UNIVERSITY OF MILAN
UNIVERSITÀ DEGLI STUDI DI MILANO

PHD. PROGRAMME IN AGRICULTURAL ECOLOGY – XXVII CYCLE
CORSO DI DOTTORATO DI RICERCA IN ECOLOGIA AGRAIA - XXVII CICLO

PhD. Thesis
Tesi di Dottorato di Ricerca

OPPORTUNITIES FOR ORGANIC MARKET DEVELOPMENT IN PORTUGAL

From understanding to promotion of certified organic food purchase

Catarina CRISÓSTOMO

Supervisor
Docente Tutor
Prof. Guido Sali

PhD. Coordinator
Coordinatore del Dottorato
Prof. Graziano Zocchi

Academic year 2013/2014

To my dear parents,
for all opportunities they have given me and especially for the blessing of life

Ai miei cari genitori,
per tutte le opportunità che mi hanno dato e soprattutto per il dono della vita

Sull' INQUINAMENTO E CAMBIAMENTI CLIMATICI

"La tecnologia che, legata alla finanza, pretende di essere l'unica soluzione dei problemi, di fatto non è in grado di vedere il mistero delle molteplici relazioni che esistono tra le cose, e per questo a volte risolve un problema creandone altri."

Santo Padre Francesco
Lettera Enciclica "Laudato Si' - sulla cura della casa comune" (2015)

ACKNOWLEDGMENTS

First and foremost, I would like thank to the over eight hundred persons who are at the core of this study for their time and availability.

I would also like to offer my deepest thanks to Professors Ana Sampaio and Ana Luísa Janeira, for their noble guidance and critical review.

Thanks also to Professor Raffaele Zanoli, Professor Cristina Marreiros, Professor Bernardo Pacheco de Carvalho, Inês Guedes and Carolina Peralta, who, in different stages of this work, were crucial to allow its continuation.

Thanks so much to Professor James Gaskin, for his tireless knowledge-sharing, making structural equation modeling accessible to all who are new to it.

My sincerest thanks to my supervisor, Professor Guido Sali. Without his belief in me, this dissertation would never have existed.

I would also like to thank Professor Graziano Zocchi, as a coordinator of this PhD. programme, who supported me right from the beginning of this research project.

A very special thanks to my beloved husband, Alfredo Sendim, for the insightful discussions, constant loving, dedicated friendship and for showing me every day that the only limits to work and creative capacity are the bounds of nature.

I am eternally grateful to my parents, sister, brother-in-law and nephews, for their love, support and understanding throughout life.

I am also particularly indebted to the University of Milan for the generous opportunity to develop this research on the Portuguese organic market.

Last but not least, I would like to express my deep thanks to all the Portuguese organic producers and processors who have co-sponsored this study with their products: Alcagoita, Biodiversus, Cantinho das Aromáticas, Casa de Valbom, Casa do Couto, Casta Lusa, Cayena, Delta Cafés, Diese, Ervital, Herdade de Carvalhoso, Herdade do Escrivão, Herdade do Freixo do Meio, Herdade dos Lagos, Herdade dos Outeiros Altos, Quinta da Palmirinha - Vinibio, Quinta d'Avó - Marovina, Quinta de Jugais, Quinta do Arneiro, Quinta do Montalto, Quinta do Pedragal, Quinta dos Lopes, Montes de Paladares, Risca Grande, Vale Tisana and Tinta Grã.

ABSTRACT

This study applies the theory of planned behaviour (TPB) to examine Portuguese consumers' purchasing behaviour with regard to certified organic food products. Drawing on survey and focus group data, consumers' attitudes are found to play a determinant role in purchase decisions, namely, to the extent that their beliefs about the consequences of purchasing organic food are grounded in product knowledge and experience. Perceived behavioural control and subjective norms also exert a significant, although smaller, influence on consumers' purchase intentions. An extended version of the TPB, including personal norms as an additional predictor of purchase intention, is also tested but there is no evidence to support an independent role of moral considerations in this context. Still, results suggest that the attainment of one's personal values is inextricably linked to the most strong and stable favourable attitudes towards purchasing certified organic food. Practical implications of research findings are offered for all who have an interest in enhancing the market share of organic food products.

