Master in Marketing

“Olive Oil Labels Survey”

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Abstract

In the present thesis the aim is to discuss whether optional information for extra virgin olive oil influences purchasing behavior for extra virgin olive oil and purchase intention. Previous research showed that optional information such as country of origin, ISO certifications, the PGI logo, carbon footprint information as well as polyphenol information explain significantly the purchasing behavior of olive oil consumers and form purchase intentions. Thus, the empirical research attempted to show whether there is a relationship between purchasing behavior and purchasing intention, based on specific optional information in extra virgin olive oil labels. Two different analyses were conducted. First, repeated measures ANOVA was implemented, to show whether purchasing probability, measured under different conditions (labels) are differentiated significantly from purchasing behavior. Then, purchasing behavior for extra virgin olive oil was assumed to be a latent variable, measurable through the significance of the criteria of country of origin, safety, nutrition facts, distinctions and whether it is environmentally friendly. Purchase intention is captured from the probability to buy labels with no optional information, with ISO 22000 information, with carbon footprint information, with polyphenol information and with the PGI logo. The research tool was a structured questionnaire. The total sample was 250 participants, consumers of extra virgin olive oil. Path analysis showed that indeed, the factors of country of origin, safety, nutrition facts, distinctions and whether it is environmentally friendly form purchasing behavior for extra virgin olive oil. Moreover, purchasing behavior impacts positively and significantly purchase intention for extra virgin olive oil. Thus, the research concluded first that information such as country of origin, safety, nutrition facts, distinctions and whether it is environmentally friendly characterize purchasing behavior for extra virgin olive oil and that purchasing behavior can actually predict purchasing intention.

Keywords: Olive oil, purchasing behavior, purchasing intention, optional information.

1 Introduction and Motivation

The purpose of this research, originally at the theoretical level, is to understand whether the label of extra virgin olive oil and its characteristics, influence the consumer to purchase it.

More specifically, the research part of the study will aim to the following: to study the characteristics of the label that affect consumers purchase behavior in terms of olive oil preferences and lead them to buy the product.

The author chose this topic because it considers it a very important factor for extra virgin olive oil packaging. It is believed that the label of a product enhances its reputation, attaches a specific identity and helps in terms of its promotion. (Dimara, E., & Skuras, 2005) All these led the author to choose this topic in order to identify all of those factors that enhance the label of the packaging of extra virgin olive oil.

The paper presents a theoretical approach including theories of packaging and labeling and their importance and effect on consumers' buying behavior as well as the information on the olive oil labels that play a role in shaping consumers' preferences.

The research follows the form of a survey with a structured questionnaire. The study is based on a subliminal experiment where participants are asked to rate olive oil labels with the optional information printed on it, rating one different characteristic each time, without them knowing.

Findings conclude that consumers pay attention to optional information on the label either intentionally or unintentionally. This can be translated as an important discovery that will aid olive oil companies market their products and understanding consumers' behavior in a better way. The sample of the research consisted of 250 individuals.

The study provides important feedback on understanding consumer behavior better as regards olive oil and the intention to purchase in particular. Labeling and packaging effect on purchase intention has been broadly examined on an academic level. The same does not apply for the olive oil labels in particular. In that way, the study contributes to taking academic research a step further on the specific matter.

Moreover, the study offers valuable feedback for marketers and the marketing sector in terms of consumer behavior concerning labeling. Marketers in the olive oil market will find the results beneficial for their sector.

2 Research Questions

Information on olive oil labels is divided into obligatory and optional information. Obligatory information includes content, quantity, company brand, contact information, and nutritional information (EE Trade Commission, 2013). Optional information includes certifications, country of origin, awards, information on polyphenol and carbon footprint labeling etc.

The research focuses on the contribution of optional information and in particular: Is the probability to buy a labeled extra virgin olive oil influenced by characteristics like nutrition facts, chemical analysis, country of origin, certifications, awards, production method, on the bottle labels?

The independent variable is the consumer behavior and is explained by the significance consumers attribute to the optional information in the olive oil label, namely: certifications, country of origin, awards, information on polyphenol and carbon footprint labeling. The dependent variable is the probability to buy a labeled product.

3 Theory Development

Labeling must satisfy both the needs of marketing for an attractive product on the shelves of stores and distribution centers are a product easy to refill and management. The designers and engineers of the package must find the right balance between a unique and differentiated packaging and a standard and therefore logistically efficient packaging. Consumers are considering information on traits and characteristics in making their buying decisions, while countries' authorities and companies are choosing labeling options (Caswell, 1998).

Consumers increasingly seem to understand that consuming products have gone through several stages of processing, transport, handling and possibly repackaging, which maximizes the very importance of proper packaging and high quality, so there are not any type of defects in the final product.

The label:

- Informs about the product it contains
- Certifies the quantity and weight
- Guarantees the protection conditions during transport in extended length supply chain.
- Advertises the product

According to Rundh (2005) packaging draws attention to a specific brand, reinforcing its image, and has an impact on perceptions about the particular product. Moreover package imparts unique value to products (Underwood, Klein & Burke, 2001; Silayoi & Speece, 2004), operates as a tool for diversity, i.e. helps the public to choose the product from a variety of similar ones, encourages customers purchasing patterns (Wells, Farley & Armstrong, 2007).

Therefore the label plays an important role in communicating the product and can be seen as one of the most significant parameters that have an impact on consumer decision making. In that way, attempting to make the most of the efficacy of labeling in a buying place, the research on olive oil labels, its essentials and their impact on consumer behavior has come to be a relevant issue.

H1: There is a positive link between purchasing behavior and the printed information on the label.

Descriptions in labeling and characteristics of olive oil are obligatory for all countries, provided they are compatible with international mandatory rules (Standard International Trade council, Codex Alimentarius). The packages to be handled through retail must not exceed a volume of five (5) liters and must be suitable for

food. The closure of the package must provide security to the inviolability also after the first use (Boskou, Blekas & Tsimidou, 1996).

Nevertheless there is optional information concerning olive oil labels that can drive the consumer's decision making procedure, depending on their presence or absence from the label.

The origin of the olives, the soil, climate and microclimate, altitude in which the olive grove, its proximity to the sea and the sunshine of the region are important parameters. Key role also plays the olive grove cultivation method but also the variety of olives (Shanmugasundaram, 2014).

Due to current trends consumers are turning more and more towards a healthier lifestyle, the part of the public that bases their purchasing decisions on the nutritional facts of a product, increases. Amongst others, the manner of production and chemical facts along with certifications (HAACCP, ISO etc) play a role in shaping consumer believes and behaviours on products (Grunert, Hieke& Wills, 2014). According to Kozup et al (2003) *"when favorable nutrition information or health claims are presented on the label, consumers have more favorable attitudes toward the product, nutrition attitudes, and purchase intentions, and they perceive risks of heart disease and stroke to be lower"*.

All olive oil products from Greece that are exported abroad have obtained one or more certifications either about the PDO of the product or the production techniques used and its quality. The most important of them include: Agrocert(Hellenic Ministry of Agriculture), TUV for food safety standards and Bio Hellas-Organization for the certification of Organic products.

H1a: There is a positive link between purchasing behavior and certifications.

Standardization is the activity by which rules are established and designed to achieve the optimum degree of order in application contexts for existing or potential problems that are common or repeated. The global standard has been prepared by consensus of all stakeholders-worldwide-and approved by one of the two global standardization organizations ISO and IEC. Recent food-safety crises have reduced consumers' trust

in the food system's ability to offer safe, high-quality food. As a result, regulators and retailers are attempting to regain consumers' trust by redesigning quality-assurance programs (Roosen, 2003).

For all products, the label and packaging plays an important role not only in carrying the necessary information according to the law, but also in conveying the brand message, the promise and overall promotion of the product to consumers (Barnes, Southee & Henson, 2003).

Geographical origin (GPA) labels are significant information and marketing tools and have lately become a vital component of European agricultural advertising (Menapace et al., 2011). For Scarpa and Del Giudice (2004) product origin matters differently in different cities.

The role of the country of origin appears to be important for the purchasing behaviour of consumers. For new markers, such as China and Japan, consumers want to see two things printed (Fotopoulos & Krystallis, 2001). First, that the product is declared to be of quality and secondly to know where the name originates. This gives companies an opportunity to understand consumer needs better. Today in the international olive oil market scams seem to happen frequently where one thing is printed and its real quality does not match it. Therefore, in the long run PDO/PGI labeling helps consumers decide on the quality of olive oil (Fotopoulos & Krystallis, 2001).

H1b: There is a positive link between purchasing behavior and country of origin.

Depending on the biological cycle of the olive and the receiving system, the content of the olive oil in polyphenols varies. The content depends on the variety of olive and ripeness of the olives, as the polyphenol content in the ripe of olives are almost half that than that in the unripe olives. That is why mainly unripe olives are used to produce good quality virgin olive oil (Trichopoulou et al, 1995).

