



Contents lists available at ScienceDirect

Ecological Economics

journal homepage: www.elsevier.com/locate/ecolecon

Analysis

Organic food consumption in Europe: International segmentation based on value system differences

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ARTICLE INFO

Article history:

Received 4 June 2010

Received in revised form 29 March 2011

Accepted 27 April 2011

Available online xxx

Keywords:

Cross-European comparison

International market segmentation

Organic products

Theory of Planned Behavior

Values

ABSTRACT

In this paper, we analyze the market for organic products in eight European countries, based on differences in their respective value systems. With a significant sample of 8014 consumers, we first identify international segments in the European organic products market using the Values Theory. Then we apply the Theory of Planned Behavior to examine how European consumers use attitudes, subjective norms and perceived behavioral control to form their purchase intention for organic products. Results show that subjective norms are the main underlying factor driving consumer behavior concerning these products. This effect is higher for the group of countries whose citizens score higher on Schwartz's value scale. In this segment of countries, people are more likely to be affected by what others think, which means that the best approach is to increase social awareness of the relevance of purchasing organic products. Organic products represent a potentially profitable opportunity for companies with an international horizon. Results are also useful for consumers and public administrations.

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1. Introduction

The increasing concern of Western societies about how some products may be profoundly harmful to the environment has led to a higher demand for organic products, sustainable business activities and stricter regulations from national governments (Gurău and Ranchhod, 2005). Indeed, some consumers have reportedly changed their purchase behavior in favor of producers who sell organic products and/or engage in green policies (Kassaye, 2001). Environmentally friendly behavior has become increasingly relevant to countries, companies and consumers alike (Kaufmann et al., 2009; Kletzan et al., 2006; Low and Davenport, 2005).

In terms of revenues, Europe is the second largest market for organic foods in the world. According to BioFach (2010), European sales of organic products in 2008 rose by 10% over the previous year and are estimated at €18 billion. The 2009 report shows that Europe's biggest organic markets include Germany (€5.8 billion), France (€2.6 billion), Italy (€1.97 billion) and the United Kingdom (€2.5 billion). Organic sales in other European countries are €724 billion in Denmark, €623 million in Sweden, €350 million in Spain, €74 million in Finland and €58 million in Greece. Mediterranean countries (Italy, Spain and Greece) are important producers and exporters of organic

fruit and vegetables, while the Northern European countries are large consumers. Nearly 90% of all consumers in the USA, the largest market in the world, would opt in favor of organic products if they were to cost the same as the nonorganic alternatives (B.B.M.G. Report, 2008). These examples show that "green values" can help differentiate products, but also that there is little doubt about the need to identify market segments that are more willing to purchase organic products.

While not all managers currently view consumers as a driving force for corporate environmental responsibility, the experiences of some prominent organizations with entrepreneurs that report a deep-rooted commitment to explicit social–environmental issues are successful examples of environmentally responsible marketing (Shandu et al., 2010). Many companies are increasingly aware of this trend and conscious of the increasingly important demand for organic products in the Western and developing world. Worldwide, the market for organic products is growing fast (Gurău and Ranchhod, 2005), but in many cases domestic supply cannot satisfy the demand for organic products, which create interesting opportunities for firms internationally (Tyburski and Zakovska-Biermans, 2003).

Since consumer behavior varies across countries, it is worthwhile to identify international market segments that are more interested and willing to choose organic products. That way, marketers can understand and respond appropriately to the core needs and wants of the various international consumer segments (Ter Hofstede et al., 1999). However, although it has often been argued that organic products represent a profitable opportunity for firms as well as a healthy choice for consumers (Gurău and Ranchhod, 2005), it is not clear how companies could segment international markets to

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persuade consumers effectively, keeping in mind the cross-cultural differences in consumer value systems. Therefore, it is crucially important to identify different segments of consumers to be able to approach them in a suitable way.

This study contributes to existing literature in that it provides empirical insight into the role of values in the purchase of organic products. The Theory of Planned Behavior (TPB) is the basic theoretical framework used to explain the behavior of European consumers toward organic food products (Arvola et al., 2008). The main contribution of this paper is the confirmation of cultural dimensions as moderator in the relationships within the TPB. Our findings will help marketers segment the market of organic products and thus allow them to target prospective customers in different European countries. Additionally, the results will also help governments design successful public awareness campaigns concerning organic products.

2. Consumer Purchase of Organic Products. Segmentation Based on Values

Organic agriculture is defined as “a holistic production management whose primary goal is to optimize the health and productivity of interdependent communities of soil, life, plants, animals and people” (UNCTAD, 2006). Organic products are goods that respect the environment and that are manufactured without the use of synthetic pesticides, herbicides, chemical fertilizers, growth hormones, antibiotics or gene manipulation (Chen, 2009). Organic production combines best environmental practices, a high level of biodiversity, the preservation of natural resources and the application of high-animal welfare standards, providing higher quality products to respond to certain consumers' demand (de Magistris and Gracia, 2008).

Recent literature has proven the convenience of the Theory of Planned Behavior framework to analyze sustainable food consumption (Vermeir and Verbeke, 2008) and organic food consumption (Aertsens et al., 2009; Dean et al., 2008). The TPB is one of the most influential conceptual frameworks used to study human action (Ajzen, 2002). The central dependent variable is consumer intention, which is an indication of a person's readiness to behave in a certain way (Ajzen, 1991), for instance, the intention to buy organic products. The TPB identifies three antecedents of intention. First, attitude toward a certain behavior is defined as the degree to which that behavior is positively or negatively evaluated, with attitudes ranging from an unfavorable to a favorable evaluation of the focal stimulus. In our context, it refers to the overall evaluation of organic products. Secondly, subjective norms are related to the social pressure people perceive when deciding whether or not to engage in a certain behavior, or the beliefs and shared expectations in a society and people's desire to adhere to them. Finally, perceived behavioral control refers to people's perception of their ability to behave in a certain way. In our case, people may have a positive attitude toward organic products and have the approval of their peer group, but they may be unable to afford organic products or simply not be able to buy them in the area where they usually do their shopping.

