

**BABEȘ-BOLYAI UNIVERSITY, CLUJ-NAPOCA**  
**FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION**  
**MARKETING DEPARTMENT**

## **Ph.D. THESIS**

**Abstract**

**CONSIDERATIONS REGARDING THE RELATION BETWEEN FINAL  
CONSUMERS' KNOWLEDGE AND ATTITUDES TOWARD ORGANIC FOODS  
AND THEIR BUYING BEHAVIOR**

Scientific Coordinator  
**Prof. Univ. dr. Ioan PLĂIAȘ**

Ph.D. Student  
**PÁL Zsuzsa**

2012

## TABLE OF CONTENT

CONTENT OF THE THESIS .....	3
KEYWORDS.....	4
INTRODUCTION .....	5
Research problem .....	5
Research Objectives .....	6
Stages for the implementation of the research .....	6
LITERATURE REVIEW.....	7
CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY .....	9
The conceptual model proposed.....	10
Research hypothesis .....	10
Methodology .....	11
EMPIRICAL RESEARCH RESULTS .....	13
The basic model of behavioral intention.....	13
Antecedents of behavioral attitude .....	14
THE RESEARCH CONCLUSIONS .....	16
Theoretical and methodological contributions.....	16
Empirical Contributions.....	18
Managerial implications .....	20
Research limitation and further development of the theme.....	21
REFERENCES .....	23

## CONTENT OF THE THESIS

LIST OF TABLES .....	5
LIST OF FIGURES .....	6
LIST OF ANNEXES.....	6
LIST OF ABBREVIATIONS.....	7
INTRODUCERE .....	8
A. Research problem and the objectives of research .....	10
B. Research methods and the structure of the thesis.....	11
Chapter I. THE ORGANIC FOOD PRODUCTS.....	14
1.1. Terminology.....	14
1.2. Definition of the organic foods.....	15
1.3. The market of the organic foods .....	18
1.4. Distribution channels and demand for organic foods.....	21
1.5. Organic products in the focus of the consumer behavior researchers .....	23
Chapter II. THE CONSUMERS' KNOWLEDGE – AN IMPORTANT FACTOR IN BUYING DECISION.....	26
2.1. Conceptual delimitation.....	30
2.2. Knowledge typology .....	32
2.2.1. Typologies based on knowledge content.....	32
2.2.2. Knowledge structure .....	34
2.2.3. Objective and subjective knowledge .....	38
2.3. Dimensions of the product knowledge .....	40
2.4. The importance of knowledge in consumer behavior researches .....	45
2.4.1. The conscious consumer .....	47
Chapter III. ATTITUDES - ATITUDINILE – INFLUENCING FACTORS OF THE CONSUMERS' BEHAVIOR	
3.1. Conceptual delimitation.....	51
3.2. The object of the attitudes.....	52
3.3. Characteristics of attitudes.....	53
3.4. Attitude structure.....	56
3.4.1. Tri-component structure of attitudes .....	56
3.4.2. Uni-component structure of the attitudes by Fishbein .....	58
3.4.3. Discussion on attitudes components .....	59
3.5. The functions of attitudes in consumers' behavior .....	61
Chapter IV. THE IMPACT OF KNOWLEDGE AND ATTITUDES ON CONSUMERS' BEHAVIOR.....	64
4.1. Perspectives in consumer behavior studies .....	65

4.2. Buying decision of food products .....	70
4.3. Consumers' knowledge and the overt behavior.....	72
4.4. Attitudes and the overt behavior .....	74
4.4.1. The theory of reasoned action and the theory of planned behavior .....	74
Chapter V. THE RESEARCH METHODOLOGY FOR THE EMPIRICAL STUDY .....	82
5.1. Conceptual framework .....	82
5.1.1. Conceptual model proposed.....	82
5.1.2. Research hypothesis .....	83
5.2. The object of attitudes and knowledge in research .....	87
5.3. Measures of variables .....	90
5.4. Studied population .....	95
5.5. The sample's structure.....	97
5.6. Data collecting tool .....	99
5.7. Statistical methods used .....	100
Chapter VI. RESULTS OF THE EMPIRIC STUDY .....	104
6.1. Preliminary analyses.....	104
6.1.1. Informing, objective and subjective knowledge, beliefs .....	104
6.1.2. Behavioral attitudes, subjective norm and perceived behavioral control.....	108
6.1.3. Behavioral intention and the overt behavior.....	110
6.2. The link between objective and subjective knowledge .....	115
6.3. Basic model of the behavioral intention .....	122
6.4. The analysis of the attitudes' antecedents .....	126
CONCLUSIONS OF THE STUDY .....	134
A. Discussion on results .....	134
<i>Theoretical and methodological contributions</i> .....	134
<i>Empirical contributions</i> .....	136
B. Managerial implications .....	139
C. Limits of the research .....	141
D. Future development of the research .....	142
REFERENCES .....	144
ANNEXES.....	157

## KEYWORDS

consumer behavior, objective knowledge, subjective knowledge, attitudes, theory of planned behavior, structural equation modelling, organic foods

## INTRODUCTION

If thirty years ago, the ecology was an occupation for government bodies and non-governmental organizations, nowadays ecological characteristics of products and the production processes and services are an economic value which requires investment and generate revenue for companies which adopt them. Today, environmental attribute can be capitalized by firms. The development of organic food market is incorporating in this trend very well. This paper falls in consumer behavior and examines some aspects of it in relation to certified organic food.

### **Research problem**

According to statistics (USDA Foreign Agricultural Service, 2008, IFOAM & FiBL, 2010), in Romania the level of organic products consumption is low, but the production is constantly increasing. Currently, local producers prefer the western European market, because for them it works as a vacuum cleaner providing a suitable price for the value supplied to consumers by organic products, or more in line with production and marketing costs. Romanian audiences willing to consume organic foods for various reasons, buy imported products distributed through hypermarkets chains at a very high price. This parallelism between the two sides of economic exchange can be reduced with marketing communication programs by both parties.