Keywords: Organic food, theory of planned behaviour, consumer purchasing behaviour, structural equation modeling, focus groups, behavioural change intervention, Portugal

AGROBIO	Portuguese Organic Farming Association
AIC	Akaike Information Criterion
ARBIO	Organic Produce Retailers Association
ATT	Attitude towards the behaviour
AVE	Average Variance Extracted
BEH	Behaviour
BIOCOOP	Organic Agriculture Produce Consumers Cooperative
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
CSA	Community Supported Agriculture
DNA	Deoxyribonucleic Acid
DWLS	Diagonally Weighted Least Squares
EC	European Community
EEC	European Economic Community
ETPB	Extended Theory of Planned Behaviour
EU	European Union
FAO	Food and Agriculture Organization
GFI	Goodness-of-Fit Index
IFOAM	International Federation of Organic Agriculture Movements
INT	Intention
INTERBIO	Inter-Professional Organic Farming Association
GMO	Genetically Modified Organisms
MI	Modification Indices
ML	Maximum Likelihood
PBC	Perceived Behavioural Control
PN	Personal Norms
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modeling
SN	Subjective Norms
SRMR	Standardized Root Mean Square Residual
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
US	United States
USA	United States of America
USDA	United States Department of Agriculture
VIF	Variance Inflation Factor
WHO	World Health Organization
WLSM	Mean-adjusted Weighted Least Squares
WLSMV	Mean- and Variance-adjusted Weighted Least Squares
WTP	Willingness to Pay

Abbreviations

α	Cronbach's coefficient alpha
ab	Indirect effect of the independent variable on the outcome variable
β	Unstandardized structural path estimate
B	Standardized structural path estimate
BSc.	Bachelor of Science
c	Total effect of the independent variable on the outcome variable
c'	Direct effect of the independent variable on the outcome variable
χ^2	Chi-square
$\Delta\chi^2$	Chi-square difference statistic
D^2	Mahalanobis distance
H	Hypothesis
λ	Standardized factor loading
L	Unstandardized factor loading
M	Means
MSc.	Master of Science
N	Number of cases within the sample
No.	Number
P	Probability of obtaining the observed results if the null hypothesis is true
PhD.	Doctor of Philosophy
q	Number of estimated free parameters
r	Correlation coefficient
R^2	Squared multiple correlation coefficient or coefficient of determination
Reg.	Regulation
SD	Standard Deviation

Units

€	Euro
%	Percentage
ha	Hectare

CHAPTER 1 - INTRODUCTION

Agroecology is a scientific discipline that provides ecological concepts and principles for the holistic study, design and management of sustainable agroecosystems (Altieri, 1995). As such, agriculture is regarded as an ecosystem in which ecological processes found under natural conditions also occur. Moreover, the key idea of agroecology is that enhanced ecological interactions and synergisms provide the mechanisms for agroecosystems to sponsor their own soil fertility, productivity and crop protection, ensuring long-term sustainability of production with fewer negative environmental or social impacts and minimal dependence on external inputs (Altieri, 1995; Altieri and Rosset, 1995).

This research, carried out within the framework of the PhD. programme in Agricultural Ecology of the University of Milan, assumes that promoting the development of organic farming, a production system that sustains agricultural productivity while preserving the natural environment by applying agroecological methods, will help to assist in the desirable transition into more sustainable agroecosystems. Yet, despite being globally on the rise, organic agriculture occupied only 1 per cent of the total agricultural land in 2013 (Willer and Lernoud, 2015). In looking to the future, it is suggested that a more radical shift towards sustainable farming systems crucially depends on organic food market growth.

In Portugal, the organic food market has grown remarkably after the turn of the century, but in spite of this significant growth, consumption of organic products remains negligible as a share of total food purchases (Crisóstomo, 2011). Hence, the aim of this study is to provide guidelines for the design of effective marketing strategies focused on increasing the demand for certified organic food products and, thus, supporting existing farmers and encouraging further conversion to organic production.

For this, an in-depth understanding of the factors determining the purchasing behaviour of the Portuguese with respect to certified organic food was required. Consumer decision making was conceptualized using Ajzen's (1985, 1991) theory of planned behaviour (TPB) and an extended version of the TPB, which included personal norms as an additional relevant construct, taking account of the role of moral considerations in shaping organic food purchase decisions.

Research data were generated from adults residing in Portugal, who were the main or joint household food purchasers, representing three different levels of experience with regard to certified organic food purchasing. Also, a quota was set for gender, as women tend to be the primary responsible for food preparation and shopping.

Structural equation modeling (SEM) was used to test the hypothesized relationships proposed by the TPB and the extended TPB models on the basis of survey data from a nationwide sample of 704 respondents. The maximum likelihood method was employed to estimate the parameters of the models, along with a bootstrap procedure, due to the departure from multivariate

normality in the data.