Additionally, the TPB has been used as a basis for explaining differences between countries. Pavlou and Chai (2002) adopted a TPB perspective to investigate people's intentions to carry out transactions online in China and the United States. Chai and Pavlou (2004) analyzed the differences between Greece and the United States with regard to the adoption of electronic commerce, adding uncertainty avoidance as a moderator. Januszewska and Viaene (2001) used the TPB to study the differences between Belgian and Polish consumers regarding their intentions to consume chocolate. Kalafatis et al. (1999) used this framework to identify the determinants of consumers' intention to buy environmentally friendly products in the United Kingdom and Greece. General support for the theory is summarized in a meta-analysis carried out by Armitage and Conner (2001).

A better understanding of international markets has been associated to the identification of distinctive target segments that

may include consumers from more than one country (Batra and Tse, 2003). Quite often, national characteristics have been used as a basis for international segmentation (Hassan et al., 2003). Particularly, culture-based segmentation has been shown to help identify substantial international segments (Steenkamp, 2001).

Schwartz (1994) developed a framework based on seven basic cultural values: conservation (interdependent social relations where security, conformity and tradition are priorities), hierarchy (legitimacy of the hierarchical ascription of roles and fixed resources – social power, authority, humility and wealth), intellectual autonomy (values that situate the person as an autonomous entity who pursues his or her goals of intellectual interest – curious, open minded, creative), affective autonomy (interest in promoting and protecting the attainment of positive affective experiences – pleasure, exciting life, varied life), competency (values give priority to the dominance of the surroundings through self-affirmation – ambition, success, risk), harmony (harmonious fit with nature and the environment – unity with nature, protection of the environment, world of beauty) and egalitarian compromise (concern for the well-being of others – equality, social justice, responsibility, help). Due to their wide application in international segmentation (Dekimpe et al., 2000; Helsen et al., 1993), we use Schwartz's seven cultural dimensions in this study.

Aertsens et al. (2009) suggest, from a theoretical perspective, the convenience of combining the TPB and Schwartz's values for a better understanding of consumers' behavior regarding organic products. Bonne et al. (2007) also stated that additional individual characteristics such as values could improve the predictive power of the TPB. From an empirical perspective, previous research, such as the study conducted by Pavlou and Chai (2002), has proven that Hofstede's cultural values moderate the relationship between attitude and intention in the context of electronic commerce when comparing countries. These authors also compared Greece and the United States and demonstrated that uncertainty avoidance, a cultural dimension proposed by Hofstede (1980), acts as moderating variable within the TPB (Chai and Pavlou, 2004). Furthermore, Tan et al. (2004) found that the dimensions of national culture suggested by Hofstede moderate the strength of the relationships in the TPB. Recently, Dinev et al. (2009) conducted a cross-cultural study to analyze the differences between South Korea and the United States in user behavior toward protective information technologies. They demonstrated that cultural factors moderate the relationship between subjective norms and behavioral intention. If the results from these publications are added up, the influence of culture turns out to be more general in the sense that cultural dimensions, not only just one of them, impact the relationships of the three antecedents of the TPB model (attitude, subjective norms and perceived control) with the dependent variable, behavioral intention. Therefore, our main hypothesis predicts that Schwartz's cultural dimensions will moderate the three main relationships within the TPB model. Fig. 1 shows these moderating effects.

In sum, our proposal to explain purchase intention of organic food in Europe and identify segments of countries consists of two pillars: the Theory of Planned Behavior and the Values Theory. Both frameworks have been applied in cross-cultural studies, as discussed in the previous paragraphs. Grunert and Juhl (1995) used the Schwartz value system on a sample of Danish teachers to analyze the influence of their values on their attitudes toward the environment, as well as the effect of those attitudes on the purchase of organic products. They found that individuals who score high on collectivist (vs. high on individualistic) values have a more favorable environmental attitude. However, our approach goes beyond that of Grunert and Juhl (1995). First of all, not only do we focus on attitude but we add the two other explanatory variables that the Theory of Planned Behavior proposes, subjective norms and perceived behavioral control. Secondly, these authors do not conduct any cross-cultural comparison regarding organic consumption. Thirdly, instead of the sequence values–attitude–behavior that Grunert and Juhl suggest, we

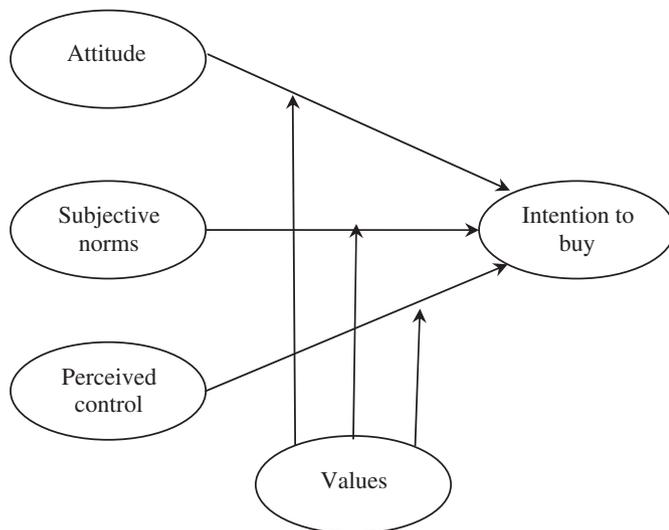


Fig. 1. The TPB model.

do propose a moderating role of cultural dimensions in each of the relationships included in the TPB model.