Previous reseaches has shown a discrepancy between consumption declared by the consumers and statistical datas regarding the organic food product sold by commerciants (Pál & Papay, 2010; Pál, 2011). Altogh the attitudes toward organic food consumption is generally favorable, this positive predispozition could not transform in buying act, one of the main barrier being the impossibility of identifying an certified organic food. While a consumer think he or she have boughth organic food, in reality they don't, because of confusion them with other products offering similar bennefits for consumer. Consumers who don't know how can be distiguish an organic food from an convetional, in many case buy foods positioned as healty or ecofriendly, and sometimes fake or even couterfeit.

## Research Objectives

The overall objective of this paper is to study the relationship between knowledge and attitudes of consumers and their place in purchase decision-making system to understand their behavior towards organic food. In the context described in the introductory part of the paper, by developing this work we propose the following objectives:

1. Defining organic products, which will be the subject of consumer behavior research.
2. Conceptualizing knowledge and delimitation of borders in their search.
3. Conceptualizing attitudes.
4. Construction and validation of a model that describes the impact of knowledge and attitudes on behavior.

## Stages for the implementation of the research

Based on an analysis of the specialized literature we have conceptualized the investigated factors and we formulated our hypotheses on possible links between them. In the empirical research we presented the main points of the methodology applied. Validation of the proposed model and the verification of the assumptions are based on primary data obtained through a questionnaire. The main method of analysis of the interdependence of variables constituting the model was structural equation modeling. Research in this field frequently use this method because it allows the analysis of the sophisticated concepts of psychology and social psychology, from where are taken or adapted many models of consumer behavior.

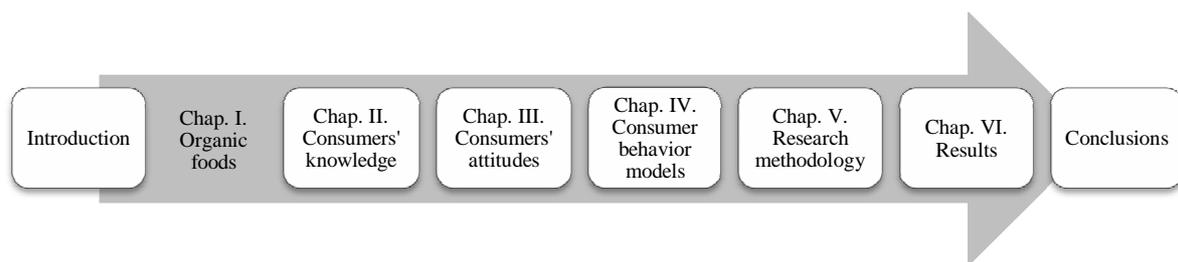


Fig. 1. The structure of the thesis

The work consists of six chapters outside of the introductory and conclusive (Fig. 1.). Each chapter focuses on a target. After the detailed presentation of the characteristics of organic food in Chapter I. these will be reintroduced in the discussion in the following chapters. Chapter IV. lays the foundation for the proposed model for analysis, which is presented itself

in Chapter V. This chapter presents the research hypotheses and methodology. Chapter VI. represents the weight of the paper by presenting the research results. Chapter on research findings contain a summary of results, pointing to the author's news, the implications for marketing practice, respectively the limits and future research directions.

## **LITERATURE REVIEW**

**The first chapter** places the research of the proposed concepts for analysis in the context of organic food consumption. This section introduces the concept and definition of organic food and their delineation from other categories of consumer products that offer or promise similar benefits of organic food, especially in terms of their effect on health. This paper addresses the issue of the consumer behavior from the perspective of certified organic food products. Also in this chapter are presented the main coordinates of the demand for these products and the situation faced by the consumer in Romania, willing to buy and eat organic food. These features of the offer, supply and demand of organic food distribution lead, among others, to the problem stated in the introduction to the paper.

**Chapter II., III. and IV.** summarize the current state of knowledge about the consumer's knowledge and attitudes towards organic food and its impact on their behavior. In the first stage of research, we used the review of the specialized literature. Through literature review we clarify the concepts, identify the variables and methods to tackle the issue (Hart, 2003). Specialized literature review also requires a critical attitude towards the discovered ideas that must be adapted, accepted or rejected in terms of objectives and based on accumulated arguments.

The result of the specialized literature research is reflected in conceptualizing the variables that enter in the analysis. Also, after analyzing the specialized literature the Planned Behavior Model (TCP) (Ajzen, 1985, Ajzen & Fishbein, 2005) proved to be suitable for analysis of the links between variables studied. Armitage and Christian (2003) points out that the strength of the model lies in its applicability in various fields. The literature regarding food consumption in general (Conner & Armitage, 2006) and ecological in particular (Arvola et al, 2008; Vermeir & Verbeke, 2008; Aertsens et al., 2009; Gotschi et al., 2010; Ruiz de Maya et al .,

2011), has shown that TAM model provides a framework for analysis suitable and useful for explaining behavior guided by attitudes and other variables.

*Tab.l no. 1. Analysed variables*

<b>Variable</b>	<b>Definition</b>	<b>Motivation of includin in analysis</b>
<b><i>Objective knowledge (CO)</i></b>	Knowledge held about an object, that can be verified being wrong or true comparing them to a standard. (e.g. regulations) (Ajzen et al., 2011)	Has been reported a confusion among consumers about characteristics of organic foods, especially about how they can be identified. (Bonti-Ankomah & Yiridoe, 2006, Pál & Pápay, 2009)
<b><i>Subjective knowledge (CS)</i></b>	The individuals perceptions of how much they know about a specific topic (Alba & Hutchinson, 2000)	Previous studies show that subjective knowledge has a stronger impact on attitudes than objective ones. (Aertsens et al., 2011)
<b><i>Beliefs (C)</i></b>	Beliefs may be incorrect, unlike knowledge; they are perceptions on some product-related aspects. Their correctness cannot be verified. (Ajzen et al., 2011)	Beliefs guide the attitude formation, the perceived subjective norm and the perceived control over performing an action. (Ajzen et al., 2011)
<b><i>Behavioral attitude (AC)</i></b>	Direct overall evaluation of the perceived outcomes of the behavior (Ajzen, 2006)	Studies have demonstrated the impact of these variables on buying intention in different cases and contexts (Conner & Armitage, 2001). These three variables together have a stronger predictive power of behavior than only attitudes (Ajzen, 2006).
<b><i>Subjective norm (NS)</i></b>	Overall evaluation of the beliefs regarding the influence of others on one's behavior (Ajzen & Fishbein, 2005)	
<b><i>Perceived control (CP)</i></b>	Overall evaluation of the perceived ease or difficulty of performing the particular behavior (Ajzen, 2006)	
<b><i>Behavioral intention (IC)</i></b>	The likelihood to choose an organic food in the future food purchasing situations	In a less specified situation is more indicated to investigate the buying intention than the buying act.

