The impact of agricultural product packaging features on consumers' reactions and buying behaviors: An eye-tracking exploratory study.

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Abstract

Consumers of green products have emerged as a crucial market in the sense that many consumers are willing to pay more for a green product compared to a conventional one. Packaging can be considered as an advantageous feature of a product that may convince consumers to proceed to a purchase. The purpose of the present study is to investigate how packaging features (eco-labels, image, shape, color) of organic agricultural products affect consumers' eye reactions and as a result impact on consumers' attitudes and buying behaviors.

Introduction

Green marketing is an important field of academic research for at least three decades (Peattie, 1995; Polonsky and Mintu-Wimsatt, 1995; Schlegelmilch et al., 1996; Fuller, 1999; Kalafatis et al., 2005; Devi Juwaheer et al., 2012). Welford (2000) describes green marketing as the administrative process that recognizes, anticipates

and satisfies the needs and desires of consumers in a profitable and environmentally sustainable way. A significant number of researchers study environmental issues that are part of the diverse stages of the production process (Mintel, 2006). In this vein, green marketing involves various processes such as product modification, product packaging, or advertising campaigns (Polonsky, 2008).

Consumers of green products have become a crucial market for the business sector given that ethical consumers constitute a new global economy (Papadopoulos et al., 2010). Many consumers are willing to pay for a green product at a higher price compared to a similar conventional one (Veisten, 2007). The Grand View Research (2018) estimates that the global green packaging market size is going to reach USD 237.8 billion by 2022. Therefore, businesses should continually seek new solutions to the environmental challenges that arise through marketing strategies with ultimate purpose to develop environmentally friendly products, recyclable and biodegradable packaging, and ways to reduce pollution caused by their operational processes (Kotler and Armstrong, 1995).

Packaging is one of the main features that gives competitive advantage to a product, and it is argued that a small investment to change packaging can lead to significant product profits compared to an advertising campaign or promotional strategy (Barber, 2010). The color of packaging is the most widely discussed feature that has been studied intensively by the marketing researchers (Imram, 1999) while the size and the shape of the package (Silayoi and Speece, 2007) as well as the images displayed on a package (Tan et al., 2006) are equally of importance. In this vein, one of the features that can be displayed in the packaging of green products is eco-labels. The eco-labels indicate the overall environmental approach and strategy followed by the companies (Giridhar, 1998).

The purpose of the present study is to investigate how packaging features (eco-labels, image, shape, color) of organic agricultural products affect consumers' eye reactions and as a result impact on consumers' attitudes and buying behaviors. Initially an eye tracking experiment has been conducted where 70 participants took

part. After that, a secondary qualitative study took place with the form of semi-structured interviews, in order to deeply understand consumers' reactions, and buying behaviors. As a result, the current conference paper contributes to the ongoing discussion about packaging features on green marketing.

Literature Review on Eco-Labels

Product packaging enables businesses to communicate with consumers at retailing stores (Rettie and Brewer, 2000, Silayoi and Speece, 2007; Simms and Trott, 2010) as well as during product use and consumption (Underwood, 2003).

There are several categories of eco-labels, including mandatory and voluntary ones. An example of mandatory ecolabelling is the European energy eco-label demonstrating the energy consumption of electrical appliances with a scale from A to F where A means minimum energy consumption and F maximum (Rubik and Frankl, 2005). Voluntary eco-labels are categorized according to ISO certification into 3 types, Type I, Type II, and Type III. Type I is the one to which the eco-label term is mostly referred to and involves the product evaluation by third party environmental organization. Type II refers to self-declaration information by the company itself, about the environmentally-friendly product characteristics (e.g. simple reference that the packaging is biodegradable). Finally, Type III refers to voluntary programs in which the company participates and provides quantified environmental product data (Global Ecolabelling Network, 2017). The present study deals with voluntary eco-labels.

Eco-labels can impact consumer purchasing decisions (Thorgersen 2002, Rashid, 2009). In particular, eco-labels can be used ideally to communicate the specific features and benefits of the green products (D'Souza et al., 2006).

However, a thread of research in marketing supports that consumers often feel confused about the various "green" terms used in eco-labels (Robertson and Marshall, 1987; Muller, 1985; West, 1995; Casewell and Modjuszka1996; Wessells et

al., 1999; Thorgersen 2000). For this reason, green products must be communicated in a simple and easy to understand manner, so as consumer can comprehend all the benefits of using this type of products (Pickett-Baker and Ozaki, 2008). Otherwise, green products will hardly be commercially successful (Pickett et al., 1995; Cherian and Jacob, 2012).