The high content of Greek olive oil in polyphenols seems to revolutionize the oil market. Increase in Greek oil exports to markets both within Europe such as Germany and abroad like China, are estimated for 2013, from the Ministry of Rural Development. Executives of the Rural Development Ministry and the industry believe

that an important impetus to Greek oil exports is expected to be given by the European regulation passed in 2012 that established the indication on the labels of *"olive oil polyphenols contribute to the protection of blood lipids from oxidative stress"*. Already cooperatives that produce PDO/PGI olive oils and producer groups have expressed interest to measure the content of their products in polyphenols by the measuring laboratories of the Ministry of Rural Development (Lockyer & Rowland, 2014).

The system of producing the oil also plays an important role in quality. The oil pressure system guarantees a high content of polyphenols, while the centrifugal system of the paste of whole olives oil gives lower polyphenol content. The temperature, time of kneading and the fineness of grinding of the olives have a significant impact on the quality and content of polyphenols (Niaounakis & Halvadakis, 2006).

In December 2012 the implementation of Regulation (EU) 432/2012 of the Commission, started which adopted a list of permitted "health claims" made on food. This list states that the health claim can be indicated on labels of oils "*the olive oil polyphenols contribute to the protection of blood lipids from oxidative stress*". The claim may be used only for olive oil which contains at least 5 mg of hydroxytyrosol and its derivatives per 20 grams of olive oil. To use this claim information that the beneficial effect is obtained with a daily intake of 20 g of olive oil should be provided to the consumer (Official EE Newspaper, 2012).

H1c: There is a positive link between purchasing behavior and polyphenols.

A very important new factor for olive oil is also the assessment of carbon footprint, with the relevant indication on the label as evidence of sustainable efficiency. Moreover according to Dr. Gertsis director of the Olive Center, College Perrotis at the American Farm School of Thessaloniki.: "*The only oil that has excellent carbon footprint i.e. low energy expenditure for the production of at is an oil from a site in Kalamata, which is produced by the Union of Agricultural Cooperatives of Messinia, which has the right to be labeled 'climate neutral'* " (Bakopoulos, 2014).

H1d: There is a positive link between purchasing behavior and carbon footprint labeling.

Finally, international food awards seem to appear as a new trend for food industries, especially in extra virgin olive oil market. Winning an olive oil competition is important for the producers. Competition like NYIOOC (USA), The Guild of Fine Food (UK) and Olive Japan (JAPAN) guarantee the quality and taste of the products from the competition, through the reputation of their judging panels. These are usually judges coming from major olive production countries (Greece, Spain, Italy). As a result, consumers buy products that have a reliable seal of approval based upon great taste and not marketing. Additionally, most of the times competitions provide marketing tools like: permanent pages into their webpage, to help winners distribute their success to the clients (distributors, importers, wholesalers), logo of the award that can be labelled on the product and official certification/diploma.

H1e: There is a positive link between purchasing behavior and awards.

Based on the relevant theory, the conceptual model of the research is the following:

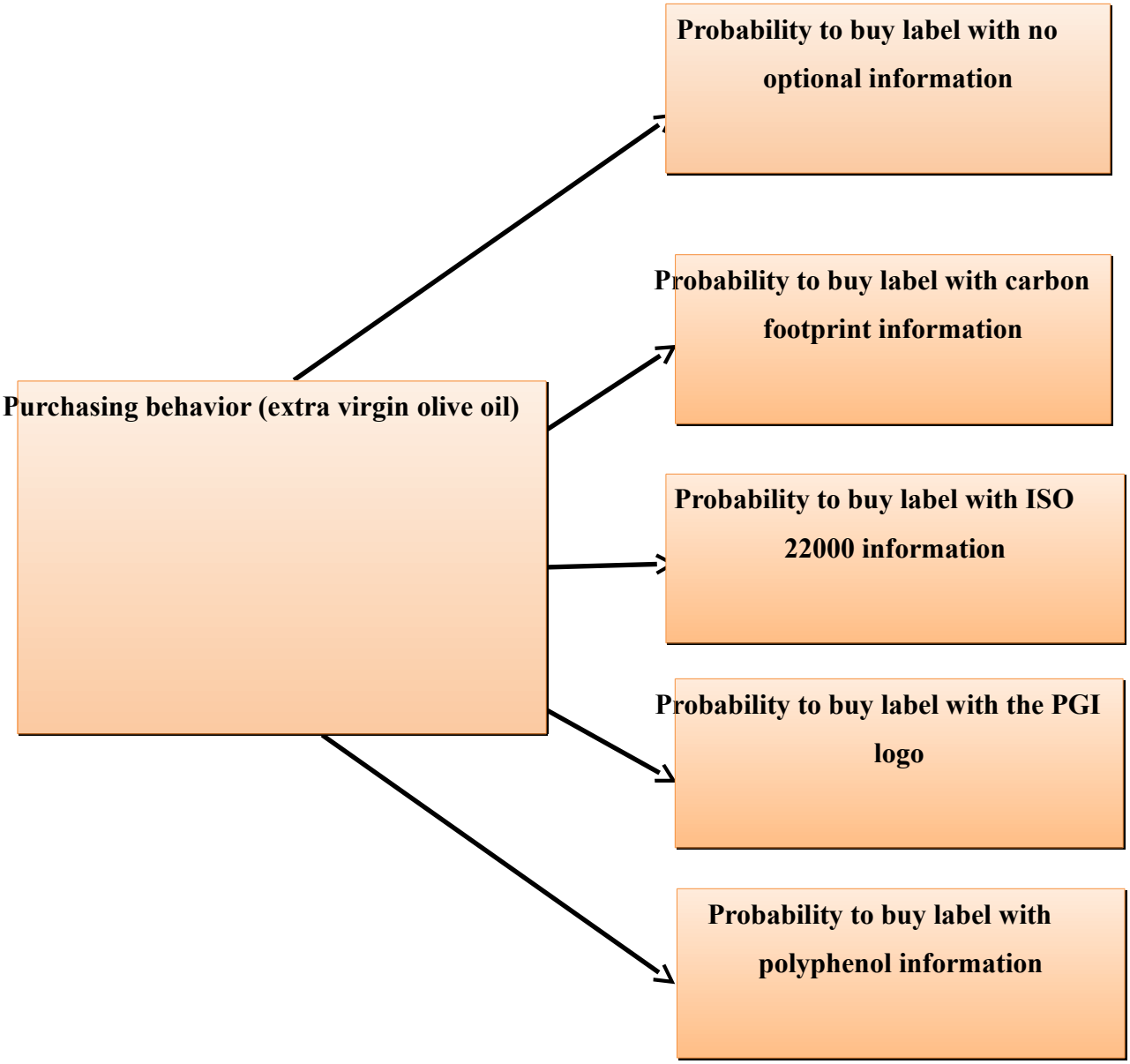


Figure 1: Conceptual research model

As the figure above shows, purchasing behavior concerning extra virgin olive oil, will impact significantly the probability to buy labels with no optional information, with carbon footprint information, with ISO 22000 information, with the PGI logo as well

as with polyphenol information. This way, it will be feasible to test all research hypotheses which were developed throughout the chapter.

4 Methodology

4.1 Sample and ethical considerations

The sample of the research consists of 250 individuals. The sample is a convenience sample rather than a random sample. The convenience sample is a sample selected to give us a first impression of the issue considered but is not representative of the population. The population consisted of olive oil consumers focusing on the age gap between 18-42, that belong in the workforce and are making their own purchasing decisions, for themselves or the family**.** During the research, ethical considerations were taken into account. Specifically, along with the questionnaire, was also sent the informed consent letter. In this letter, the participants were informed for the research aim and objectives of the research, as well as for the fact that their answers will remain anonymous and confidential. They were also informed for their right to withdraw their answers anytime they want, by contacting the researcher. Last but not least, they were ensured that their answers will not be published in third parties and that they will not be altered to serve any personal or institutional purpose.

4.2 Questionnaire development

The questionnaire is constructed in a manner that will test the participants' preferences in a subconscious manner. Specifically the questionnaire includes six (6) labels to be tested: five (5) with the 5 different dependent variables (optional information on the label) and 1 control label, with no variable. So the labels tested (also see Appendix) include one independent variable each, namely: certifications, awards, carbon footprint, polyphenols and country of origin. (and one label with no variable under examination i.e. no optional information). The specific questions have been randomized each time so that almost 42 participants correspond to each label, 250 in total.

So as to ensure validity the same label/ brand is tested each time. The only thing changing from one label to the other is the variable tested. The questionnaire also includes 2 questions concerning the criteria of purchase that consumers answered, one on the prioritization of criteria on food and one on olive oil, that participants were called to answer using a Likert scale.

In order to ensure the validity of the questionnaire a pilot study was conducted first with the participation of 15 individuals to check for any problems in the understanding of the questions (Normann, & Ramirez, 1994). The questionnaire was understandable by participants and changes were needed to be made only for the size of the labels.

4.3 Research model and validity

In this section, the aim is to discuss the empirical model which is based on the research hypotheses formulated throughout the theory development chapter. For validity purposes, all variables and their relationships are presented in libby boxes.