Also there is a constant concern to improve or adapt these models to the specific context of organic food consumption. Thus, it is tried or the extension of the determinants of purchase intention, or the insertion of mediating variables between them. In Chen's research (2007) a major difference of the model proposed by him to the base model TCP is that it deals separately the consumption barriers than other controls, such as consumer's ability to identify the product. And finally it studies the mediator effect of the personality (innovative or neophobia) and the involvement on this model. De Magistris and Gracia (2008) have

investigated the impact of objective knowledge on planned action. They found that the knowledge objectives directly and positively influence attitudes towards the activity of buying organic products. Arvola and others (2008) propose to include in the analysis, the moral issues expressed through positive sentiment given by tracking their moral principles. Maya Ruiz and colleagues (2011) suggest values as mediating variables in the relationship of the attitudes, subjective norm and perceived behavioral control with the intention of buying. Aertsens et al., (2011) have integrated objective and subjective knowledge in their model. The two types of knowledge are strongly correlated with attitude and both subjective and objective knowledge significantly influence the purchase of organic products along with attitudes, perceived barriers and motivation.

If at the beginning of the research the motivation of product adoption and shaping consumer profile were the main point of interest, in time, together with the development of literature and research methodology studies have emerged that propose and validate partial models with different complexity of the interdependence of certain internal and external factors of the organic food buying decision. Including systematic study of knowledge in consumer behavior models of organic food had happened around the year 2010, this being caused by a series of results provided by previous studies on consumer awareness.

## **CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY**

The research is an exploratory one given the studied population and the structure of the proposed model. The research framework is based on models provided by previous research, but it doesn't completely take a model, instead it's trying to adjust to the features of organic products market in Romania and to the preparation of people for the adoption of these products. The research also wants to investigate the different levels of objective knowledge, making a distinction between general knowledge, more specific knowledge and erroneous but widely shared knowledge on the characteristics of organic products. These may behave differently in the model, from other antecedents of behavioral intention. Thus the model we proposed in this paper brings some changes to the models presented in the literature and place the research in the exploration phase of relations in the system behavioral factors.

## The conceptual model proposed

TCP is the base model, thus using a cognitive approach to the problem. The model takes into account the three antecedents of behavioral intention: behavioral attitude, subjective behavioral norm and perceived behavioral control. Subjective knowledge are considered antecedents of behavioral attitudes and objective knowledge influence attitudes by forming beliefs about green products.

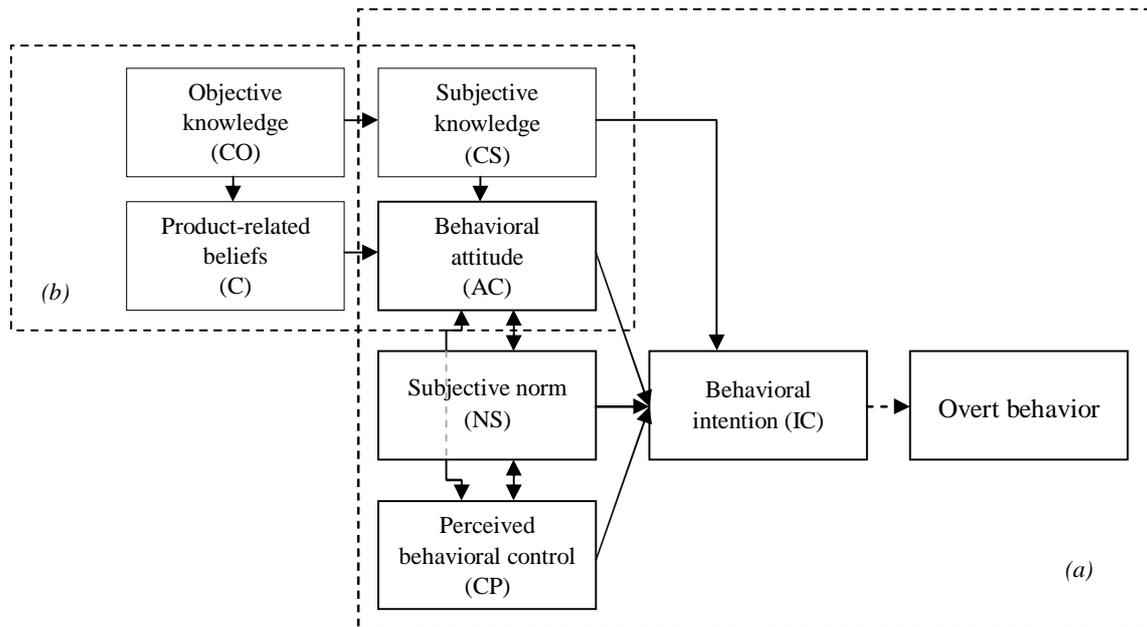


Fig. 2. Conceptual model proposed

## Research hypothesis

*H1: Behavioral attitude has a direct an positive impact on intention to buy organic foods.*

*H2a-b: Prediction of the buying intention in increased by (a) subjective norm and by (b) perceived behavioral control (among the attitude).*

*H3: Subjective knowledge has a direct an positive impact on intention to buy organic foods.*

*H4: Subjective knowledge has a direct an positive impact on attitude towards buying organic foods.*

*H5: Objective and subjective knowledge correlate positively.*

*H6a: Objective knowledge influences behavioral attitude trough subjective knowledge.*

*H6b: Objective knowledge influences behavioral attitude trough beliefs.*

*H7: Confusing organic foods with other type of healthy food influences positively the state of subjective knowlegde, and thus the attitudes.*

*H8: There is a difference in buying intention between those who consider themselves as organic consumers and those who do not.*

Thus we propose to analyze seven constructs, each consisting of several observed variables. There are analyzed two partial models. In the first (fig. 2. (A)), the dependent variable is the behavioral intention and the independent are attitude behavior, subjective norm, perceived control and subjective knowledge. In the second case (Fig. 2. (B)), the dependent variable is behavioral attitudes, objective knowledge are independent variables and subjective knowledge and attitudinal beliefs are mediating variables. In the analysis we make a difference in knowledge between the different dimensions of their objectives.