Research Hypotheses and Questions

Eco Labels

A thread of research in green marketing contends that there are specific groups of consumers that are willing to pay a higher price for green products compared to conventional ones (Wustenhagen, 1998, Vlosky et al., 1999, Veisten, 2007). Eco-labels are an important factor that influences consumer purchasing decisions (Thorgersen 2002; Rashid, 2009). Whitson and Henry (1996) examined the impact of eco-labels on consumers purchase decisions by conducting a market segmentation and they found that there is a group of people sensitive to the price of the product. On the other hand, Whitson, Ozkaya and Roxas (2014) concluded that some consumers are willing to pay at a higher price an eco-labeled product compared to a conventional one. Likewise, there would be at least a portion of consumers who are willing to buy products with ecological features at a higher price (Ozzane and Vlosky, 1997). However, Sedjo and Swallow (1999) support that the existence of an eco-label in a product, does not guarantee that consumers are willing to pay for it on a higher price.

Considering the characteristics of consumers who are willing to buy eco-labeled green products, demographic factors are of crucial significance (Moon et al., 2002). In particular, the intention to buy such a product differs according to age, where younger consumers are willing to pay more for green eco-labeled products, as opposed to older ages. Similarly, women and university graduates have positive

attitude towards eco-labeled products (Grankvist, Dahlstrand and Biel, 2004). Considering all of the above, we set the following research questions:

RQ1: *Do eco labels draw consumers' attention on packages of organic agricultural products?*

RQ2: *Do consumers take into consideration eco-labels in their buying decisions?*

RQ3: *Are consumers aware of eco-labels on product packages?*

RQ4: *Are consumers willing to buy an eco-labeled product in a higher price compared to a conventional one?*

Product Image

Considering the effectiveness of image on product packaging, Piqueras-Fiszman et al. (2013) conducted eye-tracking experiments and concluded to the results that the images in jam jars, illustrating the type of product, drew more attention compared to textual information. Packaging traits that are more attractive to consumers' eyes, remain in consumers' minds and ultimately are considered as these features that are identified with the product itself (Guerrero et al., 2000). Moreover, nature-related images raise positive feelings for consumers (Frumkin, 2003), while at the same time lead to favorable attitude towards the product (Park et al., 1986). In this vein, product images appeared in packages, influence positively consumers to test the product as well as impact on a positive manner on consumers' purchase intention (Simmons, Martin, and Barsalou, 2005). Taking into consideration all the above, we formulate the following hypothesis:

H1: *Product images on packages of organic agricultural products will draw more attention compared to textual information.*

Packaging Color

Packaging color is considered as one of the most significant features that affect product's sales (Singh, 2006). In the marketing literature, packaging is the most widely discussed characteristic of packaging studies (Imram, 1999).

Blue is the color that stimulates to a greater extent the sympathetic nervous system of humans compared to the red color while at the same time blue color is related to calmness and relaxation (Kido, 2000). In the same vein, research supports that blue is considered as a happy color while red as a sad one (Cimbalo et al., 1978).

Furthermore, color is related to culture. Wiegersma and Van der Elst (1988) conducted a cross-cultural study and they found that blue is the most preferable color collectively across different cultures. Greece is a country that is identified with the blue color, because of the endless sea and clear sky. Moreover, considering that organic farming products can be associated with a simple and calm lifestyle where the factor of harmony with the natural environment plays a decisive role, we come to the following hypothesis:

H2: *Packages of organic agricultural products which are characterized by blue color will be more preferred by consumers compared to red color packages.*

Packaging shape

Considering the shape of packaging, there is a general tendency for preference to rounded objects (Bar and Neta, 2006, 2007; Leder, Tinio and Bar, 2011). A study about consumer preferences between rounded or angled car interior design concluded that consumers prefer rounded shapes (Leder and Carbon, 2005). In the same vein, rounded design is the most preferred pattern for exterior car design, too (Carbon, 2010).

As regards to the food and beverage industry, studies contend that rounded packaging shape is preferred more in chocolate packs and water bottles (Westerman et al., 2012). Finally, a preference for rounded motifs in water and vodka packaging

is highlighted by the study of Westerman et al. (2013). In particular, these motifs show higher market chances, are more attractive, more enjoyable and less disturbing to consumers. Considering the above we assume that:

H3a: *Rounded packages of organic agricultural products will be more preferred by consumers compared to angled packages.*

H3b: *Rounded packages of organic agricultural products influence more positively the intention to purchase the product compared to angled packages.*

Materials and Methods

Eye tracking

Eye tracking is a human-computer interaction mechanism to analyze subjects' eye movement when looking at an advertisement (Duchowski, 2007). Although this method is widely used in research laboratories, some universities also employ it to analyse human visual and attention processes regarding texts, images and general content (i.e. online games) (Duchowski, 2007).

A very recent study by Horsley *et al.* (2014) agitates the basis of eye tracking research and research methodologies becoming progressively more widespread in many disciplines.