The research hypotheses developed associate purchasing behavior of extra virgin olive oil, based on specific characteristics, with the probability to buy labels with no optional information, with carbon footprint information, with ISO 22000 information, with the PGI logo, as well as with polyphenol information. Therefore, it is important to examine whether specific characteristics, in which consumers pay attention when they buy extra virgin olive oil, can predict the probability to buy labels with the aforementioned characteristics. Thus, the dependent variables are more than one (probability to buy label with no optional information, probability to buy label with carbon footprint information, probability to buy label with ISO 22000 information, probability to buy label with the PGI logo, probability to buy label with polyphenol information). Plus, the independent variable purchasing behavior is latent and is indirectly measured through the observable and measurable variables of specific characteristics (country of origin, food safety certification (i.e ISO22000), distinctions, nutrition facts/ health claims, environmental friendly).

The research model is presented in the form of libby boxes below:

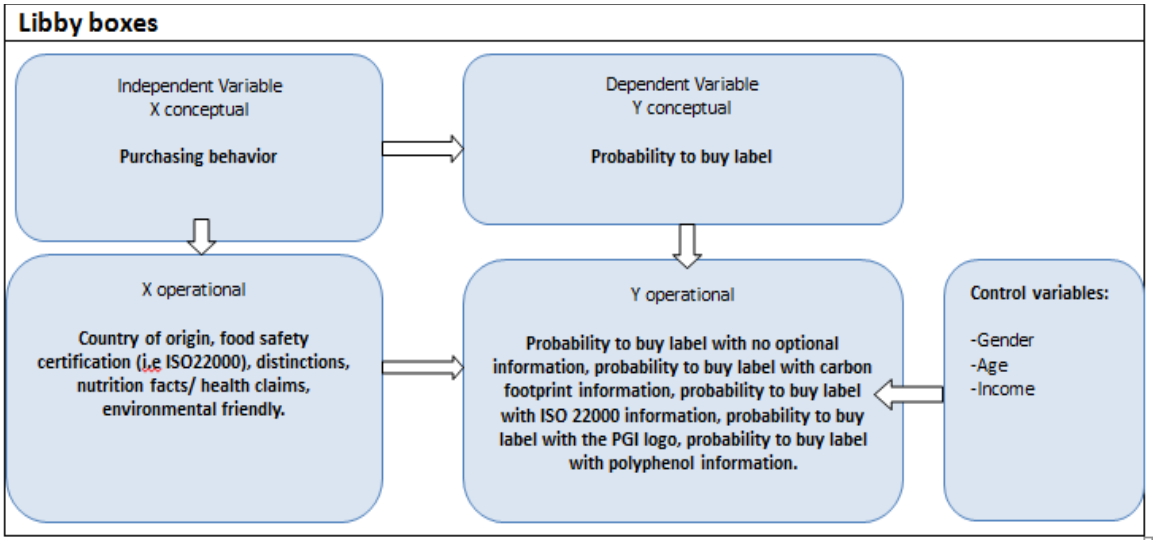


Figure 2: Libby boxes

As the figure above shows, purchasing behaviour impacts probability to buy label with specific characteristics. As control variables which impact the probability to buy label are considered the demographic data of participants and specifically gender, age and income.

4.4 Statistical analysis

In this section the aim is to discuss the statistical analysis. As the research is actually an experiment, this means that purchasing probability was measured through different scenaria, which were the different labels of extra virgin olive oil. Two different analyses were chosen. First, it was implemented a repeated measures ANOVA, setting as dependent variable purchasing probability, which comprises of five different conditions: The probability to purchase a label with no optional information, the probability to purchase a label with carbon footprint information, the probability to purchase a label with ISO information, the probability to purchase a label with the PGI logo and the probability to purchase a label with polyphenol information. The independent variables are the significance of each criterion (country of origin, safety, distinctions, nutrition facts, as well as whether it is environmentally friendly) during the purchase of extra virgin olive oil. As control variables were used the demographic data of participants and specifically gender, age and income.

Last but not least, another way to analyse the data is presented. The significance of each criterion during the purchase of extra virgin olive oil are considered as the

independent variables and constitute purchasing behavior for extra virgin olive oil. As the independent variable purchasing behaviour is a latent variable, which is defined through country of origin, food safety, certification, distinctions, nutrition facts and environmental friendly, the appropriate methodology to analyse the data is path analysis. Path analysis is a methodology which is a special case of structural equation modelling. Structural Equation Modelling (SEM) is a statistical methodology which is widely used by researchers in the social sciences. For the first time in 1970, methodology SEM associated psychometry with econometrics. On the side of psychometrics, SEM models allow explanation of latent variables using multiple indicators. In this case, the indicators of the latent variable "purchasing behavior" are country of origin, food safety, certification, distinctions, nutrition facts and environmental friendly measurable variables. SEM allows solving multiple equations that may have feedback loops. Thus, it is feasible to test simultaneously whether purchasing behaviour impacts all dependent variables (Dodge, 2003). Path analysis which is employed here, is part of structural equation models, but not exactly the same. Its aim is to investigate whether a set of data fits a prior causal model. In this case, by the construction of the questionnaire, questions concerning the significance of specific criteria in purchasing olive oil constitute purchasing behavior concerning olive oil. In this case, path analysis is actually a factor analysis (Dodge, 2003). Through maximum likelihood estimations, one can find the factor loadings of the latent variable "purchasing behavior" and examine whether they are statistically significant. If factor loadings are statistically significant, this means that data fit theory. Moreover, it is a way to test whether the questionnaire provides valid results. If factor loadings are statistically significant, questions supposed to measure purchasing behavior for olive oil indeed measure this construct. Thus, there is construct validity.

The next step is to find whether purchasing behavior as a latent variable construct impacts significantly purchase intention for each label. By the construct of the several research hypotheses, we are not interested in examining whether purchasing behavior impacts overall purchase intention for all labels of olive oil. Here, the focus is on purchasing behavior of each label separately. Therefore, there are several dependent variables in the model and one independent variable, purchasing behavior. Of course, there are variables which change the relationship between the dependent and

independent variables, the so-called control variables which need to be taken into consideration. Thus, gender, age and income of the respondents were also involved as exogenous variables.

Here, maximum likelihood regression was chosen, given the fact it is involved a latent variable. The different equations which were estimated in path analysis are presented below:

$$Purch.behav. = a + b_1 country + b_2 safety + b_3 distinctions + b_4 nutrition + b_5 envir. + e_t$$

Equation 1

$$Purch.prob.opt.\inf. = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$$

Equation 2

$$Purch.prob.carbon = a + b_1 purch.beh. + b_2 gender + b_3 age + b_4 income + e_t$$

Equation 3

$$Purch.prob.ISO = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$$

Equation 4

$$Purch.prob.PGI = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$$

Equation 5

$$Purch.prob.polyph. = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$$

Equation 6

Path analysis and structural equation models make an explicit distinction between endogenous and exogenous variables. Endogenous variables are the ones which are influenced from other variables in the model (Dodge, 2003). Therefore, for the model under investigation, dependent variables concerning the probability to buy the label with no optional information, the label with carbon footprint information, the label with ISO information, the label with the PGI logo and the label with polyphenol information are endogenous variables, influenced from purchasing behavior as well as the gender, age and income of participants. Moreover, path analysis makes an explicit distinction between observed, latent and measurement variables. The five dependent variables presented above are endogenous observed variables, as they are observed directly through collected data from participants.

Purchasing behavior is an exogenous latent variable in the model. This is because it is assumed to impact purchase intention for all five labels. It is a latent variable, as it is measured through the significance of specific criteria, indirectly. The factors which

are supposed to measure purchasing behavior can therefore be characterized as endogenous measurement variables. As it was already mentioned above, age, gender and income are considered as exogenous observed variables. What is helpful in path analysis is that it estimates the set of six equations presented above simultaneously. Therefore, it provides estimations for a set of relationships. Here, it was feasible to see at the same time whether significance of each criterion actually measures the construct "purchasing behavior" as well as whether the latter along with the demographic data of participants impacts significantly purchasing intention for each label.

5 Analysis of Findings

5.1 Demographic data of participants

The sample is divided between male and female participants. Male participants have been slightly more (57%) of the sample. Most respondents belong to the 27-35 age range. A 28% of the sample belongs to the 18-26 age range and 12% to the 36-42 age range. As for their income, the majority of respondents stated that they have 10.000 annual income or less (51%).

5.2 Purchasing behaviour

In this section, the results concerning the purchasing behaviour for food products in general and for extra virgin olive oil are discussed. In this context, ANOVA tests were employed for purchasing behaviour for food products and extra virgin olive oil separately, so as to test for significant differences between consumers with different demographic gender. This will show whether purchasing behaviour is differentiated across different consumer groups. Moreover, a paired t-test was employed, so as to flag any significant differences between purchasing behaviour for food products and extra virgin olive oil. This will show whether preferences for extra virgin olive oil are distinctive in comparison with any other food product.

As table 5, page 42 in the appendix C shows, the most important criterion for consumers seems to be nutrition facts of food products, as the average is 3.92, suggesting they are rather significant. However, as all averages exceed 3.5, this

suggests that all criteria are rather significant for consumers when they purchase food products.

