more predisposed to adopting an environmental behavior through environmental sensitivity.

### **Research limits and future research opportunities**

Like all empirical research, this research has its limits, as follows:

- Convenience and snowball sampling, the two nonprobabilistic techniques used, represent one of the research limits as it does not permit the generalization of the results. As a result, future research should find the required resources to permit the use of probabilistic sampling techniques.

- The research was made from a *static perspective* (employing a cross-sectional study), the phenomenon researched being a dynamic one. The fact that a consumer exerts a certain level of environmental knowledge or environmental sensitivity or that one has adopted an environmental behavior with direct and positive influence on his lifestyle does not guarantee the future evolution of their levels and the intensity of the relationships between them. Consequently, the relationships investigated in the present paper should be analyzed dynamically as well, through the employment of a longitudinal study, in order to raise the predictive power of the proposed conceptual model.

- The empirical research employed in this paper has shown that the relationship between lifestyle and environmental behavior is not just of an antecedental – consequential nature. It was demonstrated that environmental behavior may be a determining factor in individuals' choice of adopting a healthy lifestyle. This result may be due to the *dimension or structure of the sample used* for testing the proposed conceptual model. Future research could seek replicating this research and comparing the results with the results of this study.

## SELECTED BIBLIOGRAPHY

|     |  |
|-----|--|
| 1.  | Bollen, K.A. and Curran, P.J. (2005), "Latent curve models: a structural equation perspective", New York, NY, John Wiley and Sons.   |
| 2.  | Chan, R.Y.K., and Lau, L. B.Y. (2000), "Antecedents of Green Purchases: A survey in China", <i>Journal of Consumer Marketing</i> , vol.17(4), pp. 338-357.   |
| 3.  | Chawla, L., Cushing, D.F. (2007), „Education for strategic environmental behavior", <i>Environmental Education Research</i> , Vol. 13, Nr. 4, pp. 437-452.   |
| 4.  | Cortina J.M. (1993), „What Is Coefficient Alpha? An Examination of Theory and Applications", <i>Journal of Applied Psychology</i> ; Vol. 78, Nr. 1, pp. 98-104.  |
| 5.  | Dobscha, S., Ozanne, J. L. (2001), „An ecofeminist analysis of environmentally sensitive women using qualitative methodology: The emancipatory potential of an ecological life", <i>Journal of Public Policy &amp; Marketing</i> , Vol. 20, Nr. 2, pp. 201-214.        |
| 6.  | Engel, James, Roger Blackwell and Paul Miniard (1995), „Consumer Behavior", Forth Worth, The Dryden Press.   |
| 7.  | Fraj E. and Martinez E., (2006), "Environmental values and lifestyles as determining factors of ecological consumer behaviour: an empirical analysis" <i>The Journal of Consumer Marketing</i> . Santa Barbara: 2006, vol. 23, Iss. 3; pp. 133-144                     |
| 8.  | Grunert, S.C. (1993), „Everybody seems concerned about the environment but is this concern rejected in (Danish) consumers' food choice ?", <i>European Advances in Consumer Research</i> , no. 1, pp. 428-433.   |
| 9.  | Hughner, R. S., P. McDonagh, A. Prothero, C. J. Shultz, and Stanton J., (2007). "Who are organic food consumers? A compilation and review of why people purchase organic food," <i>Journal of Consumer Behaviour</i> , vol. 6 (2-3), pp. 94-110.                       |
| 10. | Kaiser, F., Ranney, M., Hartig, T., Bowler, P.A. (1999a), „Ecological behavior, environmental attitude, and feelings of responsibility for the environment", <i>European Psychologist</i> , Vol. 4, pp. 59-74.   |
| 11. | Kollmuss, A., Agyeman, J. (2002), „Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?", <i>Environmental education research</i> , Vol. 8, Nr. 3, pp. 239-260.  |
| 12. | Li, L-y (1997), „Effect of collectivist orientation and ecological attitude on actual environmental commitment : the moderating role of consumer demographics and product involvement", <i>Journal of International Consumer Marketing</i> , Vol. 9, no. 4, pp. 31-53. |
| 13. | Maloney, M. P., and Ward, M. P. (1973), "Ecology: Let's hear from the people. An objective scale for the measurement of ecological attitudes and knowledge", <i>American Psychologist</i> , 28, pp.583-586.  |
| 14. | Marcoulides, G. A., and Schumacher, R. E. (2001), „New developments and techniques in structural equation modeling", Mahwah, NJ: Lawrence Erlbaum.   |
| 15. | Pugesek, B., A. Tomer A, and A. von Eye (eds.) (2003), "Structural equation modeling", Cambridge University Press, Cambridge, UK.  |
| 16. | Mulaik S.A. , James L.R. , Van Alstine J., Bennett N., Lind S., and Stilwell C. D., (1989), "Evaluation of Goodness-of-Fit Indices for Structural Equation Models", <i>Psychological Bulletin</i> , Vol. 105, No. 3, pp.430-445  |
| 17. | Roberts, J.A. (1996), „Green consumers in the 1990s : profile and implications for   |

|     |   |
|-----|---|
|     | advertising”, Journal of Business Research, Vol. 36, no. 3, pp. 217-231.  |
| 18. | Schermelleh-Engel K and Moosbrugger H., (2003), “Evaluating the Fit of Structural Equation Model Tests of Significance and Descriptive Goodness-of-Fit Measures”, Methods of Psychological Research Online 2003, Vol.8, No.2, pp. 23-27   |
| 19. | Steenkamp, Jean B. (1997), "Dynamics in Consumer Behaviour with Respect to Agricultural and Food Products," in Agricultural Marketing and Consumer Behaviour in a Changing World, Kluwer Academic Publishers.   |
| 20. | Stokols, D. (1992), „Establishing and maintaining healthy environments: toward a social ecology of health promotion", American Psychologist, Vol. 47, Nr. 1, pp. 6.   |
| 21. | Willer, H. and Lernoud J. (Eds.) (2014), “The World of Organic Agriculture. Statistics and Emerging Trends 2014”, FiBL-IFOAM Report. Research Institute of Organic Agriculture (FiBL), Frick, and International Federation of Organic Agriculture Movements (IFOAM), Bonn. Revised version of February 24, 2014, ISBN FiBL 978-3-03736-251-8, ISBN IFOAM 978-3-944-372-08-2, disponibil la:<br><a href="https://www.fibl.org/fileadmin/documents/shop/1636-organic-world-2014.pdf">https://www.fibl.org/fileadmin/documents/shop/1636-organic-world-2014.pdf</a><br>accesat la data de 25.04.2014 |
| 22. | Zaiem Imed (2005), „Le comportement écologique du consommateur: Modélisation des relations et déterminants, La Revue des Sciences de Gestion : Direction et Gestion; Jul-Oct 2005; 40, nr.214/215, ABI/INFORM Global, pp. 75-88   |
| 23. | <a href="http://www.madr.ro">http://www.madr.ro</a> (MADR,2014)   |