Additionally, data drawn from focus groups held with 47 individuals in two Portuguese cities, Lisbon and Montemor-o-Novo, respectively representing urban and rural dwellers, provided for complementarity of quantitative findings. Namely, content analysis of participants' narratives allowed to explore the underlying beliefs, importance and interaction of the theoretical determinants of certified organic food purchasing behaviour.

The use of convenience sampling resulted in a research sample that is not representative of the Portuguese adult population. However, despite its lack of generalizability, reliable inferences for the sample at hand make a valuable contribution for the purpose of understanding Portuguese purchasing behaviour within the context of certified organic food. It is up to those who seek to use the research findings to examine the sampling protocols and analytical procedures used in this study and then decide the degree to which the results might be applied to their specific situation.

In this dissertation, quantitative and qualitative data are analysed and reported separately. An integration of quantitative and qualitative findings is offered in the conclusions and marketing implications of this research.

CHAPTER 2 - LITERATURE REVIEW

This chapter is organized in two distinct sections. The first section of this chapter provides an overview of the grey and scholarly literature concerning the emergence and current status of organic food production and consumption all over the world and in Portugal. The second section provides an overview of the theory of planned behaviour (TPB), used as a conceptual framework to analyse consumer decision-making with regard to certified organic food products. Following, theoretical justification and empirical evidence for the inclusion of personal norms within the TPB model is provided. Lastly, as a prelude of the qualitative research carried out as part of this study, the expectancy-value model used to measure theoretical constructs is introduced.

ORGANIC PRODUCTION AND MARKET

Definitions of organically farmed food

Organic food is food which is produced using organic production methods. Today, definitions for organic farming are multiple and legally protected by eighty-two nations (Huber *et al*., 2015), but the first definitions were developed within the organic agriculture movement. Particularly, IFOAM (International Federation of Organic Agriculture Movements), the worldwide umbrella organization for the organic sector founded in 1972, proposed the following definition:

"Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved." (IFOAM, 2015a)

The Codex Alimentarius, established by a joint commission of the United Nations Food and Agriculture Organization (FAO) and World Health Organization (WHO) to develop harmonised international food standards, also adopted a definition for organically produced foods in 1999:

"Organic agriculture is a holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, cultural, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system." (Codex Alimentarius Commission, 2013)

As a last example, the Council Regulation (EC) No. 834/2007 on organic production products, which applies to all Member States of the European Union, also comprises a definition for this production system:

"Organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes." (European Union Council, 2007)

These definitions reflect the convergence of the agroecological production principles on which organic agriculture is based. Essentially, agriculture is regarded as an ecosystem, which requires an integrated management approach moulded to nature's image.

Its productivity and stability is sustained by enhancing functional biodiversity, with a consequent increase of the interactions among the biological components operating at the field level and re-establishment of natural biogeochemical cycles. Specifically, the soil as a living entity is at the heart of the organic farming system, which is attained through high levels of organic matter and biological activity. Therefore, organic agriculture emphasizes the use of ecologically sound and locally adapted techniques such as crop rotation, polyculture, intercropping, cover crops, mulching, cultivation of legumes, incorporation of compost and crop residues, application of plant extracts for phytosanitary control, and preservation of traditional varieties and breeds. These, substantially reduce the need for external agricultural inputs, particularly of those resulting from chemical synthesis such as fertilizers, pesticides, veterinary drugs and genetically modified organisms, thus minimizing adverse effects on natural resources, whose conservation is central to the maintenance of human wellbeing of present and future generations.

In what regards organic animal husbandry, appropriate feeding, housing, stocking densities and other rearing conditions such as outdoor access, natural reproduction, avoidance of mutilations and normal day-night rhythm, ensure that the physiological and behavioural needs of animals are met, thus providing high levels of animal welfare.

IFOAM further defined the ethical principles of organic agriculture referring to the values of health, ecology, fairness, and care (IFOAM, 2015b), which were formulated within the framework of a participatory process involving the broader organic community (Padel *et al*., 2007). The above discussion about the definition of organic agriculture mostly covered the principles of health and ecology, which respectively consider the importance of the health of the interconnected whole and its foundation on ecological systems and cycles. Instead, the principles of fairness and care are less well represented, although research supports that the various stakeholders within the organic movement endorse social and economic aspects of justice, such as safe working conditions and fair prices for farmers, and a precautionary and responsible management of resources and technologies (Padel *et al*., 2007; Padel *et al*., 2010).