Eye tracking helps advertisers and marketers understand the consumers' internal processes and then tailor the information to change some aspects of the advertisement in order to be effective (Duchowski, 2007).

In this study we will concentrate on the Area of Interest (AOI) analysis which is the most common investigation in social and marketing applications (Horsley *et al.,* 2014). AOI analysis involves the use of eye-tracking software to discover fixation time, frequency and return among the diverse items or parts. AOI analyses are ever more used to examine the differences between ranges of groups (Horsley *et al.,* 2014). Our study intends to address whether there are significant differences between diverse attributes of package design, such as shape, color, the existence of

eco-labels, the existence of images on the package, and text related to bio attributes.

Methodology

Marketing researchers widely employ either quantitative (i.e. surveys), or qualitative (i.e. interviews) research methods to analyze consumer behaviour. It has been identified that experimental research, more precisely lab experiment, has only recently gained researchers' attention in the field of marketing. In this study a mix-match of methodologies has been employed to ensure the results' validity and reliability: a lab experiment with an eye tracker combined with interviews.

Participants

Seventy Greek participants (31 male and 39 female) with ages ranging from 18 to 57 years volunteered to take part in this study. No incentive for participation was provided. All the participants reported no color-blindness and one participant was excluded from the experiment as he reported suffering from attention distraction. Thus, the number of participants is sixty-nine. The participants were recruited via an emailing recruiting list provided by Aristotle University of Thessaloniki. To ensure variety of age between participants, the students were asked to bring together their parents or acquaintances of older age. To take part in the experiment participants had to be regular consumers of feta cheese and olive oil. The lab experiment took place within two weeks and we managed to utilise around ten participants per working day. Given the aforementioned literature, we consider the sample size for this research both adequate and sufficient.

Apparatus

Eye movements were recorder by Tobii Pro Studio version 3.4.5 which was used to test package design. Viewing was not binocular; instead Tobii Pro screen-based eye tracker (Figure 1) was used to monitor eye movements thus allowing participants'

freedom of movement. Infrared (940nm) video-based technology was used by the system to monitor true gaze position on a display in spite of head motion. Eye positions were sampled at 120 Hz which means that Tobii eye tracker tracks where the participants look 120 times per second, therefore providing detailed research into the timing and duration of fixation. The Tobii computer screen that was used was 22 inches with 16:9 Aspect Ratio.

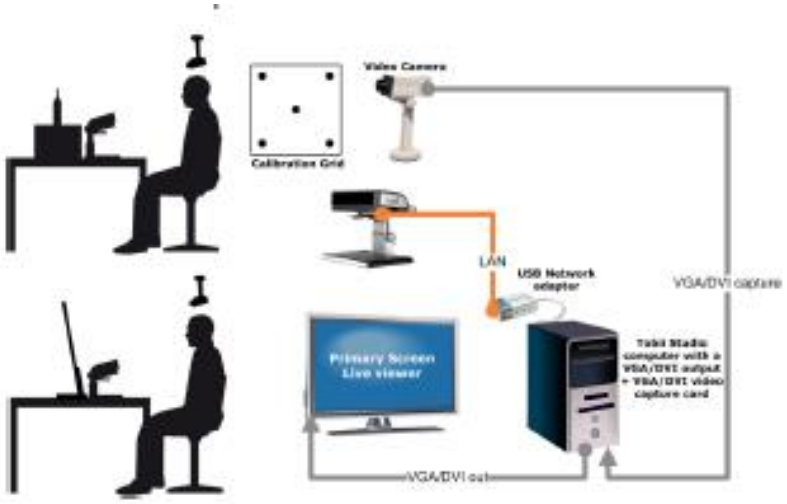

Figure 1: Tobii Pro Computer

Stimuli

As stimuli, various images of feta cheese packages were created by Christos Papathanasiou, a Graphic Designer at MMS Advertising Agency based in Thessaloniki, Greece. The aim of the different packages is to convey sensory information by means of five design attributes: 1) information concerning the text, 2) the package's shape (rounded vs. square), 3) the package's color (blue vs. red), 4) the existence or absence of an image on the package, 5) the existence or absence of an eco-label on the package. The 16 possible fully crossed combinations (2 x 2 x 2 x 2) were created. All the images (860 x 600 pixels) were presented against a black background for individual presentation. The images (Figure 2) were randomly presented to the participants following an experimental shuffle.

Figure 2: Th 16 feta cheese packages shown to participants

Procedure

The study was conducted in a quiet soundproof room under standard illumination conditions. Each participant was seated 64cm from the eye tracker and screen (valid for Tobii T Series Eye Trackers). After calibration, the general instructions for the task were verbally communicated to each participant to ensure they fully understood what was asked. The images were presented individually for 2.5sec each since this is the average amount of time spent by consumers when looking at a package (Spence

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and Piqueras-Fiszman, 2013). In total there were 16 images with different feta cheese packaging. Between each image there was a multiple-choice question and participants were asked to use the mouse and select the answer they believed was correct. The questionnaire was used as a distractor. The whole task lasted for approximately 12 minutes.