3. Methodology

3.1. Procedure

To select the focal organic product, we needed to identify an organic product whose purchase and consumption were aimed at satisfying a homogeneous need in all the countries under investigation and, also, that was available in all of the participating countries. Padel and Foster (2005) have shown that organic vegetables are among the most frequently cited products associated with organic food. Indeed, organic fruit and vegetables are products with a wider range of varieties. To gain insight, we conducted focus groups in all the countries. The results showed that fresh tomato and tomato sauce are two products that satisfy very similar needs across eight countries.

We used data from the eight European countries that were involved in a research project concerning consumer behavior related to organic food: Denmark, Finland, Germany, Greece, Italy, Spain, Sweden and the United Kingdom. Data collection was carried out by consultants in each country, with the instructions that households had to be randomly selected in major cities. Participants had to be above 18 years old, be at least in partial charge of grocery shopping in their household (in the latter case, the person with the next birthday was asked to complete the questionnaire) and purchase fresh tomatoes or tomato sauce. The national samples were randomly assigned to one of the two versions of the questionnaire: one subsample filled in the questionnaire on organic tomatoes, the other on organic tomato sauce. In some countries the questionnaire was sent by mail, together with a prepaid return envelope, while in others it was delivered and collected by hand at home. Therefore, in both cases the data collection method was a self-administered questionnaire. The response rate varied between 5 and 10% in the case of the questionnaires sent by mail and between 30 and 45% in the case of personal delivery. Prior to the quantitative data collection, a screening questionnaire was administered. There were roughly the same percentage of respondents in each of the age groups 18–30, 31–45 and 46–65 years. The questions were related to the concepts proposed in the Theory of Planned Behavior (Ajzen, 1991) as well as Schwartz's value scale.

Two identical questionnaires (organic fresh tomatoes and organic tomato sauce) were used to collect the data in each of the eight countries. Translation equivalence assured that respondents in

different countries interpret the measurement instrument similarly, and that goes beyond the mere verbatim translation of the items. The initial questionnaire was written in English, then translated into the various languages, and later translated back into English to assure consistency. Bilingual speakers assisted the national leaders in the translation of the questionnaire, which was pretested in every language before the final data collection was conducted. Attitude, subjective norms, perceived behavioral control and behavioral intention scales were adapted from Ajzen (1991). The items were scored on a 7-point Likert scale. Following previous literature (Krystallis et al., 2008; Schwartz et al., 2001), and driven by space limitation in the questionnaire, we used an abridged version of Schwartz's Portrait Value Questionnaire consisting of 17 items to measure values.

3.2. Samples Description

Table 1 provides a description of the samples. As far as the contribution of each country to the total number of organic consumers in the sample is concerned, Denmark represents the highest percentage, with almost a quarter of the total sample, whereas Spain contributes the lowest, with less than 5%. We also asked consumers about their perceptions regarding organic products (either fresh tomatoes or tomato sauce): how likely was it that organic products had specific characteristics in comparison with conventional produce (7 point Likert scale). The means regarding the perceptions about organic products' features for the two types of stimuli were quite similar. Consumers perceived organic tomatoes (with or without industrial processing) as more expensive, better for the environment, healthier, more natural and freer from chemicals than conventional produce. However, they did not think they look less attractive, keep fresh for less time or are not really organic. The sample sizes are also included in the table. Our total sample consists of 8014 consumers.

4. Results

Our main hypothesis predicts that consumers' values play a moderating role in the relationship between the TPB antecedents and behavioral intention. In other words, we propose that the differences in cultural dimension scores among the segments of countries will lead to differences in the strength of the relationship between the TPB independent and dependent variables.

To test the hypothesis, in the following subsections, we first identify the groups of countries emerging from the consumers' value

Table 1
Samples profile.

Country	Age	Gender	Income	Habitat	OCC/OCT	OCC/n	n
Italy	41.86	0.64	87.80	61.10	8.94	27.47	1000
Denmark	49.00	0.76	40.70	15.00	24.11	66.67	1003
United Kingdom	45.62	0.79	56.30	29.00	10.01	30.8	980
Finland	48.12	0.75	50.70	20.20	13.58	38.42	855
Greece	40.97	0.76	68.40	51.40	7.08	20.9	1043
Spain	43.06	0.89	56.70	22.70	4.58	13.88	1006
Germany	47.26	0.54	72.90	21.10	13.10	39.98	999
Sweden	48.92	0.67	51.50	23.10	18.59	47.79	1128
Total	45.58	0.72	60.70	30.62	100.00	35.81	8014

Age = average age in the sample.

Gender = percentage of females in the sample.

Income = percentage of consumers with intermediate or upper household income.

Habitat = percentage of percentage of consumers living in cities with more than 250,000 inhabitants.

OCC/OCT = percentage of organic consumers in the country sub-sample (OCC) relative to the number of organic consumers in the total sample (OCT) (subjects who bought organic products at least once a month were classified as organic consumers).

OCC/n = percentage of organic consumers in each country sample.

n = sample size.

Table 2
Average scores per country and cultural dimension.

	Harmony	Egalitarianism	Affective autonomy	Mastery	Conservatism
Denmark	2.61	2.23	3.33	2.50	2.70
Finland	2.01	2.03	3.19	2.38	2.17
Germany	2.26	2.01	2.81	2.01	2.01
Greece	2.36	2.10	2.85	2.03	2.08
Italy	1.90	2.09	3.25	2.00	2.27
Spain	1.77	1.77	2.51	2.19	1.77
Sweden	2.59	2.17	3.22	2.64	2.61
U. Kingdom	2.52	2.17	2.67	2.02	2.14
Mean	2.25	2.07	2.98	2.22	2.22

structures. Both a cluster analysis and the application of the cultural distance index lead to the identification of four segments of countries. Then, we proceed to estimate the structural model, after reporting scales' reliability and measurement invariance across groups. Finally, separate structural models are estimated for the four groups of countries.