Origins and recent development of organic agriculture

Agriculture has been a historical problem. According to Jackson (2002), there is archaeological evidence that, throughout the centuries of existence of Greek and

Roman civilizations, deforestation and excessive tillage has caused soil fertility decline and erosion and, hence, land degradation. Interestingly, in the 19th century both conventional scientists and organic pioneers invoked imminent soil depletion to propose solutions to increase productivity of agriculture, marking the beginning of the split between the two (Niggli, 2007; Stinner, 2007).

Liberty Hyde Bailey, the Cornell University dean, in his publications "The Outlook to Nature" (1905) and "The Holy Earth" (1915) was the first agricultural writer introducing the theme of working in harmony with nature (Jackson, 1992, 2002). But more significant was "Farmers of Forty Centuries" (1911), the book wrote by Franklin H. King, chief of the USDA Division of Soil Management, after travelling through China, Korea and Japan in the early 20th century, describing an agriculture based on crop rotations, green manuring, intercropping, soil conservation and recycling of organic matter, which had proven to be sustainable over centuries (Sligh and Cierpka, 2007; Vogt, 2007).

People involved in the early development of organic farming were influenced by this alternative form of farming built on permanent agricultural practices (Sligh and Cierpka, 2007; Vogt, 2007). Yet, it was the mechanization and chemical intensification of farming by artificial fertilizers and synthetic pesticides started in the beginning of the last century and considered responsible for the decay of soil fertility, food quality and the social and economic situation of farmers and rural populations, that definitely gave rise to the organic farming movement (Kristiansen and Merfield, 2006; Sligh and Cierpka, 2007; Vogt, 2007).

Many pioneers, influenced by each other, led this movement in different parts of the world. The Austrian philosopher Rudolph Steiner, drawing on the spiritual science of anthroposophy which he developed, was one of the first to outline an alternative farming system in 1924 (Stinner, 2007; Paull, 2011). Steiner died the year after, but his ideas were developed by his followers, leading to the creation of biodynamic agriculture, so called to reflect the biological character of fertilization and the dynamic effects of the cosmic forces (Stinner, 2007; Vogt, 2007). The key concept presented by Steiner was the farm as a living organism and individuality consisting of physical, ethereal, astral and ego forces, and although much of his approach was dismissed from what would become the dominant science-based organic farming, his holistic view concerning the importance of the interrelationships among farm elements and the surrounding environment for healthy functioning and self-regulation set the tone for its subsequent development (Niggli, 2007; Stinner, 2007; Vogt, 2007).

Paull (2006) argues that the term organic farming was coined by Walter James, the fourth Lord Northbourne, influenced by the thoughts of Rudolf Steiner. His book "Look to the Land", published in 1940, was dedicated to the holistic concept of the farm as a living organism in response to monocultural and chemical farming. Still, Sir Albert Howard and Lady Eve Balfour were the most influential advocates of organic farming in the English-speaking world (Vogt, 2007). Howard was an agricultural scientist who, in his 1940 publication "An Agricultural Testament", acknowledged that the health of soil, plants, animals and humans are interrelated and that at their basis is a humus-rich soil (Vogt, 2007). In 1939, strongly influenced by the ideas of Howard, Lady Eve Balfour

launched the Haughley Experiment in England, which was the first long-term experiment comparing organic and conventional farming (Stinner, 2007; Vogt, 2007). Some years later, she published "The Living Soil" (1943) emphasizing the importance of soil ecology for organic farming and later headed the foundation of Soil Association, which nowadays is the major organic farming organization in the UK (Conford and Holden, 2007; Stinner, 2007).

In the German-speaking countries, the beginning of the 20th century saw the emergence of the natural agriculture movement, which promoted green manure, compost and conservation tillage to improve biologically based soil fertility and developed the first concepts of appropriate animal husbandry (Vogt, 2007). Further development occurred during the 1950's, through the work of Hans Müller and Hans Peter Rusch in Switzerland, leading to the spread of an original farming practice called organic-biological agriculture that later became the basis of the first Swiss standards for organic farming (Schmid, 2007; Vogt, 2007).

In the USA, organic agriculture was popularized by Jerome Rodale, who started the magazine "Organic Gardening and Farming" in 1942 and published "Pay Dirt" in 1945 (Vogt, 2007). Inspired by the British organic pioneers, he strongly believed in the importance of restoring and protecting the natural health of the soil to preserve and improve human health (Kristiansen and Merfield, 2006; Sligh and Cierpka, 2007; Stinner, 2007). The Rodale Institute (originally the Soil and Health Foundation) was founded in 1947 to advance organic farming knowledge, running a long-term trial comparing biodynamic, organic and conventional farming systems since 1981 (Stinner, 2007).