## **Methodology**

The studied **population** consists of current and potential consumers of certified organic food from big cities. From the perspective of achieving the objectives of the study we are interested in people who had touches with green products, even in the formulation of an opinion. In Romania 80% of organic food is sold through hyper- and supermarkets (Kilcher et al., 2011). This underlines our hypothesis to investigate those who have access to these products, ie the population that has access to certified products. The study population was in the city of Cluj-Napoca, the second largest city in the country<sup>1</sup>, following the criterion of accessibility of the certified offer. We are aware that many people, being the first or second generation in Cluj, they have gardens or farms in the country, and the types of markets presented and distinguished from Essoussi and Zahaf (2008) tend to come together for the population studied.

In this study were used emirical samplin method. We considered some results from previous studies regarding the profile of the consumers interested in buying organic foods. Thus, younger persons with family, having small children in household, with higher education degree and higher income show interest toward organic foods. The sample contains 407 individuals, after eliminating 24 incomplete questionnaires. In the sample are overrepresented women (66,8%), younger respondents (69% sub 44 de ani), with family (52% married, 35% has child), with higher education (70%).

---

<sup>1</sup> According to data from the National Statistics Institute in database Tempo for 2011.

**Data collection method** was complex. Thus, through electronic mail, recipients were selected from a social network and the most important criterion was the presence recipients equally among men and women. 171 responses were recorded, the response rate being 53%. The second method was face to face, in order to increase the response rate and to reach people who do not use social networks, or even the Internet.

**Data collection tool** was questionnaire. The questionnaire consists of 25 questions. In terms of content it is divided into four sections: questions about knowledge and the degree of awareness, TCP variables, behavioral information and identification data.

**Statistical methods.** For the data analysis we used SPSS 20.0 și SPSS AMOS 20.0 statistical software packs, and for designing tables and figures Microsoft Excel were used.

The data analysis starts with presentation of variables' distribution. Since we have reformulated some measurement scales offered by the literature and adapted them to the particular context, we performed a confirmatory factor analysis to verify the internal consistency of each measured construct.

In order to verify the link between the model's construct we used structural equation modelling method via AMOS software. The basic structure of SEM is similar to regression functions:  $data = model + residues$  (Byrne, 2001). The main difference to regression models is, that SEM can handle easily latent variables. In the same time SEM is useful and proper to verify structural models based on previous literature research. In addition, AMOS offer a series of fitting measures to establish if the model proposed is suitable for the collected data.

Among these analysis, we used ANOVA test for quantitative variables and  $\chi^2$  test for qualitative ones to establish significant differences between different knowledge or behavioral groups.

## EMPIRICAL RESEARCH RESULTS

### The basic model of behavioral intention

Based on preliminary results, it was decided to split the CP variable into two subcategories (perceived control over price - CPprice, perceived control over accessibility - CPplace). Thus the proposed model, based on TCP meets five independent variables and one dependent (IC). Measurement scales of all latent variables from the model were verified using confirmatory factor analysis, which shows that the measurement model is suitable for the data set collected. Model validation was done by calculating the convergent and the discriminant validity, checking the consistency of the constructs and the divergence between different constructs.

The structural model consisted of factors from the measurement model. Independent variables explained 63% of the variance of behavioral intention, which is a good prediction. Perception of control over accessibility products (CPloc) proved to be immaterial to predict behavioral intention. Behavioral attitude has direct and positive impact on intention. Contrary to the expectations regarding the size of the effect of behavioral attitude, of all determinants this one has the lowest impact (after CPloc), but still statistically significant. Subjective knowledge also have a significant positive impact on the intention and the strongest effect has the subjective norm, which is well above the effect of attitude. The structural equation model show a good fit to data (tab. no. 2.).

*Tab. no.2. Basic model*

	<b>B</b>	<b>S.E.</b>	<b>p</b>	<b>β</b>	<b>R<sup>2</sup></b>
AC → IC	0,302	0,096	0,002	0,161	0,626
NS → IC	0,493	0,094	0,000	0,381	
CPpreț → IC	0,189	0,039	0,000	0,229	
CPloc → IC	0,028	0,058	n.s.	0,024	
CS → IC	0,206	0,054	0,000	0,213	

$$\chi^2/df = 248,526/104 = 2,38; CFI = 0,970; TLI = 0,961; RMSEA = 0,059$$

Therefore, we can say that a favorable attitude towards organic food results in a stronger purchase intention. Social pressure (subjective norm) perceived by the consumer and perceived control perception on the ability to pay the price of organic food contribute significantly to directly predict the intention. Besides the basic elements of TCP, subjective

knowledge held by consumers have a positive impact on intention. This means that an individual if deemed informed about organic products, intends to act favorably towards them.

### **Antecedents of behavioral attitude**

Following the researchers' practice, we calculated an average value for CO and CS from the scales forming these variables. If we would take the average score for OK and SK, they would do not correlate with each other. This means that the actual amount and correctness of the informations held by consumers doesn't influence the degree of selfevaluation regarding own knowledge. Teh overall score of the CO can depends on which items are included in their list for verificatin its, and those items how general or specific are. Thus, we opted for dividing the items measuring CO into two cathegories: true statement and misperceptions. After an exploratory factor analysis we discovered, that the items referring to general attributes correlate well, forming a latent variable (COcomp), while the statements about certification process correlate also well (COcert). Also, the misperception items formed another factor (COcapc).

After this division of the CO variable, the overall measurement model for the partial model of attitude (a) were reanalysed with a confirmtory factor analysis. This analysis confirmed the proper grouping of the observed variables. Thus the model is formed by the latent constructs of C+, Cocert, Cocomp, COcapc, CS and AC, has a good fit to be accepted and inputed in structural analysis ( $\chi^2/df=312.864/136=2,3$ ; NFI=0,929; CFI=0,958; TLI=0,947; RMSEA=0,057). The convergent and discriminant validity of the measurement model also carried good fitting results.