Data analysis

To analyse fixations and compare them across the 16 feta cheese packages, various areas of interest (AOIs) were defined. The number of AOIs is not equal among all 16 packages because there are some attributes present in one package but absent in another one. For example, eco-labels appear on some packages but are absent from others. The AOIs are defined as: 1) the information area with a photo of the feta cheese – "AOI_image"; 2) the border of the package –"AOI_shape"; 3) the shape of the package –"AOI_shape"; 4) the main text including the area of origin for the feta cheese –"AOI_POP"; 5) the existence of an eco-label –"AOI_logo"; 6) the text were the word bio is mentioned –"AOI_bio"; 7) the word feta –"AOI_feta" (see Figure 3 as an example of a package's AOIs). The measure that was considered in the analyses was the sum of the duration (ms) of all fixations, which was calculated for each AOI of each package.

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Figure 3: Areas of Interest (AOIs) defined: 1) Feta, 2) color, 3) shape, 4) bio, 5) POP, 6) logo

Results

Study 1: Eye tracking data analysis

To determine which variations had a significant impact on attention captured by each AOI, analyses of variance (ANOVAs) were performed on the total fixation duration data for each AOI.

After checking the data, the regularity of data between groups (histograms and Kolmogorov test p>.05) and homogeneity of variations between groups (Levene's test p> .05) was verified.

Analysis of variance were performed with independent variables being the pictures representing various packaging styles and characteristics (g_bio, color, g_Feta, g_image, g_POP, g_shape, g_Logo) and dependent variable being the fixation time that was recorded through the eye tracker. From the sum square (SS), mean square (MS), and F, statistically significant differences in fixation time were found between the groups, as listed in Table 1.

Item		SS	df	MS	F	Sig
Picture 1	*Model*	30606,840	5	6121,368	21,535	0,000*
	Error	98068,660	414	284,257		
Picture 2	*Model*	3528,011	4	882,003	5,358	0,000*
	Error	45435,589	415	164,622		
Picture 3	*Model*	2920,040	4	730,010	5,416	0,000*
	Error	37198,760	415	134,778		
Picture 4	*Model*	5275,248	5	1055,050	4,654	0,000*
	Error	78209,752	414	226,695		
Picture 5	*Model*	6357,571	5	1271,514	3,802	0,002*
	Error	115377,429	414	334,427		
Picture 6	*Model*	7388,082	6	1231,347	5,430	0,000*
	Error	93889,918	413	226,787		
Picture 7	*Model*	8437,821	5	1687,564	5,412	0,000*
	Error	107575,679	414	311,814		

Picture 8	*Model*	8973,393	5	1794,679	6,447	0,000*
	Error	96042,440	414	278,384		
Picture 9	*Model*	11358,392	6	1893,065	6,863	0,000*
	Error	114201,322	413	275,849		
Picture 10	*Model*	4171,793	5	834,359	2,578	0,026*
	Error	111650,707	414	323,625		
Picture 11	*Model*	11998,739	6	1999,790	6,791	0,000*
	Error	121911,261	413	294,472		
Picture 12	*Model*	10192,396	6	1698,733	3,876	0,001*
	Error	181451,604	413	438,289		
Picture 13	*Model*	8641,276	5	1728,255	4,196	0,001*
	Error	142115,390	414	411,929		
Picture 14	*Model*	9525,417	4	2381,354	10,386	0,000*
	Error	63282,583	415	229,285		
Picture 15	*Model*	23474,196	6	3912,366	9,123	0,000*
	Error	177551,518	413	428,868		
Picture 16	*Model*	13025,098	5	2605,020	7,651	0,000*
	Error	117466,402	414	340,482		

*Source: calculations on SPSS, *p<.001*

Table 1: ANOVA results for all 16 pictures

Separate post hoc tests were performed using the Bonferroni corrected coefficient as a cutoff point, for each independent variable (picture). SPSS offers Bonferroni-adjusted significance tests for pairwise comparisons. This adjustment is available as an option for post hoc tests and for the estimated marginal means feature. There were statistically significant differences within the groups. The results are explained for each picture separately.

Picture 1

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_bio - g_color (t(69)= 3.505, p<.008), g_bio - g_shape (t(69)= 3.820 , p<.008), g_color - g_Feta (t(69)= -6.291, p<.008), g_Feta - g_shape (t(69)= 6.260 , p<.008), g_color - g_POP (t(69)= -5.390 , p<.008), g_POP - g_shape (t(69)= 5.498 , p<.008). The post hoc test shows that the most significant features for the first package are the word bio in the text, the word Feta, and the place of origin (POP) compared to the color (red) and the shape (square shape).