In Japan, independent developments were carried out by Mokichi Okada and Masanobu Fukuoka during the 1930's, who practised and promoted natural farming, a no-till with permanent plant mulching strategy with a spiritual underpinning of living in harmony with nature (Scialabba and Hattam, 2002; Kristiansen and Merfield, 2006). Fukuoka is author of the best-selling book "The One-straw Revolution" (1978), describing his philosophy and farming practices.

The publication of "Silent Spring" in 1962 by Rachel Carson was a key turning point for the organic agriculture movement (Kristiansen and Merfield, 2006; Lockeretz, 2007). The book sounded the alarm regarding the dangers of the indiscriminate use of pesticides, particularly as they affected wildlife, launching a consumer movement against the misuse of harmful chemicals in food production (Soule and Piper, 1992; Kimbrell, 2002; Sligh and Cierpka, 2007). From this moment onwards, the concept of environmental sustainability was added to the founders concerns for healthy soil, healthy food and healthy people (Kristiansen and Merfield, 2006).

The modern organic movement was also highly influenced by new modes of political and philosophical thought, including "Limits to Growth" (1972) by Dennis and Donella Meadows and colleagues on the implications of continuous growth on a planet with finite resources and "Small is Beautiful: A Study of Economics as if People Mattered" (1973) by E.F. Schumacher, criticizing modern economic progress at the expense of life quality (Kristiansen and Merfield, 2006; Conford and Holden, 2007).

In the meantime, many national organizations for the promotion of organic farming started to emerge or gain visibility, providing public education and advisory services (Kristiansen and Merfield, 2006; Lockeretz, 2007). As the number of farmers and consumers increased, these organizations started to have the important role of defining standards for organic food production and establishing certification procedures to verify compliance with the standards (Schmid, 2007; Sligh and Cierpka, 2007).

In 1972, the French association Nature et Progrès formed in 1964, played a key role in the formation of the International Federation of Organic Agriculture Movements (IFOAM), together with Soil Association and three other founder organizations (Vogt, 2007). By 1975, IFOAM had grown to 50 member organizations from 17 countries and in 1978 a technical committee drafted the first IFOAM Basic Standards (Geier, 2007; Schmid, 2007). Since then, standards kept continuously expanded and updated by IFOAM members, providing the basis for the adoption of regulations in this area, in particular, in developing and transition countries (Kilcher *et al*., 2006; Geier, 2007; Schmid, 2007).

Organic farming started to become a widespread phenomenon, as consumers' awareness of environmental and food safety implications of agricultural chemicals associated to high nitrate levels, pesticides residues and synthetic food additives grew, while their confidence in organic integrity was nurtured by setting organic standards and working at the local level (Aschemann *et al*., 2007; Lockeretz, 2007; Sligh and Cierpka, 2007). By the 1960's, local organic food cooperatives started to emerge, and in the 1970's the first specialized shops for organic products were created in many central European countries and later on in the USA and Japan, whereas in other countries organic food was being offered for sale in natural or health food stores (Aschemann *et al*., 2007; Sligh and Cierpka, 2007). Further growth in organic agriculture occurred in the 1980's, partly induced by food scares and scandals, such as bovine spongiform encephalopathy (BSE), salmonella and other forms of bacterial contamination, and factory farming practices such as battery cages for hens and use of growth promoting hormones and prophylactic antibiotics (Torjusen *et al*., 2004; Kristiansen and Merfield, 2006; Aschemann *et al*., 2007; Conford and Holden, 2007; Schmid, 2007). More recently, the potentially negative effects of technological advancements in food products, such as food irradiation and genetic engineering came to accrue consumer unease about modern food production (Lyons, 2001; Torjusen *et al*., 2004; Conford and Holden, 2007).

In recognition of the growing consumer interest in organic food and with the emergence of significant overproduction and environmental problems as a result of intensification, the governments of Austria, Denmark, France and Switzerland started the first policy initiatives for national regulations defining organic production in the mid-1980's, followed soon after by national conversion support programmes under the framework of the EU Extensification Programme (Padel and Lampkin, 2007; Stolze and Lampkin, 2009). In 1990, Spain and Finland also introduced legally binding organic standards and most other EU member states had a national definition of organic farming overseen by the organic movement and recognized by producers and consumers (Padel and Lampkin, 2007).