As table 6, page 42 in the appendix C shows, all criteria concerning the purchasing behavior for extra virgin olive oil are rather significant on average terms for consumers. The most important criterion is country of origin (4.10) and then follow nutrition facts (4.04), food safety (3.89), environmental friendly (3.83) and distinctions (3.82).

The null hypothesis of ANOVA test is that that all groups' means are equal. Thus, a p-value lower than 0.05 suggests that there is statistically significant difference in means between groups. As the column significance shows, in table 7, page 43 in Appendix C, all p-values are lower than the 0.05 significance level. Therefore, purchasing behaviour, both for food products and extra virgin olive oil is differentiated according to the gender.

Last but not least, in this point the means of purchasing behaviour concerning food products and extra virgin olive oil, criterion by criterion are compared. As table 8, page 44 in Appendix C shows, in all cases, the significance of each criterion is higher in the case of extra virgin olive oil. Those differences are statistically significant in all cases, as the p-value is lower than the 0.05 significance level. This does not hold for the distinctions criterion (0.07). Thus, extra virgin olive oil should be examined as a separate category of food products. In the following section the results concerning the probability to buy labels based on specific characteristics are presented.

5.3 Probability to buy a specific label of olive oil

In this section the data concerning probability to buy specific labels according to specific criteria are discussed. As the average values in table 9, page 44 in Appendix C show, it is rather very likely to buy an extra virgin olive oil with ISO 22000 information (4.02). Then, consumers consider important to have carbon foot print information (3.87), polyphenol information (3.79), PGI (3.51) and no optional information (3.36). The label with no optional information on it receives 28% "very likely to buy" responses, 39%, "rather likely to buy" responses and a 25% "neither likely nor unlikely to buy" responses. A 6% responded with "Rather unlikely to buy it" and a 3% with a "very unlikely to buy it". Therefore, it is less likely for consumers

to buy extra virgin olive oil with no optional information. The label with the carbon footprint information receives 54% “rather likely to buy” responses and 30% “very likely to buy” responses. “Neither likely nor unlikely to buy it” received a 14% choice from respondents.

The label with the ISO 22000 information received 70% “Rather likely to buy it” responses and 19% “very likely to buy” responses, by participants. Only an 8% of respondents chose “very unlikely” or “rather unlikely to buy it”. The label with the PGI logo (Protected Geographical Indication) receives a 58% “rather likely to buy” responses and a 27% “very likely to buy” response rate. A 12% of responses is concentrated on “very unlikely” or “rather unlikely to buy it”. The label with the polyphenol information receives a shared 42% “rather likely” and another 42% “very likely” to buy response rate. “Neither likely nor unlikely to buy it” received 11%. “Rather unlikely to buy it” received a 6% of responses. The label with the awards received a 23% “Neither likely nor unlikely to buy it” response rate, a 43% “rather likely to buy” and a 31% “Very likely to buy” response rate.

As before, in this point probabilities are compared between different consumer groups, based on gender. As table 10, page 44 in Appendix C shows, in all cases gender differentiates the significance consumers put on each criterion, as the p-values of the test are below the 0.05 significance level.

In this point, it was considered essential to find out which is the best label, according to the purchase intention of each one of them. For this purpose, it was employed an ANOVA test, along with a post-hoc LSD test, in order to show the label with the highest purchase intention. As the ANOVA test showed, the difference for average purchase intention across different labels is statistically significant (p=0.000).

Table 1: Multiple comparisons LSD test: differences in purchase intention between labels.

Multiple Comparisons						
Purchase intention						
LSD						
(I) label	(J) label	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
No optional information	Carbon footprint information	-,50473*	0,09918	0	-0,6993	-0,3102
	ISO information	-,65796*	0,09918	0	-0,8525	-0,4634
	PGI logo	-0,14768	0,09868	0,135	-0,3413	0,0459
	Polyphenol information	-,42494*	0,09908	0	-0,6193	-0,2306
Carbon footprint information	No optional information	,50473*	0,09918	0	0,3102	0,6993
	ISO information	-0,15323	0,09977	0,125	-0,349	0,0425
	PGI logo	,35705*	0,09927	0	0,1623	0,5518
	Polyphenol information	0,07979	0,09967	0,424	-0,1157	0,2753
ISO information	No optional information	,65796*	0,09918	0	0,4634	0,8525
	Carbon footprint information	0,15323	0,09977	0,125	-0,0425	0,349
	PGI logo	,51028*	0,09927	0	0,3155	0,705
	Polyphenol information	,23301*	0,09967	0,02	0,0375	0,4285
PGI logo	No optional information	0,14768	0,09868	0,135	-0,0459	0,3413
	Carbon footprint information	-,35705*	0,09927	0	-0,5518	-0,1623
	ISO information	-,51028*	0,09927	0	-0,705	-0,3155
	Polyphenol information	-,27727*	0,09917	0,005	-0,4718	-0,0827
Polyphenol information	No optional information	,42494*	0,09908	0	0,2306	0,6193
	Carbon footprint information	-0,07979	0,09967	0,424	-0,2753	0,1157
	ISO information	-,23301*	0,09967	0,02	-0,4285	-0,0375
	PGI logo	,27727*	0,09917	0,005	0,0827	0,4718

As the table above shows, the label with the lowest average purchase intention is the one of no optional information, as the average purchase intention between this label and the rest is lower. All differences are statistically significant, apart from the one with the PGI logo (p=0.14). The best label is the one with the ISO information, as the

mean differences are positive. All differences with other labels are statistically significant, apart from the one of carbon footprint information (p=0.13).

5.4 Relationship between purchasing behaviour and probability to buy a labeled product

In this section the association between purchasing behaviour and probability to buy labeled products is examined. First, the correlations among the variables are presented. Then, repeated measures ANOVA results are presented. Last but not least, path analysis results are discussed.

Table 2: Correlation between purchasing behaviour for food products and probability to buy labeled products

Spearman's rho	The label with no optional information	The label with the carbon footprint information	The label with the ISO 22000 information	The label with the PGI logo	The label with the polyphenol information	The label with the awards
Food safety	-,080	,198	,046	,195	,312	,367*
Distinctions	,173	,351*	,087	-,062	,375*	,314
Nutrition	,136	,359*	,034	-,051	,319	,249
Environmental Fr.	,056	,404*	,034	,265	,411*	,274

According to the table above, there is a statistical significant positive correlation between the food safety criterion and the likelihood consumers to purchase a product labeled with an award (rho=.367). When the significance level of food safety increases the probability consumers to purchase a product with an award label increases as well. Moreover there is a statistical significant positive correlation between the distinction criterion and the likelihood consumers to purchase a product labeled with the carbon footprint information (rho=.371). Also, there is a statistical significant positive correlation between the distinction criterion and the likelihood consumers to purchase a product labeled with the polyphenol information (rho=.375). Furthermore, there is a statistical significant positive correlation between the environmental friendly criterion and the likelihood consumers to purchase a product

labeled with the carbon footprint information (rho=.401). Also, there is a statistical significant positive correlation between the distinction criterion and the likelihood consumers to purchase a product labeled with the polyphenol information (rho=.411). All the above mean that when the significance of the food product criterion increases then this affects positively the labeled products, it depends from the information given in the label which label will be affected. Almost each extra food product criterion is linked positively with specific labeled products, not to all of them.

Table 3: Correlation between purchasing behaviour for olive oil and probability to buy labeled products

Spearman's rho	The label with no optional information	The label with the carbon footprint information	The label with the ISO 22000 information	The label with the PGI logo	The label with the polyphenol information	The label with the awards
country	-,195	,347*	,107	,119	,283	,202
Food safety	-,088	,141	,045	,258	,080	,287
Distinctions	,276	,149	,156	,204	,507**	,424*
Nutrition	,000	,132	-,101	,098	,371*	,359*
Environmental Fr.	,189	,359*	,011	,355*	,458**	,141

According to the table above, there is a statistical significant positive correlation between the country criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with carbon footprint information (rho=.347). Also, there is a statistical significant positive correlation between the distinction criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with polyphenol information (rho=.507). In addition there is a statistical significant positive correlation between the distinction criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with an award (rho=.424). Furthermore there is a statistical significant positive correlation between the nutrition criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with polyphenol

information(rho=.371). Moreover, there is a statistical significant positive correlation between the nutrition criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with an award (rho=.359). There is also a statistical significant positive correlation between the production method criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with carbon footprint information (rho=.369) or with an award (rho=.386). Finally there is a statistical significant positive correlation between the environmental friendly criterion of selecting extra virgin olive and the likelihood consumers to purchase a product labeled with carbon footprint information (rho=.359) or with polyphenol information (rho=.458). All the above mean that when the significance of the extra olive oil criterion increases then this affects positively the labeled products, it depends from the information given in the label which label will be affected. Almost each extra olive oil criterion is linked positively with specific labeled products, not to all of them.