Picture 2

According to the post hoc test (corrected criterion Bonferroni a=.01), statistically significant differences were found within the groups g_color - g_POP (t(69)= -2.842, p<.01), g_color - g_Feta (t(69)= -3.329, p<.01), g_POP - g_shape (t(69)= 2.806, p<.01), g_Feta - g_shape (t(69)= 3.372 , p<.01), g_bio - g_Feta (t(69)= -3.144 , p<.01). Hence, the post hoc test indicates that fixation duration is significant for the place of origin (POP) and the word Feta for the second picture, compared to the word bio, the color (blue) and the shape (square).

Picture 3

According to the post hoc test (corrected criterion Bonferroni a=.01), statistically significant differences were found within the groups. g_color - g_POP (t(69)= -3.691, p<.01), g_color - g_Feta (t(69)= -3.237, p<.01), g_POP - g_shape (t(69)= 3.737, p<.01). The post hoc test shows that there is significance for the place of origin (POP) and the word Feta for the third picture, compared to the color (red) and the shape (square).

Picture 4

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_bio - g_POP (t(69)= -2.949, p<.008), g_Feta - g_logo (t(69)= 2.897, p<.008), g_bio - g_Feta (t(69)= -3.365, p<.008), g_color - g_Feta (t(69)= -3.309, p<.008), g_Feta - g_shape (t(69)= 2.907, p<.008). The post hoc test illustrates that fixation duration is significant for the place of origin (POP) and the word Feta for the fourth picture, compared to the word bio, the eco-label, the color (blue) and the shape (square).

Picture 5

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_logo - g_POP (t(69)= -3.443, p<.008), g_Feta - g_logo (t(69)= 3.040, p<.008). Like the previous pictures, the place of origin (POP) and the word Feta are significant compared to the eco-label for the fifth picture.

Picture 6

According to the post hoc test (corrected criterion Bonferroni a=.007), statistically significant differences were found within the groups. g_color - g_Feta (t(69)= -4.105, p<.007), g_Feta- g_shape (t(69)= 2.973, p<.007), g_image - g_Feta (t(69) = 4.957, p < .007), g_bio - g_Feta (t(69) = -3.865, p < .007). In picture 6, the word Feta and the image of feta cheese are significant compared to the word bio and the shape (square).

Picture 7

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_image - g_POP (t(69)= -4.387, p<.008), g_image -g_shape (t(69)= -2.871, p<.008), g_Feta - g_image (t(69)= 3.753, p<.008). The post hoc test shows that the place of origin (POP), the shape (square) and the word Feta are significant compared to the image of feta cheese for the seventh picture.

Picture 8

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_color - g_image (t(69)= 2.961, p<.008), g_image- g_POP (t(69)= -4.867, p<.008), g_image - g_shape (t(69)= -4.447, p<.008), g_Feta - g_image (t(69)= 5.517, p<.008), g_bio -g_image (t(69)= 3.163, p<.008). In picture 8, the post hoc tests shows that the color (blue), the place of origin (POP), the shape (square), the word bio and the word Feta are significant compared to the image of feta cheese.

Picture 9

According to the post hoc test (corrected criterion Bonferroni a=.007), statistically significant differences were found within the groups. g_color - g_image (t(69)= 3.385, p<.007), g_Feta- g_image (t(69)= 4.475, p<.007), g_logo - g_Feta (t(69) = 3.349, p < .007), g_image - g_POP (t(69)= -4.560, p<.007), g_image - g_shape (t(69) =

-4.695, p < .007), g_bio - g_image (t(69) = 3.346, p < .007). In picture 9, the color (red), the word Feta, the eco-label, the place of origin (POP), the word bio and the and shape (rounded) are significant compared to the image of the feta cheese.

Picture 10

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_color - g_Feta (t(69)= -4.325 , p<.008), g_color - g_POP (t(69)= -3.601 , p<.008). The post hoc test for the tenth picture shows that the word Feta and the place of origin (POP) report significant fixation durations compared to the color (red).

Picture 11

According to the post hoc test (corrected criterion Bonferroni a=.007), statistically significant differences were found within the groups. g_color - g_Feta (t(69)= -4.332, p<.007), g_Feta - g_shape (t(69)= 5.414, p<.007), g_logo - g_Feta (t(69) = 4.999, p < .007), g_logo - g_POP (t(69)= -2.992, p<.007), g_POP - g_shape (t(69) = 3.359, p < .007), g_bio - g_Feta (t(69) = -3.472, p < .007). In picture 11, the word Feta is significant compared to the shape (rounded), the word bio and the color (red), but the eco-label is significant compared to the place of origin (POP).