4.1. Identification of Groups

With the 17 value items used in the questionnaire we built five cultural dimensions that help us to describe the countries (see Table 2): harmony (two items, alpha = 0.94), egalitarianism (five items, alpha = 0.79), affective autonomy (five items, alpha = 0.85), mastery (three items, alpha = 0.76) and conservatism (two items, alpha = 0.79). Interviews with professionals and consumers allowed us to assure that these are the Schwartz's cultural dimensions that are more related to the products data collection focuses on.

We applied cluster analysis using the items averaged by country as input variables, and countries as observations, to determine which countries were more similar. Ward's hierarchical agglomerative method was used to determine the number of clusters in the dataset (Hair et al., 1998). The large increase in the agglomeration coefficient (71.14%) was observed at the stage in which four clusters were reduced to three, which suggested that two very distinct clusters had been combined. Therefore, identifying four groups better accounted for similarities and differences of the eight countries (Table 2). Cultural dimension scores of Denmark and Sweden were higher and closer than those of the other countries. Spain showed the lowest values for four out of the five dimensions, and even in mastery its score is low. Italy and Finland showed low values of harmony and high values of affective autonomy, while differing in mastery. The fourth group, finally, is composed of Germany, Greece and the United Kingdom and showed lower scores of affective autonomy and mastery. Similar results were obtained when the cultural dimensions scores averaged per country were introduced in the cluster analysis.

Some researchers have suggested using cultural indices, turned into cultural distance scores, to measure the extent to which various cultures are similar or dissimilar (Clark and Pugh, 2001; Shenkar,

2001). They have been widely used in cross-cultural research (Magnusson et al., 2008; Ng et al., 2007; Shenkar, 2001). Indeed, Cho and Padmanabhan (2005: 309) state that "no international business study can be considered complete unless there is an explicit variable controlling for cultural distance." Literature has relied on Kogut and Singh's (1988) cultural index, which is based on Hofstede's cultural dimensions (Tihanyi et al., 2005). Harzing (2004) highlighted that "the number of publications incorporating cultural distance as one of their independent variables has boomed" (p. 76). The index is calculated as the arithmetic average of the variance-corrected differences between the scores of Hofstede's (1980) four cultural dimensions. The mathematical representation is:

$$CD_j = \sum_{i=1}^4 \frac{\{(I_{ij} - I_{ia})^2 / V_i\}}{n}$$

Where: CD_j = cultural difference between the a th and the j th country; I_{ij} = j th country's score on the i th cultural dimension; I_{ia} = a th country's score on the i th cultural dimension; V_i = variance of the i th dimension; n = number of cultural dimensions.

Kogut and Singh's index has recently proved to be appropriate for Schwartz's scale as well (Ng et al., 2007). Distance scores were calculated for each pair of countries (Table 3). As expected, the closest country relative to Denmark in terms of its cultural scores is Sweden. Low scores also appear for Italy and Finland and among Greece, Germany and the UK. These results confirm those obtained with the cluster analysis. Therefore, we decided to establish four segments of countries: Denmark and Sweden in one group, Finland and Italy in a second group, Spain forming another group, and Germany, Greece, and the United Kingdom in a fourth group.

4.2. Preliminary Results

After defining the segments, we begin the structural modeling analysis. So far, we have drawn no distinction between fresh tomatoes and tomato sauce, because values are related to individuals and, as such, independent of product category. Nevertheless, from this point onward, we will analyze the two products separately.

First of all, we report purchase intentions among the eight countries. Table 4 shows that Greece, Italy and Spain have a higher purchase intention for these two organic products, which came as a bit of a surprise because these nations contribute the least to the organic consumers in the total sample (Table 1). Nonetheless, this result is consistent with Mostafa's (2007), who concludes that there is a weak link between intention and the actual purchase of organic products. Moreover, metric equivalence may have affected data, such that scores obtained from respondents in different countries may have different meanings (Bhalla and Lin, 1987). This explanation is ruled out with the similar Cronbach alphas across countries we found (Parameswaran and Yaprak, 1987), as shown below. An additional explanation could be the exposure effect. The exposure of consumers in Greece, Italy and Spain to organic products is lower (lower

Table 3
Cultural distance scores.

	Denmark	Finland	Germany	Greece	Italy	Spain	Sweden	U. Kingdom
Denmark	0							
Finland	1.76	0						
Germany	3.03	0.91	0					
Greece	2.26	0.93	0.12	0				
Italy	2.34	0.54	0.87	0.82	0			
Spain	6.67	2.19	1.44	2.28	2.83	0		
Sweden	0.14	1.46	2.81	2.19	2.49	6.05	0	
U. Kingdom	2.36	1.67	0.45	0.17	1.55	3.06	2.32	0

Table 4
Differences in purchase intention across countries.

	F (df)	Denmark	Finland	Germany	Greece	Italy	Spain	Sweden	UK
Fresh	38.15 (7)*	4.01 ^b	4.11 ^b	4.01 ^b	4.71 ^a	4.68 ^a	4.57 ^a	3.95 ^b	4.40
Sauce	18.38 (7)*	3.40 ^b	4.03	3.68 ^b	4.80 ^a	4.45 ^a	4.54 ^a	3.98 ^b	4.24

Means in the same row with different superscripts differ significantly ($p < 0.05$) by the Scheffe test. UK differs ($p < 0.05$) from Sweden for fresh and from Denmark, Greece and Germany for sauce. Finland differs ($p < 0.05$) from Denmark, Greece and Spain for sauce.