Having explained the correlations among the variables, in this point it is important to present the results of repeated measures ANOVA. As table 11, pages 44-45, in Appendix C shows, the average purchasing probability concerning the label with no optional information is differentiated significantly according to country of origin (B=0.14, p=0.037) nutrition facts (B=0.27, p=0.001) and whether the label is environmentally friendly (B=0.32, p=0.000). This suggests that the higher the significance of the aforementioned criteria for the consumers, the higher the purchasing probability of a label with no optional information.

Moreover, average purchasing probability concerning carbon footprint is differentiated significantly from all five criteria. Specifically, the higher the significance of the criterion of country of origin, the higher purchasing probability of a label with carbon footprint information (B=1.67, p=0.000). The same does not apply for safety issues, as the impact is negative (B=-2.47, p=0.000). Distinctions also seem to impact negatively purchasing probability of a label with carbon footprint information (B=-6.54, p=0.000). Nutrition facts impact positively purchasing probability in this case (B=1.00, p=0.000) and whether if it is environmentally friendly as well (B=2.16, p=0.000).

Average purchasing probability is differentiated significantly according to the significance of distinctions. The impact is positive (B=0.8, p=0.000). Average purchasing probability for a label with the PGI logo is differentiated significantly according to the criterion of country of origin (B=0.15, p=0.026) and if the label is environmentally friendly (B=0.50, p=0.000). Purchasing probability for polyphenol is differentiated significantly according to nutrition facts criterion (B=0.91, p=0.000).

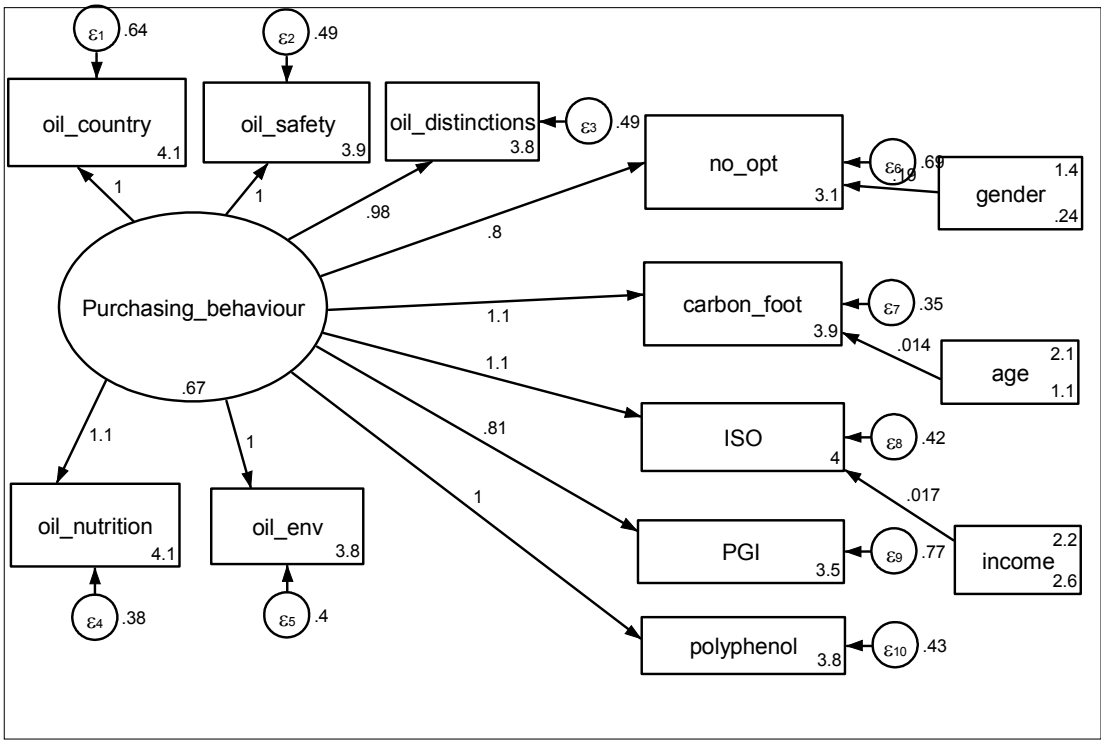


Figure 3: Path analysis for purchasing behaviour and probability to buy a labeled product

As the results from path analysis show, purchasing behaviour is explained significantly from country of origin (B=1.00, p=0.000), safety (B=1.00, p=0.000), distinctions (B=0.98, p=0.000), nutrition (B=1.1, p=0.000) and environmental friendly (B=1.00, p=0.000). Moreover, as the coefficients of purchasing behaviour show, it impacts positively and significantly the probability to buy a labeled product. Specifically, the more significant the criteria which determine purchasing behaviour are, the higher the probability to buy a labeled product with no optional information (B=0.8, p=0.000), with carbon footprint information (B=1.1, p=0.000), with ISO information (B=1.1, p=0.000) and polyphenol information (B=1.00, p=0.000). This actually shows that the higher the requirements of consumers for virgin oil, the more likely it is to buy labeled products with the aforementioned characteristics. Indeed, as

research hypotheses assumed, purchasing behaviour impacts positively and significantly the probability to buy a labeled product.

The results presented in the figure above are illustrated in the following table as well:

Table 4: Path analysis (impact of purchasing behavior on purchasing probability).

Path analysis		
Equation: $Purch.behav. = a + b_1 country + b_2 safety + b_3 distinctions + b_4 nutrition + b_5 en$		
	B	P>|z|
Country of origin	1.00	0.000
Safety	1.00	0.000
Distinctions	0.98	0.000
Nutrition	1.1	0.000
Environmentally friendly	1.00	0.000
Equation: $Purch.prob.opt.\inf . = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e$		
	B	P>|z|
Purchasing behavior	0.8	0.000
Gender	0.19	0.000
Age	0.05	0.85
Income	0.01	0.73
Equation: $Purch.prob.carbon = a + b_1 purch.beh. + b_2 gender + b_3 age + b_4 income + e_t$		
	B	P>|z|
Purchasing behavior	1.1	0.000
Gender	0.89	0.002
Age	0.01 4	0.76
Income	0.02	0.56
Equation: $Purch.prob.ISO = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$		
	B	P>|z|

Purchasing behavior	1.1	0.000
Gender	1.2	0.004
Age	0.89	0.24
Income	0.45	0.12

Equation:

$$Purch.prob.PGI = a + b_1 purch.behav. + b_2 gender + b_3 age + b_4 income + e_t$$

	B	P>|z|
Purchasing behavior	1.1	0.000
Gender	0.78	0.001
Age	0.54	0.15
Income	0.017	0.13

Equation:

$$Purch.prob.polyph. = a + b_1 purch.behav. + b_2 gend$$

	B	P>|z|
Purchasing behavior	1.00	0.000
Gender	0.81	0.001
Age	0.01	0.46
Income	0.13	0.08

6 Discussion of Findings

The analysis provides some interesting findings concerning the consumers purchasing behavior. The initial hypothesis that "there is a positive link between purchasing behavior and the printed information on the label" is supported. This is because in general, purchasing behavior for extra virgin olive oil, which is characterized from the significance each consumer gives to specific elements of no optional information (country of origin, nutrition facts, distinctions, safety and whether it is environmentally friendly) impacts positively and significantly the probability to buy a labeled product with optional information.

The rest of the hypotheses are therefore supported from the empirical results. Indeed, the link between purchasing behavior and ISO certifications is positive. The more important optional information is for the consumers, the more possible is to buy a labeled product with ISO 22000 certification. This is consistent with previous literature and specifically (Caswell, 1998), Rundh (2005), Underwood, Klein &

Burke, 2001), Silayoi & Speece (2004), Wells, Farley & Armstrong (2007), Boskou, Blekas & Tsimidou (1996), Shanmugasundaram (2014) and Grunert, Hieke& Wills (2014). The researchers showed that ISO 22000 certification increases purchase intention.

Moreover, the link between purchasing behavior and country of origin is positive. Indeed, country of origin seems to have a positive impact on purchasing behavior. This is consistent with previous studies, such as the ones of Roosen (2003), Barnes, Southee & Henson (2003), Menapace et al. (2011), Scarpa and Del Giudice (2004) and Fotopoulos & Krystallis (2001).

Furthermore, there is a positive link between purchasing behavior and polyphenols. This is because the more important optional information is for consumers, the more possible it is to buy a labeled product with polyphenol information. This outcome is consistent with previous studies too (Trichopoulou et al, 1995; Lockyer & Rowland, 2014; Niaounakis & Halvadakis, 2006; Official EE Newspaper, 2012). The research concluded that purchasing behavior and carbon footprint have a positive link. The more important optional information is for the consumers, the higher is the probability to buy a labeled product with carbon footprint information. This is consistent with the findings of Bakopoulos (2014). Last but not least, there is a positive link between purchasing behavior and awards. This is because the more important the optional information is for consumers, the higher the probability to buy a labeled product with the PGI logo. This finding is supported from Bakopoulos (2014) as well.

The importance of optional information is highlighted by the fact that the label with no optional information on received the less positive responses by consumers. Overall it seems that consumers are concerned with health claims and nutrition facts when making their decisions about food purchases as well as with food safety and environmentally friendly claims.