Picture 12

According to the post hoc test (corrected criterion Bonferroni a=.007), statistically significant differences were found within the groups. g_color - g_Feta (t(69)= -5.103, p<.007), g_Feta - g_shape (t(69)= 4.995, p<.007) , g_logo - g_Feta (t(69) = - 4.105, p < .007), g_color - g_POP (t(69)= -3.046 , p<.007). The post hoc test shows that the word Feta, the shape (rounded) and the place of origin (POP) are significant compared to the eco-label and the color (red) for the twelfth picture.

Picture 13

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_color - g_Feta (t(69)= 2.662,

p<.008), g_Feta - g_shape (t(69)= 4.773, p<.008), g_logo - g_Feta (t(69) = - 2.967, p < .008). For picture 13, the post hoc test shows that the color (blue) and the word Feta is significant compared to the eco-label. In picture 13, the word Feta is significant compared to the color (blue), the shape (rounded) and the eco-label.

Picture 14

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_color - g_POP (t(69) = - 3.934, p < .008), g_color-g_Feta (t(69)= - 4.488, p<.008), g_Feta - g_shape (t(69)= 5.005, p<.008), g_bio - g_Feta (t(69) = - 2.667, p < .008), g_POP - g_shape (t(69) = 2.646, p < .008). In picture 14, the place of origin (POP), the word Feta are significant compared to the shape (rounded) and the color (blue), but the word bio is significant when compared to the word Feta.

Picture 15

According to the post hoc test (corrected criterion Bonferroni a=.007), statistically significant differences were found within the groups. g_color - g_POP (t(69) = - 3.417, p < .007), g_color-g_Feta (t(69)= - 4.315, p<.007), g_Feta - g_shape (t(69)= 5.639, p<.007), g_logo - g_shape (t(69)= 4.973, p<.007) and g_POP - g_shape (t(69)=4.595 , p<.007), g_Feta - g_logo (t(69)= 3.37, p<.007), g_bio - g_POP (t(69)= - 3.23 , p<.007), g_bio - g_logo (t(69)= -2.976, p<.007), g_bio - g_Feta (t(69)= -4.323, p<.007), g_color - g_logo (t(69)= -3.272 , p<.007). In picture 15, the place of origin (POP), the eco-label and the word Feta are significant compared to the color (blue), the word bio and the shape (rounded).

Picture 16

According to the post hoc test (corrected criterion Bonferroni a=.008), statistically significant differences were found within the groups. g_color - g_POP (t(69) = - 4.688, p < .008), g_color -g_Feta (t(69)= -6.243, p<.008), g_Feta - g_shape (t(69)= 8.312, p<.008), g_image - g_shape (t(69)= 2.724, p<.008) and g_POP - g_shape (t(69)=6.078 , p<.008). In picture 16, the place of origin (POP), the word Feta and the

image of feta cheese are significant compared to the shape (rounded) and he color (blue).

Figure 4: Heatmap showing the attention paid to specific feature on one of the package designs

Figure 5: Gaze plot showing a representative eye movement from one participant on one of the package designs

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Study 2: Semi-structured interviews

After the eye-tracking experiment, 12 respondents were asked supplementary questions in the form of semi-structured interviews. Seven of them were female and five were male, with age ranging from 24 to 52 years old.

During the interview, personal heatmaps (example shown in Figure 4) and gaze-plots (example shown in Figure 5) for each respondent were presented to justify their eye-movement. The use of two methods was implemented because qualitative research techniques (such as semi-structured interviews) in combination with projective techniques gain a better understanding of respondents' perceptions (Donoghue, 2000). Hence, semi-structured interviews were used to gather detailed information (Bermingham and Wilkinson, 2003) about participants' perceptions of ecological agricultural product packaging. Semi-structured interviews are considered useful in the sense that helped collect answers like "why consumers prefer one type of packaging feature over another?" (De Ruyter and Scholl, 1998). An interview guide was used to help researchers collect a comparative dataset by asking all participants the same questions. Each interview lasted between 12 to 17 minutes.

Eco Labels

Considering the impact of eco-labels on product packaging, 10 out of 12 interviewed participants noticed the eco label. From the remaining two, the first mentioned that:

"I did not look at it at all, I was impressed by the color and the packaging only".
(Man, 28 years old, biologist)

While the other highlighted that the reason she didn't notice was that she was not wearing her eye-glasses. In particular she said that:

"I did not see the eco-label because I did not wear my glasses. People over 40 typically suffer from presbyopia. That's why companies should change the fonts and size of Eco labels. I do not go shopping with my eye-glasses".

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(Woman, 44 years old, unemployed)

Collectively, 10 out of 12 participants are aware of the existence of eco-labels in product packaging while at the same time they can recognize them during shopping time. However, one participant mentioned that it is important to be written in the package that a product is biological. She said:

"I recognize the eco-labels. However, I believe it is necessary to have both the text BIO and the eco-label on the package".