* Significant at 0.01 level.

consumption rates and lower degree of market presence), which makes these products more appealing than when consumers are more frequently exposed to these products (both with regard to consumption rate and market presence).

Initial consistency estimate Cronbach alphas were calculated for the scales and for each country and type of product. Reliability estimates proved acceptable. The mean value was 0.79 and 0.76 for fresh and sauce samples, respectively, which are higher than the target reliability of 0.70. Regardless of the generally acceptable values of the reliability estimates, after applying a confirmatory factor analysis (CFA), some items were deleted because of the low factor loadings (below 0.3) and/or high modification indices. Based on those results, we used four items for attitude and two items for perceived control, subjective norms and behavioral intention. Cronbach alphas are shown in Table 5.

Common method bias can cause problems if data from single informants are used for dependent and independent variables. We employed Harman's single-factor test as reviewed by Podsakoff et al. (2003). Principal component analysis on the variables included in the model revealed three factors with eigenvalues greater than 1 for both products, accounting for 65.1% and 64.0% of the variance for fresh tomato and tomato sauce samples, respectively. Results showed that common-method variance does not appear to be a problem since (a) several factors were identified, (b) the first factor did not account for the majority of the variance (35.1% and 35.5% for fresh tomato and tomato sauce samples, respectively), and (c) no general factor can be observed in the unrotated structure (Podsakoff et al., 2003; Reinartz et al., 2004).

4.3. Invariance Testing

Measurement invariance refers to an assessment of a measure that has been used for more than one group to determine whether the measurement is equivalent and invariant across groups (Byrne, 2003). In cross-cultural studies, there is always a question as to whether scores in different cultural samples can be compared (Van De Vijver and Tanzer, 1997). If the invariance condition is not met, apparent differences between groups could indeed cover up measurement problems. Little (2000) noted that items on a scale must be interpreted and responded to in the same way across groups, and that, after this condition has been met, the cultural differences could be examined in valid and meaningful ways. Construct comparability (factor invariance)

holds when the corresponding measurement parameters (factor loadings) of a construct are equivalent across the groups of interest (Meredith, 1993). Using a CFA approach, the idea is to constrain any set or all parameters to be invariant across groups (Marsh, 1994). If the factor structure is invariant, we can use the scales with some confidence to compare the countries under investigation.

We conducted CFA with LISREL 8.7 (Joröskog and Sörbom, 2004), using robust maximum likelihood, with data from the 10 items that measured the four constructs needed to estimate the TPB model for organic products. These analyses were performed for both types of stimuli in each country, to test whether the a priori model fits the data for each of the eight samples. The results were acceptable, since the main goodness of fit indices reached the required thresholds (Table 6).

Subsequently, we tested the conceptual model using the total sample of consumers (TS in Table 7). Again, goodness of fit statistics reached the required thresholds, and we therefore started performing invariance models across the eight countries.

When validating measurement across groups, configural and metric invariance have to be tested using multiple-group CFA (Steenkamp and Baumgartner, 1998). The various measures were analyzed to test their psychometric properties. Configural invariance of the scales was supported, as the CFA model fit was good for both types of products (see Table 7 [M1]). All factor loadings were significant at $p < 0.001$, and the (within-group standardized) factor loadings were all above 0.5. All factor correlations were significantly below unity ($p < 0.001$), supporting discriminant validity between the constructs (Anderson and Gerbing, 1988).

Critical values for the tests of measurement invariance of the CFA models were evaluated by the examination of χ^2 difference tests. However, recent studies suggest that this information should be complemented with changes in CFI and RMSEAs (Chen, 2007). Those additional indices present advantages over chi-square difference tests, the latter being known to be oversensitive to sample size and to violations of multivariate normality. This aspect is especially relevant due to the big sample size we have in our data set. A decrease in CFI of 0.01 or less and an increase in RMSEA difference of 0.015 or less between a more restricted model and the preceding one indicate that the invariance hypothesis should not be rejected (Chen, 2007).

Following the hierarchical analytic step (Joröskog and Sörbom, 2004), the unrestricted model M1 was then compared with a constrained one, M2, in which the factor loadings were restricted so as to be invariant across samples (Bollen, 1989). The goodness of fit

Table 5
Cronbach's alpha per country and type of stimulus.

	α	Denmark	Finland	Germany	Greece	Italy	Spain	Sweden	UK	Total sample
Fresh	Attitude	0.91	0.84	0.84	0.87	0.89	0.86	0.87	0.88	0.88
	Norms	0.68	0.65	0.74	0.60	0.64	0.60	0.53	0.74	0.66
	Control	0.73	0.72	0.66	0.57	0.69	0.61	0.72	0.73	0.73
	Intention	0.92	0.92	0.92	0.82	0.88	0.76	0.86	0.87	0.88
	Values	0.85	0.83	0.85	0.88	0.85	0.83	0.82	0.89	0.86
Sauce	Attitude	0.86	0.87	0.85	0.86	0.88	0.85	0.86	0.86	0.86
	Norms	0.61	0.57	0.73	0.56	0.65	0.58	0.50	0.68	0.63
	Control	0.67	0.67	0.65	0.56	0.65	0.58	0.60	0.70	0.67
	Intention	0.88	0.89	0.91	0.81	0.89	0.75	0.85	0.90	0.87
	Values	0.84	0.84	0.84	0.89	0.84	0.86	0.83	0.89	0.86

Table 6
Goodness of fit in confirmatory factor analysis in each country.