In orded to verify the mediation effect of the CS and C+ between CO components and the attitudes were verified in two steps. First, a simple structural model was tested to underline the low correlation between CO components and AC. After this, we included the C+ and CS variables between these constructs. This analysis showed taht either the C+ or the CS variables has a total mediator effect between COcomp, COcert, COcapc and the AC links.

The final model for the behavioral attitude contains a dependent variable (AC), three independent variable (COcomp, COcert și COcapc) and two mediator variables (C+ și CS) (Tab. no. 3.). The CO components explain 36% from the C+ variance, the stronger effect on

this has the objective knowledge regarding the food components. The COcapc has also a positive influence on beliefs. This indicates that if they interviewed person consider this items true, the appreciation of the beliefs should be also higher. If in the case of overall CO and CS scores there not were correlation, each CO components has not strong, but positive relation on CS ( $p < 0,05$  in all cases). The impact of beliefs on attitude is the highest ( $\beta = 0,551$ ), but the relation CS-AC is also statistically significant.

Tab. no.3. Model of the behavioral attitude

	B	S.E.	p	$\beta$	R <sup>2</sup>
COcomp → C+	0,483	0,091	0,000	0,371	0,364
COcert → C+	0,186	0,076	0,015	0,182	
COcapc → C+	0,209	0,060	0,000	0,223	
COcomp → CS	0,354	0,116	0,002	0,198	0,226
COcert → CS	0,364	0,106	0,000	0,260	
COcapc → CS	0,186	0,081	0,022	0,145	
C+ → AC	0,332	0,036	0,000	0,551	0,350
CS → AC	0,049	0,021	0,023	0,111	
Std.indirect effect	COcomp → AC	0,226			
	COcert → AC	0,129			
	COcapc → AC	0,139			

$$\chi^2/df = 344,752/140 = 2,46; CFI = 0,952; TLI = 0,941; RMSEA = 0,060$$

Din studiu reiese faptul că cunoștințele despre existența sistemului de certificare a produselor ecologice au un impact mai puternic asupra cunoștințelor subiective decât asupra credințelor. Cunoștințele obiective despre componentele produselor ecologice au un impact mult mai puternic asupra credințelor pozitive față de performanța acestor produse, iar acest efect se regăsește în favorabilitatea atitudinii. De asemenea, răspunsurile date la întrebările capcană pot fi traduse în aprecierea pozitivă a caracteristicilor produselor ecologice. Aceasta înseamnă că imaginea produselor ecologice, ca fiind provenite din gospodării țărănești sau ca fiind produse exclusiv de origine vegetală, ori că nu conțin zahăr adăugat, contribuie la percepția acestor produse ca fiind mai sănătoase, gustoase, fără ingrediente dăunătoare sănătății.

Using an ANOVA test shows that those who say they are “buyers” have more positive attitude, perceived social norms stronger, feel a greater price control and consider them more informed. But the difference for objective knowledge about ingredients and the certification

process is not significant. Only in trick question case there is a significant difference in the sense that those who do not consume believe more strongly in the reality of the claims made intentionally wrong. The fact that either knowledge of the existence of the certification or evaluation of trap questions did not differ significantly between consumers and nonconsumers raises again the question that among self-declared consumers there are many who actually consume products other than those certified.

## **THE RESEARCH CONCLUSIONS**

If a consumer does not know how to distinguish between two foods, he chooses the more convenient alternative by price (Bonti-Ankomah & Yiridoe, 2006). This can lead to counterfeit products, and does not favor the development of the production and marketing of organic food (among other activities packaging, labeling, and marketing communication). People have a comprehensive view of what it means in general "organic" but are not familiar with more specific aspects of organic farming, the processing of such products and certification system. It is expected that those who know the various aspects of organic food products and production are showing a favorable behavior, well-defined and consistent to these products.

### **Theoretical and methodological contributions**

The consumers' insufficient knowledge to correctly identify an organic food was reported by previous research. In most cases, however, it was insisted more on the reputation of those products than on deeper knowledge about these products. Research regarding the behavior of organic food consumer tend to focus on building models of factors influencing the purchase decision. In these approaches the study of knowledge acquired a central role, starting from a cognitive approach of the buying decision. Although it is observed that there is a need to include identification of consumer knowledge in behavioral models (Bonti-Ankomah & Yiridoe, 2006; Hughner et al., 2007; Thøgersen, 2005), in specialized publications flow, the occurrence of these constructs in consumer decision-making system dates back to early 2010 (de Magistris & Grace, 2008; Pieniac et al., 2010a; Pieniac et al., 2010b; Aertsens et al., 2011, Díaz & Garcia, 2012; Gotschi et al., 2010).

The author of the present study, based on the studies of specialized literature and based on the results of a research conducted in 2009 (Pal & Papay, 2010; Pal, 2011), has identified this issue only tangentially in the study of consumer behavior and considered to be important for organic food.

The present study provides an *overview of issues related to consumer knowledge*, the type and level of them and their importance in consumer decision making. At the same time, there is differentiation between the terms used interchangeably in the specialized literature. For products that are manufactured and marketed under certain standards, the interpretation of the concept of knowledge is easier, as well as its measurement. The fewer rules imposed on all agents, the more laborious is the definition of reference points that a consumer should know for adopting the product. In this case, consumer perceptions and procedural knowledge are relevant to research. It should be noted that the study of consumer behavior towards organic food, because of strict regulation of their production and marketing, requires relaunch discussions on consumer knowledge and implicitly on defining the conceptual framework for knowledge.

Also, based on the specialized literature, the study provides *an analysis framework for the link between knowledge, attitudes and behavioral intention towards organic food*. Known model of Ajzen's (1985) theory of planned behavior has been tested in all or part by the field researchers. This model meets attitude and behavioral intention to purchase and include other factors that increase the predictive power of intention. Based on literature synthesis we argue for inclusion in the model the constructs on knowledge. With both objective and subjective knowledge contributing to predicting attitude, then in addition to attitude, subjective norm and perceived control, subjective knowledge can have an impact on behavior.