(Woman, 44 years old, unemployed)

In the same vein, one of the two participants that does not recognize eco-labels on packaging products highlighted the importance of a text that displays the word "bio".

"No, I do not recognize them (eco-labels). That's why I want the information to be in text (on the package)".

(Woman, 51 years old, civil servant)

Regarding whether consumers take into consideration eco labels on their buying decisions, 9 out of 12 participants agreed that they consider eco-labels when they go shopping. However, all the nine respondents are a bit hesitant towards eco-labels as to whether the information they provide is true or not.

"Yes (I consider eco-labels on my buying decision), but as far as I know the controls for product certification are not so strict".

(Woman, 27 years old, medical doctor)

"Yes, of course I would buy an eco-labeled product. But if it does not have the same effect as the conventional one, I will return to the conventional (e.g. Detergent)".

(Woman, 44 years old, unemployed)

From the remaining three participants, two of them stated that the only reason for not considering eco-labels on their buying decisions is the higher price. Finally, the last one declared that he seldom considers eco-labels when go shopping. They said:

"No, because I have no financial means to buy eco-friendly products".

(Man, 32 years old, private employee)

"No, I do not consider buying these products at all, because they are more expensive".

(Man, 28 years old, biologist)

Considering their intention to buy an eco-labeled product in a higher price (given that they can financially afford it) compared to a conventional one, all respondents stated that they are willing to make such a purchase. However, 9 out of 12 support that it depends on the range of the price difference in the sense that the difference must be justifiable.

"I would buy an eco-product at a higher price, depending of course on the difference of the price. However, I understand that eco-products require higher quality production process".

(Man, 27 years old, pharmacist)

"I would buy an eco-product at a higher price, depending on the range of the price difference. I think eco-labels say the truth about product's quality".

(Woman, 30 years old, archaeologist)

On the other hand, 3 out of 12 participants mention that they do not care about the range of the price difference if the quality of the eco-product is high.

"If I'm sure about the origin and the quality of the eco-product, I would buy it regardless of the higher price".

(Man, 32 years old, agronomist)

"I want the products that I buy to be ecological/organic. This reflects the quality and I do not care at all about the price difference."

(Woman, 34 years old, academic professor)

"If the eco-product is effective and high in quality, I don't care about the price".

(Woman, 44 years old, unemployed)

Product Image

Considering the impact of image vs text on the product packaging, only 4 out of 12 noticed the image on the package. From the eight participants that did not notice the image, four of them justify this behavior on the fact that they read the text and that was enough to understand the kind of the product. The feature "text" is used as substitute for "image".

On the other hand, 11 out of 12 participants read the text. They stated that reading the textual information on product packaging is a common action.

"I read the text. I read the PDO of Mytilene, I am interested in this information".
(Woman, 26 years old, medical doctor)

"I worked on it (the text). I always read the text".
(Man, 32 years old, agronomist)

"I wanted to check the origin (Mytilini) and if it is a PDO product".
(Woman, 52 years old, nursing home)

Packaging Color

Regarding the packaging color, 11 out of 12 prefer the blue package. From them, 10 out of 11 consider that red color is deterring. Finally, one of them supports that blue package fits well with Greece and Greek products.

"I starkly prefer the blue package. The red threatened me".
(Woman, 24 years old, agronomist)

"I prefer the blue because the red bothers me, blue is a calm color".
(Man, 27 years old, pharmacist)"

"I prefer the blue. It refers to Greece and the sea".
(Man, 35 years old, medical doctor)

Packaging shape

Considering the shape of the package, 11 out of 12 respondents agreed that they would choose the angled package. There are mainly two reasons for this preference. The first one lies in their habitual use. They are used in buying such a product (Feta) in angled packages. Furthermore, they declared that the rounded package often reminds other products like yoghurt or ice-cream.

"I prefer the angled package. I'm used to it. Squared is the shape of feta cheese, angled should be the shape of the package".
(Man, 32 years old, agronomist)

"I like the angled package more, because I am used to it. The other package relates to yogurt".

(Woman, 51 years old, civil servant)

The second reason why they prefer the angled package design lies in terms of usability. In particular, 6 out of 11 consider this angled design to be more usable. The square shape refers to the shape of the slice of the product, so it can be cut more easily for servicing.

"I prefer the angled design. It is easier to use it, because it helps cut the slice rectangular to serve".

(Man, 35 years old, medical doctor)

Regarding the research questions and the hypotheses, Table 2 shows an overview of the main findings.