	χ^2		RMSEA		NNFI		CFI		GFI		SRMR	
	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce
Denmark	128.75	90.32	0.083	0.065	0.97	0.98	0.98	0.98	0.93	0.95	0.033	0.045
Finland	101.59	102.04	0.076	0.078	0.97	0.96	0.98	0.98	0.94	0.94	0.034	0.041
Germany	92.31	123.86	0.066	0.081	0.98	0.97	0.99	0.98	0.96	0.94	0.026	0.034
Greece	91.24	116.42	0.064	0.076	0.98	0.97	0.99	0.98	0.95	0.94	0.040	0.041
Italy	102.99	48.19	0.072	0.036	0.98	0.99	0.99	0.99	0.95	0.96	0.033	0.027
Spain	101.43	62.62	0.070	0.048	0.97	0.98	0.98	0.99	0.95	0.97	0.038	0.030
Sweden	143.58	105.02	0.081	0.070	0.96	0.97	0.97	0.98	0.94	0.95	0.042	0.037
U. Kingdom	90.48	112.27	0.066	0.077	0.98	0.97	0.99	0.98	0.96	0.94	0.028	0.037
Total sample	575.51	541.41	0.068	0.068	0.98	0.98	0.98	0.98	0.96	0.96	0.028	0.029

indices for M2 was good (Table 7). Although the increase in χ^2 was significant between M1 and M2 for both fresh tomatoes and tomato sauce (144.7 and 142.63 with 42 degrees of freedom, $p < 0.001$), the decrease in CFI was an insubstantial 0.003 for both CFA models and the increase in RMSEA (0.0005 and 0.001, respectively) was also very low. This falls within the benchmark recommended by Chen (2007), indicating that the factor loadings were the same for all the countries. These findings provide strong evidence to support the metric invariance of the measures. We then estimated M3, in which all factor loadings, factor variances and factor covariances were imposed to be equal between countries. Since M3 was nested within M2, M3 was subsequently compared to M2, using the χ^2 difference test, CFI, and RMSEA values. The χ^2 differences were significant (401.48 and 315.91 with 70 degrees of freedom, $p < 0.001$), but the CFI differences were 0.009 and 0.007 for fresh tomato and tomato sauce, respectively, and 0.0049 and 0.0042 in RMSEA, which meant they met the criterion. Finally, we estimated M4, in which we additionally imposed item uniqueness invariance. Comparing M4 with M3, the differences in CFI were below the threshold of 0.01 (0.005 and 0.004 for fresh tomatoes and tomato sauce, respectively), and the same occurs with RMSEA and the threshold of 0.015 (0.0029 and 0.0014) with χ^2 differences significant (239.15 and 153.93 with 35 degrees of freedom, $p < 0.001$). Therefore, the model structure was considered to be the same across the eight countries, indicating that the measurement equivalence criterion was met.

4.4. Structural Modeling

After establishing measurement invariance, separate structural models were estimated for each of the eight samples. Overall, the fit statistics indicate that the TPB provides a good fit to the data for all the countries. Consequently, the total group could be divided into the four blocks of countries identified through the cluster analysis and confirmed by Kogut and Singh's cultural distance index.

Next, using SEM to determine whether the strengths of relationships among constructs hold across the four groups (Durvasula et al., 1993). We first estimated an unconstrained model (M5), in which the data of the four groups (segments of countries) were analyzed simultaneously and no constraints were imposed. All fit statistics fall within the accepted ranges, indicating that the same structural model form applies to the four groups (Table 8). Next, a

constrained model (M6) was estimated in which all the structural paths were imposed to be equal across the four samples. The difference in χ^2 applies and showed significant statistical differences at $p < 0.001$ for both fresh tomatoes and tomato sauce. Moreover, goodness of fit indices also showed a slight improvement.

Therefore, we could conclude a priori that there were differences among the four segments for the path coefficients. Results are highly consistent across segments for both types of products, although less significant paths appear for purchase intention of tomato sauce. Table 9 reports results for the models in which all paths were freed for the four groups and for each product (M5 in Table 8). The unstandardized weights were used to discuss these results because they are comparable across samples and retain their scale effect (Hair et al., 1998). Goodness of fit indices stayed within the required ranges. Pair comparisons between groups show significant differences ($p < 0.05$) except for the comparison between the groups Italy–Finland and Germany–Greece–UK, with almost the same pattern for both products. Considerable portions of the variance in purchase intention of the organic product ($R^2 = 0.72$, and 0.74 for fresh tomato and tomato sauce, respectively) were explained by the models.

Results show that the three antecedents of the TPB exert a significant influence on purchase intention. However, their relative weight varies, becoming some of those antecedents even nonsignificant for particular combinations of segments of countries and product. First, perceived behavioral control plays a residual role in both types of stimuli, although its effect is slightly higher and always significant for fresh tomatoes, while it may even be nonsignificant for processed organic products. In other words, the effort people have to make in terms of time, money, etc., is of relatively little importance in people's decision of whether or not to buy organic food. Nevertheless, for perishable products like fresh tomatoes, availability and ease of purchase become more relevant. Because such goods cannot be stored long, consumers want them to be available when they are needed. This suggests that, although it has a low score, perceived control is significantly present across the four segments of countries for decisions concerning organic fresh products. By contrast, because tomato sauce can be stored for much longer, perceived control is even considered nonsignificant for some European consumers (Denmark–Sweden and Italy–Finland).

People's attitudes toward organic products represent the second most important variable in explaining purchase intention. Therefore,

Table 7
Summary of the CFA models and goodness of fit statistics for the eight countries.