Third, the contribution of this paper is distinguished by expanding consumer behavior models from these foods with particular emphasis on addressing consumer knowledge. *The innovative character of this approach from other studies is the layering concept of objective knowledge* in various subjects, thus being permitted the identification of more nuanced effects of knowledge on attitudes. Instead of treating objective knowledge as score goals, the proposed model, using ESM methods presents them as a structure of multiple categories of topics covered by measuring scales.

## **Empirical Contributions**

Study and synthesis of literature contributed to the foundation of empirical analysis, which verifies the built assumptions. Thus, this paper provides some results statistically verified that contributes to a better understanding of the topic and the formulation of concrete proposals and future research directions.

Our study showed *a direct and positive link between attitude and behavioral intention*. The structural model shows that *other factors (CS, NS, CPprice) have stronger impact on intention than attitude* toward the behavior, except the perceived control over the accessibility of these products (CPplace). Based on preliminary analyzes, the relatively weak link between AC and IC was somewhat predictable from lower standard deviation scores obtained for the observed variables, necessary to measure behavioral attitude. TCP-based studies generally show a stronger link between attitude and intention, the other two antecedents of intent only complete the intent prediction. In our case, subjective norm has the biggest impact on purchase intent. In studies regarding consumer behavior towards organic products the results are not fully converging about this. In Chen's study (2007) all three antecedents (AC, NS and CP) are significant for the purchase intention and the strongest predictor is attitude. Instead, at Arvola et al. (2008) the subjective norm is the strongest.

Some research in the specialized literature support the significant impact of subjective knowledge on behavior (Pieniac et al., 2010b). Our hypothesis based on this research was confirmed, *CS having a stronger impact on the variation of IC than attitude*. This result is very important because it emphasizes the importance of consumer status on the perception of familiarity with product or context. According the segmentation performed on the basis of CS and CO we have noticed that *those who have high CS, use multiple sources of information*. In addition, they state that they observe and receive information from the authorities, they perceive a social pressure (NS) stronger than others, and their attitude towards the product is more favorable. A consumer who receives a lot of information from the environment regarding organic food, whether this information is correct, in terms of principles and rules organic movement, positively influences subjective knowledge, which in turn leads consumers to feel more comfortable with the buying decision. Clearly, this decision will be made based on product perception. So in an uncontrolled space of information, consumers

will make decisions based on the perceived level of knowledge, but this decision may not be favorable for organic certified product.

As measured score calculated for CS and CO, doing the arithmetic mean of the scales, it didn't prove to be a correlation between them. But the main components of CO were found to be correlated with CS. It was also confirmed that *subjective knowledge both directly and through attitudes have positive impact on behavioral intention*. A similar result was reported by Pieniac et al. (2010a). We found that although there is a *weak link between attitude and objective knowledge, beliefs and subjective knowledge mediates these relations*. We also found that *consumer confusion of different foods that provide similar benefits (health) positively influences subjective knowledge*. This may be due to the perception of their expertise.

Tab. no.4. Review of the hypothesis

	Hypothesis	Confirmed	Explication
H1	<i>Behavioral attitude has a direct an positive impact on intention to buy organic foods.</i>	yes	Prooved by the basic model ( $\beta=0,161$ )
H2a	<i>Prediction of the buying intention in increased by subjective norm.</i>	yes	Prooved by the basic model ( $\beta=0,381$ )
H2b	<i>Prediction of the buying intention in increased by perceived behavioral control.</i>	partially	Only perceived control on price is significant.
H3	<i>Subjective knowledge has a direct a positive impact on intention to buy organic foods.</i>	yes	Prooved by the basic model ( $\beta=0,213$ )
H4	<i>Subjective knowledge has a direct an positive impact on attitude towards buying organic foods.</i>	yes	Prooved by the AC model ( $\beta=0,111$ )
H5	<i>Objective and subjective knowledge correlate positively.</i>	partially	Mean scores don't correlate, but divided compontnts do.
H6a	<i>Objective knowledge influences behavioral attitude trough subjective knowledge.</i>	yes	Including SC between CO and AC increases the predictive power of the model.
H6b	<i>Objective knowledge influences behavioral attitude trough beliefs.</i>	yes	Including C+ between CO and AC increases the predictive power of the model.
H7	<i>Confusing organic foods with other type of healthy food influences positively the state of subjective knowlegde, and thus the attitudes.</i>	yes	Prooved by the AC model AC (COcapc- CS $\beta=0,145$ ; COcapc effect indir. AC: 0,139)
H8	<i>There is a difference in buying intention between those who consider themself as organit consumer and those wo does not.</i>	yes	Vefified with ANOVA test, $p<0.001$

Results of the study (table no. 4.) of subjectively and objectively measured knowledge and their impact should be considered by those who want to sell organic products or want to encourage the general spread of these products. If individuals do not receive complete information from sources they trust, they will form subjective knowledge. It was also found that those who say that they are “consumers” express higher CS, although it is doubtful that the products purchased are really green. Subjective knowledge based on accurate objective knowledge, are more favorable to the producer, because consumers perceives about the products what the manufacturer or the retailer wanted to communicate. Subjective knowledge based on false or distorted objective knowledge, can lead the buyer to use forged source of procurement based on lies.

### **Managerial implications**

*This paper had a diagnostic role because it revealed important problems regarding the structure of consumer’s knowledge* about organic food and its impact on the choice of a product. In this paper we measured declarative and procedural knowledge on identifying the product category, but by behavioral questions *we demonstrated that the confusion can be observed at the level of acquisition sources*. In addition to organic food confusion with other healthy foods presented in the literature, Henryks and Pearson (2010) distinguished several levels of confusion, which must be taken into account by a manufacturer or retailer of these products. *Confusion in the attributes, the logos and the distribution of organic food creates a threat from other products similar or even identical to organic products*. These products inhibit the development of the organic sector where barriers perceived by the consumer adoption are perceived to be lower (ie price). Gracia and Magistris (2008) argue that the only tool to differentiate organic products from conventional ones is the formation of consumers' knowledge and attitudes. *Also by clear and repeatedly issued information it can be increased the amount of knowledge that justifies the presence of the most important barriers, the premium price*. Looking the whole issue from a broader perspective, an important role in moving towards organic products it’s played by the increasing knowledge of issues such as the possible negative impact of conventional nutrition on health and the negative effects of conventional agriculture on the environment (Barnes et al. , 2009).