RQ/Hypothesis	Result	Explanation
RQ1: *Do eco-labels draw consumers' attention on packages of organic agricultural products?*	Yes	Eco-labels grabbed participants' attention compared to other package features.
RQ2: *Do consumers take into consideration eco-labels in their buying decisions?*	Yes	Most of them do but many reported that they would like to see the eco attributes of the product explained in text.
RQ3: *Are consumers aware of eco-labels on product packages?*	Yes	Most of them are; even though there is a misunderstanding due to variety of different eco-labels.
RQ4: *Are consumers willing to buy an eco-labeled product in a higher price compared to a conventional*	No	Some of them are, many of them are not but they insisted that it depends on both the degree of the higher price and the effectiveness of the product.

one?		
H1: *Product images on packages of organic agricultural products will draw more attention compared to textual information.*	Not supported	The image of the feta cheese gathered considerably less attention compared to the text.
H2: *Packages of organic agricultural products which are characterized by blue color will be more preferred by consumers compared to red color packages.*	Supported	Most respondents mentioned that the red color frightened them for this specific product.
H3a: *Rounded packages of organic agricultural products will be more preferred by consumers compared to angled packages.*	Not supported	Eye tracking data show that participants did not pay attention to the shape of the package; whereas interviews reveal that the angled shape is preferable compared to the rounded.
H3b: *Rounded packages of organic agricultural products influence more positively the intention to purchase the product compared to angled packages.*	Not supported	Although the qualitative data provide no connection between package shape and intention to purchase, it is safe to assume that rounded shape has no relation to purchase behavior as it is not preferred by participants when compared to the angled shape.

Table 2: RQs and Hypotheses overview

Conclusions

In this study we chose not to use an existing feta cheese brand name to avoid false associations, nor to create a new one. Thus, we used the word Feta as the product's name and even placed it in the middle of the package in bold and big font size (as seen in Figure 2). The statistical analysis show that the word Feta grabbed the participant's attention compared to all the other features of the package. Similarly,

the place of origin (in Greek the initials POP are used to indicate the Protected Place of Origin) reported significant results when compared to all the other features. Even through the interviews it is identified that participants do care about the place of origin when buying feta; some of them even said that they care about it more than they care about eco-labels.

Interestingly, the word bio in the text ("product of bio agriculture") and the eco-label, when present, grabbed the participants' attention compared to many of the other features. The image of the feta cheese is significant when compared to some features (i.e. shape and color), but not significant when compared to other (i.e. place of origin, the word Feta). Indeed, the interviews reveal that participants will read the text and avoid looking at the image because the text provides all the information that they need to this specific product.

Surprisingly, the data shows that neither the shape nor the color of the package are significant compared to the rest of the features in nearly all sixteen packages. On the other hand, most of the interviewees said that they prefer the blue color and the angled shape when it comes to feta cheese packaging.

The findings indicate that people are more interested in the brand name as well as the place of origin when buying feta cheese but seem not to care about the shape nor the color of the package. From a managerial point of view, there is evidence that the information that is better attended to is expected to drive consumer decision-making. Hence, managers should emphasize more on highlighting the brand name and the place of origin as it seems to add value on the package along with any bio features, rather than investing in changing the package shape or color. The appearance or absence of the feta cheese image seems to play little importance when it comes to packaging, thus managers can choose to opt in or out of this one.

Lastly, there is evidence to support that buyers pay attention to the presentation of eco-labels, but they also want the bio features to be highlighted in the form of text.

Thus, managers should make sure that the one does not substitute the other, rather they complete each other.

As a final remark, bigger font size is more preferable among consumers, especially for agricultural products.

Limitations

Although our findings shed some light into the packaging of bio feta cheese, we acknowledge some limits. For example, the laboratory setting, the forced exposure to the packages, and the immediate response measures limit the generalizability of this study.

Another limitation is that we were unable to use real packages, rather we created pictures of different package designs. If we had the opportunity to use a portable eye-tracker we would be able to test real packages instead of computer representations. For example, shape and texture cannot be fully appreciated through a flat image on screens. In fact, this is a very interesting recommendation for future research to compare differences between the data obtained from real packages compared to package designs as representations. In a real life experiment it is likely that the effects of touch-inviting elements of the package would be significant.

Also, a limitation is the amount of time exposed to the pictures (2.5 seconds for each picture) which affects the average fixation duration on the pictures. For example, for billboard advertisements studies have found that the size of the advertisement influences participants' looking times (Rayner *et al.,* 2001). Similarly, the size of the package might influence participants' fixation duration.

It is possible that the most important limitation lies in the fact that this study focused only on one specific product; even though product type has been identified as an important factor in green and social advertising research (Royne *et al.,* 2012).

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Lastly, the presentation of price on the package was intentionally avoided for this study. However, participants were asked about price during the interview. It would be beneficial to examine whether consumers pay more attention to the price rather than the rest of the package features and whether their attitude changes when different prices are shown.

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