	χ^2		Df		RMSEA		NNFI		CFI		GFI		RNI	
	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce
TS	575.51	541.41	29	29	0.0681	0.0669	0.9753	0.9753	0.985	0.984	0.9636	0.9643	0.9848	0.9841
M1	998.32	790.35	267	267	0.0735	0.0630	0.9736	0.9786	0.980	0.984	0.9331	0.9410	0.9804	0.9842
M2	1143.02	932.98	309	309	0.0730	0.0640	0.9740	0.9780	0.978	0.981	0.9245	0.9325	0.9777	0.9811
M3	1544.50	1248.89	379	379	0.0779	0.0682	0.9704	0.9750	0.969	0.974	0.9160	0.9208	0.9688	0.9737
M4	1783.65	1402.82	414	414	0.0808	0.0696	0.9681	0.9740	0.963	0.970	0.8938	0.9125	0.9633	0.9701

Table 8

Comparison between the restricted and the unrestricted structural models.

	χ^2		df		RMSEA		NNFI		CFI		GFI	
	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce	Fresh	Sauce
M5	1016.52	861.95	185	185	0.066	0.061	0.978	0.980	0.977	0.979	0.960	0.946
M6	1067.67	909.27	194	194	0.066	0.061	0.978	0.980	0.976	0.978	0.959	0.946

the more positive people's attitudes toward the organic food are, the more likely they are to have the intention to buy it. Spanish consumers show the highest influence of this variable, while for Danish and Swedish consumers it is not significant for the processed product.

Undoubtedly, it is subjective norms that interest us the most, since this variable shows the biggest variation among groups and their relative weight is also higher than those of attitude and control. The coefficient for subjective norms in Denmark and Sweden always exceeds the estimate for the other segments of countries, while in Spain it shows the lowest impact. The significant influence of subjective norms across segments is consistent with the fact that the purchase of organic produce is public, i.e., other people could see the consumer at the moment of buying the organic tomatoes and somehow approve the decision.

Consumers in Denmark–Sweden report higher scores in cultural dimensions and are strongly affected by subjective norms in their intention to buy organic products. Their conservatism (maintenance of status-quo) and mastery (mastery of the social environment and getting ahead of other people) are dominant when they make decisions regarding organic food. Danish and Swedish organic consumers are more aware of the social group to which they belong and are worried about the maintenance of their status quo within the group. At the opposite end, we find Spain, with low scores on cultural dimensions and with Spanish consumers relying more on their own assessment to purchase organic food products. Lower scores of harmony with nature, egalitarianism, affective autonomy, and conservatism lead Spaniards to assign less relevance to subjective norms, while showing greater impact of how they assess the products (attitudes) and the required effort to obtain them (perceived control), compared to other European countries. These results confirm our hypothesis predicting that Schwartz's cultural dimensions moderate the relationships within the TPB model when explaining the intention to buy organic products. Given that we have grouped countries based on their cultural dimensions, we relate the differences in the influence of each antecedent (attitudes, subjective norms, and perceived behavioral control) on purchase intention of organic products with cultural differences. In other words, differences such as the small influence of social norms for Spanish consumers of organic products and the high influence of this variable for Danish and Swedish consumers can be explained by differences in cultural values, as these three countries belong to two different cultural groups.

The other two segments of countries (Italy/Finland and Germany/Greece/UK) show similar coefficients for the three antecedents of

intention to buy organic products. The reason behind this similar relevance of the three factors may be linked to their scores in cultural dimensions too. If we average scores in each group, we can see that both show similar scores in three out of the five dimensions (egalitarianism, mastery and conservatism). Moreover, while they differ in harmony and affective autonomy (and that is why the segmentation procedure identifies four segments) in both of these two cultural dimensions they show scores that lay between those of Spain and Denmark/Sweden. In summary, they do not show a very distinctive pattern in cultural dimensions and this may explain their similar results in the coefficients associated with the antecedents of intention to buy organic products.

5. Discussion

In this paper, we explain the differences in the antecedents of purchase intention with regard to organic products in eight European countries, introducing cultural dimensions as moderators. More specifically, we segment the market for organic products into those eight countries, based on differences in the various national value systems. Data from over eight thousand consumers provided insights into the underlying variables that drive people's intention to purchase organic food.

Our analyses allowed us to divide the eight countries into four groups, based on scores in Schwartz's cultural dimensions (Denmark and Sweden as a group, Italy and Finland as another group, Spain as a one-country segment, and the UK, Germany and Greece as the last group). Thus, our main contribution is that we have managed to identify four major segments of European countries whose citizens' antecedents of purchase intention for organic products show differences that are related to the countries' cultural values. The findings shed light on the discrepancy in consumer behavior across Europe with respect to purchasing organic food.

Our study offers consistent results for raw and processed products (fresh tomato and tomato sauce) and reveals that the main factor causing differences among segments is subjective norms, with the exception of Spain. People are affected by normative beliefs concerning the expectations of important referents when facing decisions regarding organic products. Consumers from Denmark and Sweden, the two countries with the highest scores on cultural dimensions, are more conditioned or affected by what is socially acceptable, whereas those from most countries in the sample are governed by this factor to a lesser extent, although in both cases subjective norms exert the highest influence on people's intentions to buy organic products, relative to attitude and perceived

Table 9

Unstandardized parameter estimates in each group.