We also found that both the right knowledge and those considered being confusions influence the perception of products and the consumer perception on its degree of information. From the point of view of retailers and manufacturers, this finding represents firstly *an opportunity in that the image of such traditional products from farms enhance product image*, on the other hand *is a threat because these products not certified by third bodies is a real alternative for organic products*. In terms meso-and macro problem is that if products are not certified, counterfeit products appear at a lower cost, and increase the counter-selection in ecological food system.

A permanent, general and trustworthy information, of organic food increases the amount of information, and thus subjective knowledge, attitudes and intention to adopt organic food. All consumers who believe themselves as consumers of organic food although the products they bought are not even green products can be considered as potential consumers. Knowledge of the certification system, trust in it, and the search of it in their purchasing process of organic products will remove from the shadow the natural markets of small quasi-organic products. Information in this case is a very important input in the growth of organic food.

A consumer may develop favorable attitude towards organic products without understanding their manufacturing process, relying on very simple learning heuristics (eco or bio equally good, healthy, and so on). In contrast, no consumer may choose an organic product in exchange for a non-organic, if he doesn't know the procedure necessary to distinguish the two products. Knowledge of the certification logos or knowledge of the production process (on own production is easier, and more difficult for unknown producers) is a vital segment development. *Marketing efforts should focus on these certification logos, drawing on the theory and rich practice of branding*. The information flow should be maintained by systematic and clear information over the advantages and characteristics of organic food.

### **Research limitation and further development of the theme**

Although our goal was not the expectation of quantitative demand, but the discovery of mechanisms in the formation of purchase intention and propose solutions to the problems of confusion, a probabilistic method for *sampling* would provide higher confidence results.

Another limitation of the research is that the investigated factors relate to a *general context*, the general nutrition. Somewhat the market reality limited the degree of specification of the context, but it reduces the predictive power of the model and increases the ability to interpret very differently a question by consumers. By default, this does not affect the reliability of scales.

Beyond the methodological limitations we can remind the *conceptual limits* of the research. In the present study, we addressed the problem of confusion about organic food with similar products with cognitive vision. With this approach we assumed that a high degree of knowledge of aspects of production, certification, are reflected in the benefits logical derived there from, and a higher degree of subjective knowledge, attitudes and behavioral intentions. Using TCP automatically imply proposals regarding the sources of information and improved cognitive learning. Although this model allows the emergence of affective elements, such as evaluating the overall attitude, and compliance with social norms, yet it is a cognitive model. This model *does not capture the effects of conditioned learning*, which would be interesting aspect in the study of the adoption of organic products.

Future research directions automatically turn to the limits listed above. Improved sampling method would increase the scientific value of the work. Outlining the population of potential consumers would still be difficult. Still we insist on urban population because rural self-consumption is very high, and probably also consumption of certified quasi-organic. *Shaping these markets based on the pattern of consumption remains an important task and also very interesting in the study of food consumption habits*. Based on the results of research on awareness of sources of acquisition and information, it appears that on this metropolitan market several schemes of behavioral and environmental markets or quasi-organic are combining (organic unintentionally as they cataloged Hubbard 2010). Those who buy from small farms, producers or get organic products in-house, so from informal channels are strongly present. Those who seek and buy certified products are also present. These two patterns of behavior may occur even in the case of one person. A clear segmentation of the population studied, based on our interpretation of objective knowledge would facilitate the identification of these types of consumers.

Based on the results and discussion with consumers while completing questionnaires it was proved that in the absence of clear information, especially about certification, consumers

derive from hearsay and experience how an organic product should be. This image can serve as source of inspiration for marketing, but often does not coincide with the promoted one. A qualitative research could explain better the source of information, how to interpret them by consumers and their ability to influence consumer behavior towards organic food.

Furthermore, the subject of consumers' knowledge is not exploited. This research has demonstrated that objective knowledge measurement scales cover phenomena and structures more complex than when treating their obtained as mean score of knowledge. In the present research we defined only three dimensions of objective knowledge, but the levels at which they can relate are more numerous. We included in the measuring model just some declarative and procedural knowledge; however we didn't explore consumer expertise for undertaking activities in the context of consumption of organic products. Theme, issue and data processing tools allow us to have a multivariate approach of the structure of the knowledge; in this direction that can deepen their research.

## REFERENCES

1. Aertsens, J., Mondelaers, K., Verbeke, W., Buysse, J., & Van Huylenbroeck, G. (2011). The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. *British Food Journal*, 113 (11), 1353 – 1378.
2. Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl, & J. Beckmann (Eds.), *Action Control - From intention to behavior* (pp. 11-39). Springer-Verlag.
3. Ajzen, I. (2006). *Constructing a TpB Questionnaire: Conceptual and Methodological Considerations*.
4. Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behavior. In D. Albarracin, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 173-221). New Jersey: Lawrence Erlbaum Associate Inc.
5. Ajzen, I., Joyce, N., Sheikh, S., & Gilbert Cote, N. (2011). Knowledge and the Prediction of Behavior: The Role of Information Accuracy in the Theory of Planned Behavior. *BASIC AND APPLIED SOCIAL PSYCHOLOGY*, 33, 101–117.
6. Alba, J. W., & Hutchinson, W. J. (2000). Knowledge Calibration: What Consumers Know and What They Think They Know. *Journal of Consumer Research*, 27, 123-156.
7. Albarrasín, D., Wang, W., Li, H., & Noguchi, K. (2008). Structure of Attitudes. In W. D. Crano, & R. Prislin (Eds.), *Attitudes and Attitude Change* (pp. 19-40). Psychology Press.