When it comes to purchasing olive oil the prioritization shifts and the criterion of country of origin seems to be of outmost importance for consumers. This is maybe due to the reputation and history that Greek olives and olive oil have on the perception of consumers, as being of quality. Nutrition facts and health claims information is of great importance when it comes to purchasing extra virgin olive oil.

Also respondents seem to pay attention to Food safety certification (i.e. ISO) when it comes to buying olive oil as well.

Correlation analysis showed that in terms of comparing the independent variables and their impact on purchase intention, consumers seem to be drawn mostly by the food safety certifications and the protected geographic indication information, which also agrees with their conscious choices when it comes to prioritizing criteria. The awards and polyphenols information seem to play a less important role in purchase intentions when compared to the rest. Maybe due to the fact that consumers are yet to realize what exactly polyphenols mean in terms of translating them into a health claim for their benefit. The same can be said about the awards.

The carbon footprint logo has been more positively received –than the aforementioned variables of awards and polyphenols. This reveals an ecological tendency in the purchasing behavior and intentions of consumers.

The research reveals that consumers pay attention to optional information on the label either intentionally or unintentionally. This can be translated as an important discovery that will aid olive oil companies market their products and understanding consumers' behavior better.

6.1 Research Limitations

Within the limitations of the research, there is the problem of testing a visual aid which can alter the validity of the questionnaire. This implies that participants actually respond to the visual attraction of the label and not on the variable presented, while not paying attention to the information on it.

Moreover, there was a restricted sample size for each label, in order to be able to produce outcomes that can be generalized to the whole population of Greek consumers with confidence.

Furthermore, quantitative research does not allow explaining "why" there is such a relationship between purchasing behavior for olive oil and purchase intention. It does not allow explaining why those criteria are important for consumers as well and how those criteria actually influence their purchase intentions. Therefore, qualitative

analysis with semi-structured interviews may have been more appropriate to answer such questions.

6.2 Further Research

Further research can be conducted so as to enrich the current study and reveal more interesting findings. A qualitative type of research can reveal the reasons behind the consumers' preferences and reach deeper into understanding their intentions, discovering the "why's" behind the prioritization of their choices.

Moreover, a longitudinal type of study may help understand consumers intentions in time better, by comparing current trends to future trends and past trends. Also, more in depth study may include comparison to consumers' behavior in other countries of Europe or worldwide, that will reveal more interesting findings on how *countries* buy olive oil.

References

Ahmad, N., Nadeem, M., Ahmad, R., & Tariq, M. S. (2015). Relationship of advertising and packaging for creating brand personality.

Bakopoulos B.(2014) "We do not receive the messages for olive oil", Eleutheria newspaper . Retrieved from

http://www.eleftheriaonline.gr/oikonomia/agrotika/item/46040-gkertsis-elaiolado

Barnes, C., Southee, C., & Henson, B. (2003, June). The impact of affective design of product packaging upon consumer purchase decisions. In *Proceedings of the 2003 international conference on Designing pleasurable products and interfaces* (pp. 134-135). ACM.

Boskou, D., Blekas, G., & Tsimidou, M. (1996). Olive oil composition. *Olive oil: Chemistry and technology*, *1996*, 52-83.

Caswell, J. (1998). How labeling of safety and process attributes affects markets for food. *Agricultural and Resource Economics Review,* 27(2), 151-158.

Deliya, M. M., & Parmar, M. B. J. (2012). Role of packaging on consumer buying behavior–Patan district. *Global journal of management and business research*, *12*(10).

Dimara, E., & Skuras, D. (2005). Consumer demand for informative labeling of quality food and drink products: a European Union case study. Journal of Consumer Marketing, 22(2), 90-100.

Dodge, Y. (2003) *The Oxford Dictionary of Statistical Terms*. OUP

EE Trade Comission (2013) retrieved from: http://exporthelp.europa.eu/thdapp/taxes/show2Files.htm?dir=/requirements&reporterId1=EU&file1=ehir_eu13_02v001/eu/main/req_mktolive_eu_010_0612.htm&reporterLabel1=EU&reporterId2=PL&file2=ehir_pl1

3_02v001/pl/main/req_mktolive_pl_010_0612.htm&reporterLabel2=Polonia&label=Marketing+standards+for+olive+oil&languageId=es&status=PROD

Fotopoulos, C., & Krystallis, A. (2001). Are quality labels a real marketing advantage? A conjoint application on Greek PDO protected olive oil. *Journal of International Food & Agribusiness Marketing*, *12*(1), 1-22.

Grunert, K. G., Hieke, S., & Wills, J. (2014). Sustainability labels on food products: Consumer motivation, understanding and use. *Food Policy*, *44*, 177-189.

Kauppinen-Räisänen, H. (2014). Strategic use of colour in brand packaging. *Packaging Technology and Science*, *27*(8), 663-676.

Kozup, J. C., Creyer, E. H., & Burton, S. (2003). Making healthful food choices: the influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *Journal of Marketing, 67*(2), 19-34.

Lockyer, S., & Rowland, I. (2014). Authorised EU health claims for polyphenols in olive oil.

Menapace, L., Colson, G., Grebitus, C., & Facendola, M. (2011). Consumers' preferences for geographical origin labels: evidence from the Canadian olive oil market. *European Review of Agricultural Econom*ics, 38(2), 193-212.

Niaounakis, M., & Halvadakis, C. P. (2006). Olive Processing Waste Management: Literature Review and Patent Survey 2nd Edition (Vol. 5). Elsevier.

Official EE Newspaper (2012), retrieved 15-7-2015 from http://www.gcsl.gr/media/trofima/reg-432-2012.pdf

Roosen, J. (2003). Marketing of safe food through labeling. *Journal of Food Distribution Research, 34*(3), 77-82.

Rundh, B. (2005). The multi-faceted dimension of packaging. British Food Journal, 107 (9), 670-684.

Scarpa, R., & Del Giudice, T. (2004). Market segmentation via mixed logit: extra-virgin olive oil in urban Italy. *Journal of Agricultural & Food Industrial Organization,* 2(1).

Shanmugasundaram, S. (2014). A study of brand loyalty in edible oils among educated housewives in Tamilnadu.

Trichopoulou, A., Katsouyanni, K., Stuver, S., Tzala, L., Gnardellis, C., Rimm, E., & Trichopoulos, D. (1995). Consumption of olive oil and specific food groups in relation to breast cancer risk in Greece. Journal of the National Cancer Institute, 87(2), 110-116.

Underwood, R. L. (2003). The communicative power of product packaging: creating brand identity via lived and mediated experience. Journal of Marketing Theory and Practice, Winter, 62-76

Wells, L. E., Farley, H., & Armstrong, G. A. (2007). The importance of packaging design for own-label food brands. International Journal of Retail & Distribution Management, 35 (9), 677-690.

Appendix A – Questionnaire

Introduction to the Survey

Thank you for deciding to take part in this survey! You will need less than 10 minutes to fill it out.

There aren’t right or wrong answers and you are free to express your opinion, so please be spontaneous when you answer the following questions.

This is a college project and no personal data will be needed or exposed.

First part – Demographics & Olive oil consumption

1.Gender

Male	
Female	

2.Income

10000 per year or less	
10000 – 12000 per year	
12000 – 16000 per year	
16000 - 20000 per year	
20000 – 30000 per year	
30000- 50000 per year	
50000 per year or more	

3.Age

18-26	
27-35	
36-42	

43-52	
53-63	
63 or more	

Consumption Criteria

4.How significant are the following criteria when purchasing a food product?

	Very significant	***Rather Significant***	***Neither significant nor insignificant***	***Rather insignificant***	***Very insignificant***
Quality					
Certifications					
Awards					
Nutritional value					
Contribution to environmental protection					

Second Part

1. **How significant are the following criteria when purchasing a food product?**

		Very Insignificant	Rather Insignificant	Neither Insignificant Nor Significant	Rather Significant	Very Significant
1	Country of Origin	1	2	3	4	5
2	Food safety Certification (i.e ISO22000)	1	2	3	4	5
3	Distinctions	1	2	3	4	5
4	Nutrition Facts/ health claims	1	2	3	4	5
5	Environmental friendly	1	2	3	4	5