	Fresh				Sauce			
	Denmark and Sweden	Italy and Finland	Spain	Germany, Greece and UK	Denmark and Sweden	Italy and Finland	Spain	Germany, Greece and UK
Attitude to intention	0.42 (3.95)	0.50 (5.18)	0.63 (5.14)	0.45 (5.61)	0.13 (1.12)	0.51 (4.01)	0.61 (4.64)	0.51 (5.66)
Norms to intention	1.01 (8.76)	0.85 (7.80)	0.39 (2.81)	0.81 (8.74)	1.30 (10.48)	0.90 (6.45)	0.47 (3.29)	0.84 (8.33)
Control to intention	0.17 (4.29)	0.07 (2.19)	0.19 (4.31)	0.12 (4.02)	0.08 (1.54)	0.02 (0.49)	0.14 (2.38)	0.09 (2.61)

Note: Asymptotic robust t-values between brackets.

behavioral control. However, social norms exert the lowest influence in Spain, the segment with the lowest scores on cultural dimensions. Our findings point, therefore, toward a clear and positive association between cultural dimensions and the relevance of social norms in people's intention to purchase organic products. With this contribution, we add an explanation to previous findings, like Vermeir and Verbeke (2006) who reported that the desire to comply with other people could explain strong intentions to purchase sustainable dairy products despite weak personal attitudes. We also need to highlight the fact that our findings can be at odds with previous research. In fact, one of the main conclusions derived from the meta-analysis conducted by Armitage and Conner (2001: 471) about the efficacy of the TPB model is that "the subjective norm construct is generally found to be a weak predictor of intentions." A possible explanation for the deviation from the general rule is that, in our setting, many consumers do not have enough information to distinguish between organic and nonorganic food in terms of properties. Maybe the only source of information is the product's label. Since that information may still be insufficient for decision-making, consumers tend to rely on other people's opinion to make up their minds. Additionally, from a methodological point of view, Armitage and Conner (2001) linked the poor performance of the subjective norms component to the use of single items measure. We used two items in the present study, and that could have also contributed to a higher relative weight of the variable.

The residual influence of perceived control across segments supports the finding by Randall and Gibson (1991), whose research showed that the addition of perceived behavioral control to the initial Theory of Reasoned Action does not increase its predictive power.

With regard to cultural dimensions, results in terms of their moderating effect are consistent with the social nature of those cultural dimensions. As we assimilate culture through socialization, a higher relevance of cultural dimensions is related to a stronger perceived social pressure or stronger awareness of information about what behavior is most appropriate or beneficial (Bamberg et al., 2007). This effect is especially relevant to the consumption of organic products, because the importance of social norms for environmentally responsible behavior is thoroughly documented in literature (Biel and Thøgersen, 2007).

The results of this study have important implications for marketers. Companies that market organic products in the countries we examined should consider our findings when deciding how to segment them, in order to be able to develop a more effective marketing approach. Once the segments have been identified, companies can decide whether or not to offer different products to specific segments or to offer basically the same product but with a different positioning, depending on the segment-specific benefits and values the product is perceived to provide. Denying or ignoring the existence of segments of countries within the whole sample will cause marketers to miss out on the opportunity to address their target customers in a proper way. Additionally, governments wanting to increase the consumption of organic products may support this initiative, which means that they should also take note of our conclusions and use our findings in their efforts to increase public awareness. Public information campaigns should focus not only on individual consumers, but also on consumer organizations, if they are to succeed in encouraging people to buy organic food. At this point, we should also highlight the fact that maybe not all consumers do really know what organic food is, which contributes to a certain level of uncertainty, the reduction of which is of interest for both companies and public administrations. Nonetheless, as attitudes are not the main driver of purchase intention of organic products, providing information about what other people do and think about organics may be even more effective. In that sense, if relevant referent groups adopt organic food their behavior may be imitated by others: the higher the number of consumers, the higher the social pressure to buy.

Although the authors of this study feel that the results presented here definitely have merit, they are not without limitations. To begin with, we have dealt with only two product categories, fresh tomatoes and tomato sauce. The results may be different when other products

are included. Secondly, we have focused on developed European countries and have not included the developing countries in Eastern Europe. These limitations offer potential avenues for future research such as the replication of our study with low- and high-involvement products and with Eastern and Western European countries. Finally, studying the organic product market structure (points of sale, price levels, product variety, etc.) in each country could provide greater insight into the effective moderating effect of cultural dimensions, as those market structures may have a stronger influence on consumer intention to purchase organic products and its antecedents, reducing the moderating effect of cultural dimensions.

6. Conclusions and Directions for Future Research

Global sales of organic food have dramatically increased lately. Consumers have come to expect greener products and services, and companies have responded, either by promoting new products that are safer for the environment or by emphasizing attributes that make their existing products green. Because these transactions take place in a globalized world, firms need to target their products at markets that span national boundaries. Nevertheless, competitive clout is difficult to attain if companies do not understand and respond to the core consumer values and needs (Ter Hofstede et al., 1999).

With this study we show that cultural values can explain differences in how consumers build purchase intention for organic products. First, we identify international segments in the European organic products market using the Values Theory. Then we apply the Theory of Planned Behavior to examine the consumption of organic products in these European segments. The contribution of this paper to existing literature is the evidence it presents with regard to how European consumers use attitudes, subjective norms and perceived behavioral control to form their purchase intention for organic products. Results show that subjective norms are the main underlying factor driving this consumer behavior. Nevertheless, the effect is higher for the group of countries whose citizens score higher on Schwartz's value scale. In these countries, people are more likely to be affected by what others think, which means that the best approach is to increase social awareness on the relevance of purchasing organic products. Organic products represent a potentially profitable opportunity for companies with an international horizon. However, if they are to exploit the promise of this market successfully, they need to know how to segment the market to approach consumers effectively. Results are also useful for consumers and public administrations that may benefit from and be interested in, respectively, the organic market.

Acknowledgment

This research was co-funded by European Commission through project no. QLK1-2002-02446, the grant ECO2009-13170 from the Spanish Ministry of Science and Innovation and by the Fundación Séneca-Agencia de Ciencia y Tecnología de la Región de Murcia (Spain), under the II PCTRM 2007-2010. Authors also thank the support provided by Fundación Cajamurcia.

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