8. Armitage, C. J., & Christian, J. (2003). From Attitudes to Behaviour: Basic and Applied Research on the Theory of Planned Behaviour. *Current Psychology* , 22, 187–195.
9. Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of the Planned Behaviour: A meta-analytic review. *British Journal of Social Psychology* , 40, 471–499.
10. Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lahteenmäki, L., et al. (2008). Predicting intentions to purchase organic food: The role of affective and moral attitudes in the Theory of Planned Behaviour. *Appetite* , 50, 443–454.
11. Barnes, A. P., Vergunst, P., & Topp, K. (2009). Assessing the consumer perception of the term “organic”: a citizens’ jury approach. *British Food Journal* , 111 (2), 155-164.
12. Bonti-Ankomah, S., & Yiridoe, E. K. (2006). *Organic and Conventional Food: A Literature Review of the Economics of Consumer Perceptions and Preferences*. Retrieved August 18, 2011, from <http://www.organicagcentre.ca/Docs/BONTI%26YIRIDOEApril28%2006Final.pdf>
13. Byrne, B. M. (2001). *Structural Equation Modeling with AMOS*. New Jersey: Lawrence Erlbaum Associates Inc. Publisher.
14. Chen, M.-F. (2007). Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related personality traits. *Food Quality and Preference* , 18, 1008–1021.
15. Chen, M.-F. (2009). Attitude toward organic foods among Taiwanese as related to health consciousness, environmental attitudes, and the mediating effects of a healthy lifestyle. *British Food Journal* , 111 (2), pp. 165-178.
16. de Magistris, T., & Gracia, A. (2008). The decision to buy organic food products in Southern Italy. *British Food Journal* , 110 (9), 929-947.
17. Díaz, F. J., & García, P. G. (2012). Consumer knowledge, consumption, and willingness to pay for organic tomatoes. *British Food Journal* , 114 (3), 318-334.
18. Essoussi, L. H., & Zahaf, M. (2008). Decision of making process of community organic food consumers: an exploratory study. *Journal of Consumer Marketing* , 25 (2), 95-104.
19. Gifford, K., & Bernard, J. C. (2011). The effect of information on consumers’ willingness to pay for natural and organic chicken. *International Journal of Consumer Studies*, 35, 282–289.
20. Gotschi, E., Vogel, S., Lindenthal, T., & Larcher, M. (2010). The Role of Knowledge, Social Norms, and Attitudes Toward Organic Products and Shopping Behavior: Survey Results from High School Students in Vienna. *The Journal of Environmental Education* , 41 (2), 88-100.
21. Gracia, A., & de Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy* , 33 (5), 386–396.
22. Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate data analysis* (7 ed.). New Jersey: Prentice-Hall.
23. Hart, C. (2003). *Doing a literature review*. London: SAGE Publications Ltd.

24. Henryks, J., & Pearson, D. (2010). Misreading between the lines: Consumer confusion over organic food labelling. *Australian Journal of Communication* , 37 (3), 73-86.
25. Hong, J., & Sternthal, B. (2010). The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments. *Journal of Marketing Research* , 47, 301-311.
26. Hughner, R. S., McDonagh, P., Prothero, A., Shultz, C. J., & Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour* , 6(2-3), 94–110.
27. IFOAM & FiBL. (2010). *The world of organic agriculture - statistics & emerging trends*.
28. Kilcher, L., Willer, H., Huber, B., Frieden, C., Schmutz, R., & Schmid, O. (2011). *The Organic Market in Europe*. www.fibl.org. Research Institute of Organic Agriculture FiBL and SIPPO.
29. Napolitano, F., Braghieri, F., Piasentier, E., Favotto, S., Naspetti, S., & R, Z. (2010). Effect of information about organic production on beef liking and consumer willingness to pay. *Food Quality and Preference* , 21, 207–212.
30. **Pál, Zs.** (2008). Choosing Healthy Foods. *MID - Marketing form Information to Decision* , 1, 263-274.
31. **Pál, Zs.** (2011). Hitek és tévhitek az ökoélelmiszerekről a kolozsvári lakosság körében. *Felelős marketing* (pp. 244-251). Pécs: Pécsi Tudományegyetem Közgazdaságtudományi Kar.
32. **Pál, Zs., & Pápay, O.** (2009). A fogyasztók biotermékekkel kapcsolatos ismeretei Romániában, *Jelenkori társadalmi és gazdasági folyamatok*, Debrecen, Ungaria, 4 (3-4), 99-107.
33. **Pál, Zs., & Pápay, O.** (2010). A biotermékek ismerete Kolozsváron. *Közgazdász Fórum* (1), 57-72.
34. Philippe, A., & Ngobo, P.-V. (1999). Assessment of Consumer Knowledge and its Consequences: A Multi-Component Approach. *Advances in Consumer Research* , 26, 569-575.
35. Pieniac, Z., Aertsens, J., & Verbeke, W. (2010a). Subjective and objective knowledge as determinants of organic vegetables consumption. *Food Quality and Preference* , 21 (6), 581-588.
36. Pieniac, Z., Verbeke, W., & Scholderer, J. (2010b). Health-related beliefs and consumer knowledge as determinants of fish consumption. *Journal of Human Nutrition and Dietetics*, 23, 480–488.
37. Plăiaș, I. (1997). *Comportamentul consumatorului*. Deva: Intelcredo.
38. Plăiaș I. & **Pál Zs.** (2009) The Consumers' Resources Influencing the Organic Food Choice, *MID - Marketing form Information to Decision*. Risoprint Cluj-Napoca, Editor: Moisescu O. & Plăiaș, I., 325-334.
39. Ruiz de Maya, S., López-López, I., & Munuera, J. L. (2011). Organic food consumption in Europe: International segmentation based on value system differences. *Ecological Economics* , 70, 1767–1775.

40. Thøgersen, J. (2005). Consumer behavior and the environment: which role for information? In S. Krarup, & C. S. Russell (Eds.), *Environment, Information and Consumer Behavior* (pp. 51-63). UK: Edward Elgar Publishing Ltd.
41. Tsakiridou, E., Boutsouki, C., Zotos, Y., & Mattas, K. (2008). Attitudes and behaviour towards organic products: an exploratory study. *International Journal of Retail & Distribution Management* , 36 (2), 158-175.
42. USDA Foreign Agricultural Service. (2008). *Romania. Organic products. Organic agriculture in Romania*. GAIN Report.
43. Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: theory of planned behaviour and the role of confidence and values. *Ecological Economics* , 64 (3), 542–553.
44. Zakowska-Biemans, S. (2011). Polish consumer food choices and beliefs about organic food. *British Food Journal* , 113 (1), 122-137.