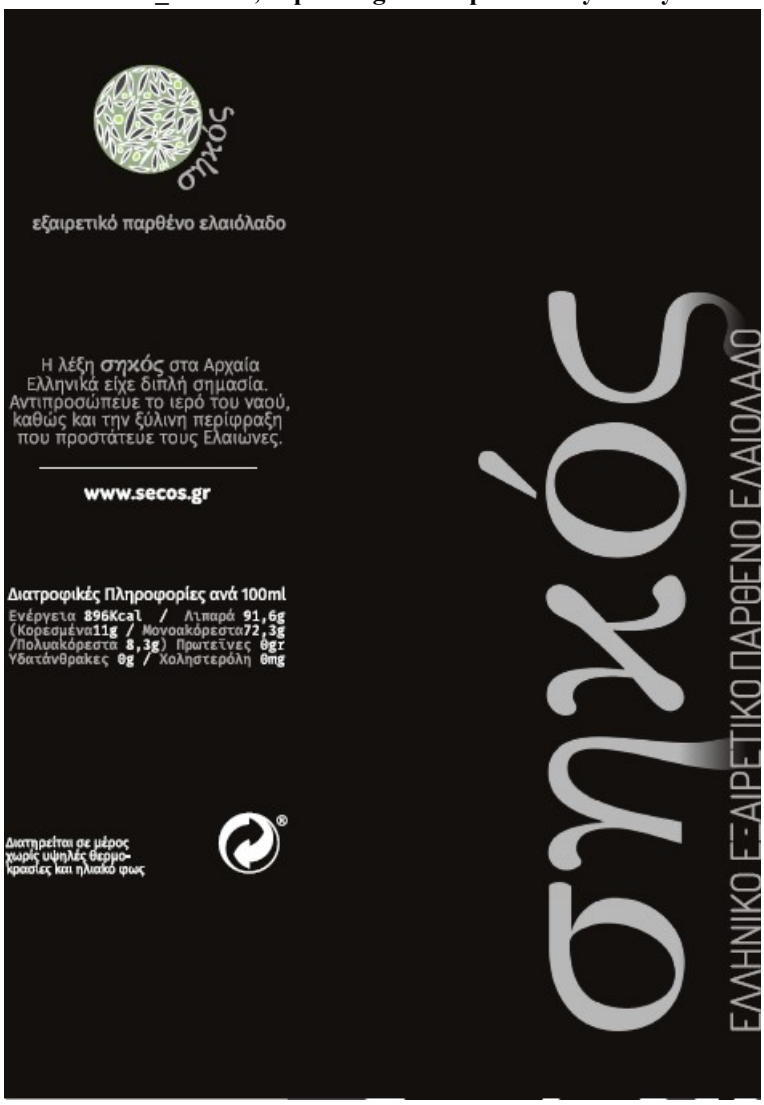
2. Please rate the label_1 below, depending on the probability to buy it:

1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

3. Please rate the label_2 below, depending on the probability to buy it:

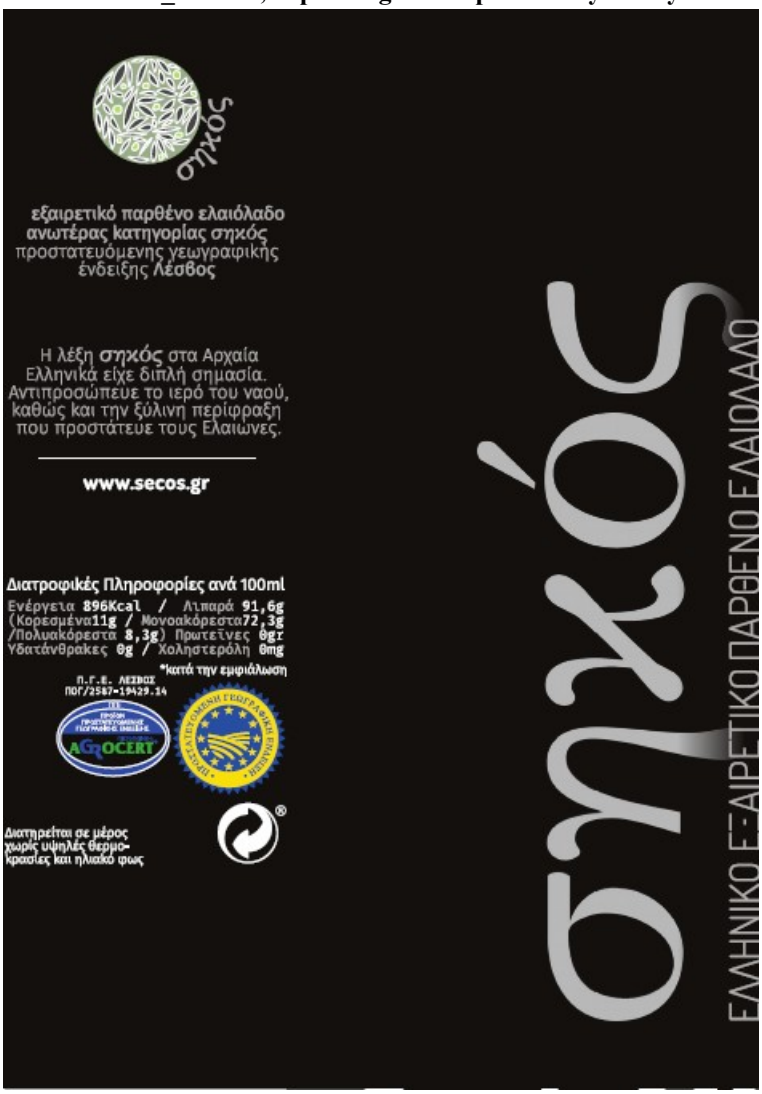
1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

4. Please rate the label_3 below, depending on the probability to buy it:



1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

5. Please rate the label_4 below, depending on the probability to buy it:

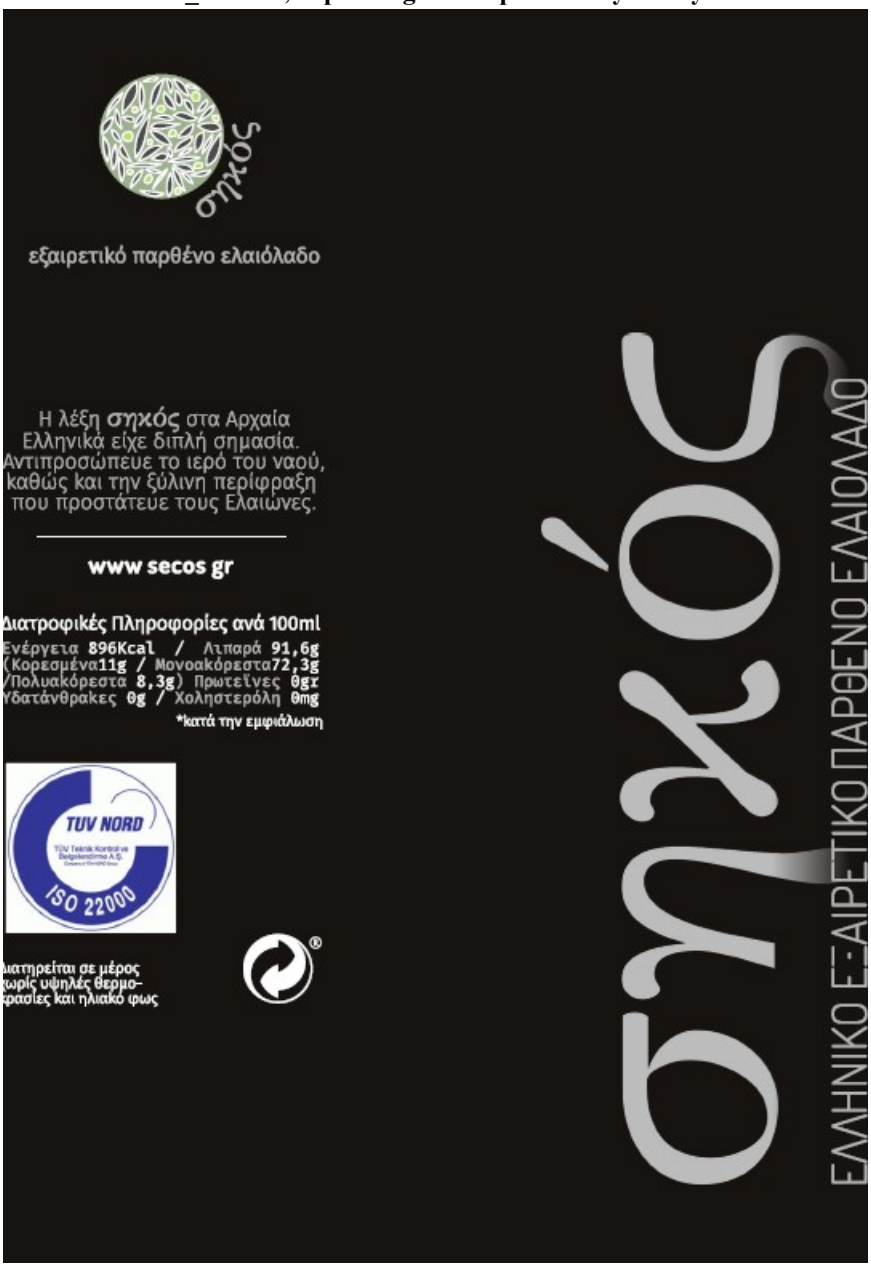


1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

6. Please rate the label_5 below, depending on the probability to buy it:

1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

7. Please rate the label_6 below, depending on the probability to buy it:



1	Very unlikely to buy it
2	Rather unlikely to buy it
3	Neither likely nor unlikely to buy it
4	Rather likely to buy it
5	Very likely to buy it

8. How significant are the following criteria when purchasing Extra Virgin Olive Oil?

		Very Insignificant	Rather Insignificant	Neither Insignificant Nor Significant	Rather Significant	Very Significant
1	Country of Origin	1	2	3	4	5
2	Food safety Certification(i.e ISO22000)	1	2	3	4	5
3	Distinctions	1	2	3	4	5
4	Nutrition Facts/ health claims	1	2	3	4	5
5	Environmental friendly	1	2	3	4	5

Thank you for your time and participation!

Appendix B-Structural equation modelling code

sem (Purchasing_Behavior -> oil_country,) (Purchasing_Behavior -> oil_safety,) (Purchasing_Behavior -> oil_distinctions,) (Purchasing_Behavior -> oil

> _nutrition,) (Purchasing_Behavior -> oil_env,) (Purchasing_Behavior -> no_opt,) (Purchasing_Behavior -> carbon_foot,) (Purchasing_Behavior -> ISO,)

> (Purchasing_Behavior -> PGI,) (Purchasing_Behavior -> polyphenol,) (gender -> no_opt,) (gender -> carbon_foot,) (gender -> ISO,) (gender -> PGI,)

> (gender -> polyphenol,) (age -> no_opt,) (age -> carbon_foot,) (age -> ISO,) (age -> PGI,) (age -> polyphenol,) (income -> no_opt,) (income -> c

> arbon_foot,) (income -> ISO,) (income -> PGI,) (income -> polyphenol,), covstruct(_lexogenous, diagonal) cov(_lexogenous*_oexogenous@0) iterate(20)

> latent(Purchasing_Behavior) nocapslatent

Endogenous variables

Observed: no_opt carbon_foot ISO PGI polyphenol

Measurement: oil_country oil_safety oil_distinctions oil_nutrition oil_env

Exogenous variables

Observed: gender age income

Latent: Purchasing_Behavior

Appendix C-Tables

Table 5: Purchasing behaviour for food products

Purchasing behaviour for food products (significance of each criterion)						
	Very Insignificant	Rather Insignificant	Neither Insignificant Nor Significant	Rather Significant	Very Significant	Mean
Country of Origin	6.80%	7.60%	26.00%	37.60%	22.00%	3.6
Food safety Certification(i.e ISO22000)	8.84%	9.24%	12.85%	44.98%	24.10%	3.66
Distinctions	4.02%	9.24%	32.53%	39.36%	14.86%	3.52
Nutrition Facts/ health claims	5.60%	8.40%	9.60%	41.20%	35.20%	3.92
Environmental friendly	3.21%	12.45%	21.69%	43.78%	18.88%	3.63

Table 6: Purchasing behaviour for extra virgin olive oil

Purchasing behaviour for extra virgin olive oil (significance of each criterion)						
	Very Insignificant	Rather Insignificant	Neither Insignificant Nor Significant	Rather Significant	Very Significant	Mean
Country of Origin	8.03%	3.61%	3.61%	39.76%	44.98%	4.1
Food safety Certification(i.e ISO22000)	6.40%	8.40%	7.60%	45.20%	32.40%	3.89
Distinctions	5.22%	6.83%	16.87%	43.37%	27.71%	3.82
Nutrition Facts/ health claims	5.62%	6.02%	8.84%	38.15%	41.37%	4.04
Environmental friendly	4.44%	6.85%	17.34%	43.55%	27.82%	3.83

Table 7: ANOVA test: Purchasing behaviour by gender

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Country of origin (food products)	Between Groups	17,724	2	8,862	7,217	,001
	Within Groups	308,201	251	1,228		
	Total	325,925	253			
Safety (food products)	Between Groups	13,611	2	6,806	6,428	,002
	Within Groups	265,747	251	1,059		
	Total	279,358	253			
Distinctions (food products)	Between Groups	22,160	2	11,080	8,562	,000
	Within Groups	323,516	250	1,294		
	Total	345,676	252			
Nutrition facts (food products)	Between Groups	15,010	2	7,505	6,245	,002
	Within Groups	301,667	251	1,202		
	Total	316,677	253			
Environmental friendly (food products)	Between Groups	7,762	1	7,762	7,031	,009
	Within Groups	277,115	251	1,104		
	Total	284,877	252			
Country of origin (oil)	Between Groups	17,156	2	8,578	6,184	,002
	Within Groups	341,237	246	1,387		
	Total	358,394	248			
Safety (oil)	Between Groups	14,858	2	7,429	6,222	,002
	Within Groups	293,696	246	1,194		
	Total	308,554	248			
Distinctions (oil)	Between Groups	17,750	2	8,875	7,175	,001
	Within Groups	303,052	245	1,237		
	Total	320,802	247			
Nutrition facts (oil)	Between Groups	15,185	2	7,592	6,517	,002
	Within Groups	285,424	245	1,165		
	Total	300,609	247			
Environmental friendly (oil)	Between Groups	15,774	2	7,887	6,925	,001
	Within Groups	279,060	245	1,139		
	Total	294,835	247			

Table 8: Paired t-test (purchasing behaviour for food products and extra virgin olive oil)

	Paired Differences							
	Mean (difference)	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Country of origin	-.48996	1.08179	.06856	-.62498	-.35493	-7.147	248	.000
Safety	-.30522	.90875	.05759	-.41865	-.19179	-5.300	248	.000
Distinctions	-.10931	.95859	.06099	-.22945	.01082	-1.792	246	.074
Nutrition facts	-.47177	.99757	.06335	-.59654	-.34701	-7.448	247	.000
Environmental friendly	-.21862	.82194	.05230	-.32163	-.11561	-4.180	246	.000

Table 9: Descriptive statistics for probabilities to buy extra virgin olive oil

Descriptive Statistics

	N	Mean	Std. Deviation
No optional information	254	3,3622	1,11879
Carbon footprint information	248	3,8669	1,10320
ISO 22000 information	248	4,0202	1,11468
PGI	253	3,5099	1,11843
Polyphenol information	249	3,7871	1,09934
Valid N (listwise)	246		

Table 10: ANOVA test: Criteria to purchase olive oil by gender

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
No optional information	Between Groups	15,010	2	7,505	6,245	,002
	Within Groups	301,667	251	1,202		
	Total	316,677	253			
Carbon foot print information	Between Groups	15,185	2	7,592	6,517	,002
	Within Groups	285,424	245	1,165		
	Total	300,609	247			
ISO 22000 information	Between Groups	20,592	2	10,296	8,810	,000
	Within Groups	286,308	245	1,169		
	Total	306,899	247			
PGI	Between Groups	8,843	1	8,843	7,245	,008
	Within Groups	306,382	251	1,221		

	Total	315,225	252			
Polyphenol information	Between Groups	14,410	2	7,205	6,212	,002
	Within Groups	285,309	246	1,160		
	Total	299,719	248			

Table 11: Repeated Measures ANOVA

Repeated Measures ANOVA Parameter Estimates

Dependent Variable		B	Std. Error	t	Sig.	95% Confidence Interval Lower Bound	Upper Bound
No optional information	Intercept	,627	,242	2,590	,010	,150	1,103
	country of origin	,135	,065	2,095	,037	,008	,263
	safety	,083	,071	1,167	,245	-,057	,224
	distinctions	-,088	,075	-1,176	,241	-,236	,059
	nutrition facts	,265	,077	3,465	,001	,114	,416
	environmentally friendly	,321	,077	4,164	,000	,169	,473
carbon footprint	Intercept	-8,290	1,546	-53,607	,000	-8,594	-7,985
	country of origin	1,673	4,130	40,509	,000	1,592	1,755
	safety	-2,473	4,569	-54,121	,000	-2,563	-2,383
	distinctions	-6,538	4,787	-136,576	,000	-6,632	-6,444
	nutrition facts	1,000	4,892	20.44	0,000	1,000	1,000
	environmentally friendly	2,162	4,925	439,047	0,000	2,153	2,172
ISO	Intercept	,340	,132	2,579	,011	,080	,599
	country of origin	-,034	,035	-,954	,341	-,103	,036
	safety	,005	,039	,125	,900	-,072	,082
	distinctions	,878	,041	21,519	,000	,798	,958
	nutrition facts	-,011	,042	-,263	,792	-,093	,071
	environmentally friendly	,078	,042	1,869	,063	-,004	,161
PGI	Intercept	,787	,252	3,127	,002	,291	1,283
	country of origin	,150	,067	2,235	,026	,018	,283
	safety	-,081	,074	-1,093	,276	-,228	,065
	distinctions	,133	,078	1,707	,089	-,021	,287
	nutrition facts	-,008	,080	-,097	,923	-,165	,149

	environmentally friendly	,501	,080	6,253	,000	,343	,659
polyphenol	Intercept	,356	,129	2,756	,006	,101	,610
	country of origin	-,023	,034	-,680	,497	-,091	,044
	safety	,045	,038	1,188	,236	-,030	,120
	distinctions	,030	,040	,754	,452	-,049	,109
	nutrition facts	,907	,041	22,230	,000	,827	,988
	environmentally friendly	-,068	,041	-1,665	,097	-,149	,013