Finally, in face of the growing number of standards and certification labels, the European Commission put into effect Council Regulation (EEC) No. 2092/91 defining rules on organic crop production, processing, labelling and inspection in 1993 and implemented Council Regulation (EEC) No. 1804/1999 for organic livestock production in 2000 (Padel and Lampkin, 2007; Stolze and Lampkin, 2009). The original regulations have been substantially revised, resulting in Council Regulation (EC) No. 834/2007 and associated implementing rules laid down in Commission Regulation (EC) No. 889/2008, which came into force in 2009, with compulsory use of a new European organic logo in all pre-packed organic products since 2010 (Stolze and Lampkin, 2009). In USA and Japan, the two other major markets, national regulations for organic products also came into force in 2002 and 2001, respectively (Aschemann *et al*., 2007). By 2013, 82 countries had fully implemented organic regulations (Huber *et al*., 2015).

In the EU, from the establishment of a regulatory framework, governmental funding for organic farming, although with varying degrees, extended into area payments and certification cost support for producers, training programmes, research projects, extension and advisory services, market development and consumer promotion (Padel and Lampkin, 2007; Stolze and Lampkin, 2009). These policy measures have resulted in unprecedented organic production and market growth, although the US organic market remained in the lead primarily driven by growing product awareness and consequent consumer demand (Kortbech-Olesen, 2003; Padel and Lampkin, 2007).

Concomitantly, increasing demand and clear organic certification rules, led to the involvement of large conventional processors, distributors and retailers in the organic market and to the development of organic production in export-oriented countries, namely in Africa and Latin America, which in turn further boosted organic sales through greater product availability, range and recognition (Claude and Holtmann, 2006; Yussefi, 2006; Aschemann *et al*., 2007).

The growing and globalised organic market, the emergence of large-scale and highly specialized organic production, the rise of organic certification bodies, the creation of government regulations and the involvement of multinational corporations in organic production, processing and retailing attracted by the price premium of organic products has been regarded as threatening to the integrity of the organic movement and its principles (Lyons, 2001; Guthman, 2004; Padel *et al*., 2007; Schmid, 2007; Geier *et al*., 2007; Truninger, 2010).

This process, by which organics increasingly takes on the characteristics of mainstream industrial food system as been called the conventionalization of organic agriculture (Buck *et al*., 1997) and has sparked a renewed interest on the underlying values and principles of organic farming. In response, IFOAM started a global consultation in 2004, which, together with the findings of EU projects on the revision of the organic regulation, ended with the approval of the four main principles of organic agriculture at the IFOAM General Assembly in 2005 (Schmid, 2007; Sligh and Cierpka, 2007). It was established that the principles of health, ecology, fairness and care form the basis from which organic agriculture should grow and develop (IFOAM, 2015b).

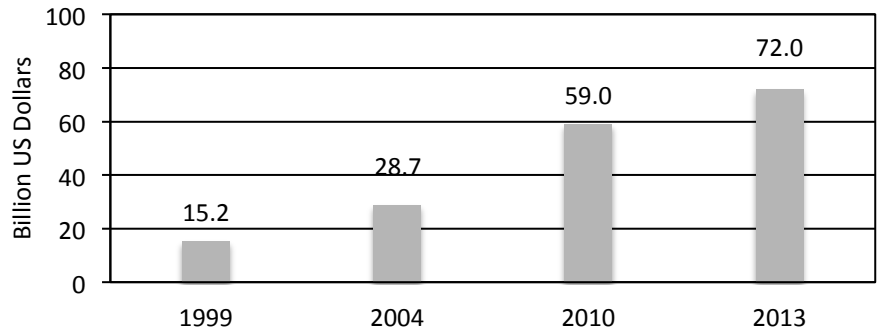
On the consumer side, organic farmers' markets, farm shops, box-schemes,

community supported agriculture are increasing in popularity all over the world (Duram, 2005; Kristiansen and Merfield, 2006; Aschemann *et al*., 2007; Brunori *et al*., 2011; Flores, 2015), in what Goodman and Goodman (2007) defined as post-organic movements, with a refocus on local food systems. Such short value chains based on direct marketing, smaller scale, transparency and community embeddedness are more likely to support the ecological, economic and social dimensions of sustainability embodied in the principles of organic agriculture, aiding to secure its original transformative agenda (Constance *et al*., 2013).

The world organic market

In the year 2013, global retail sales of organic food and drink reached a value of 72 billion US dollars or 54 billion Euros and growth is expected to continue in the coming years (Sahota, 2015). Figure 2.1 shows a positive picture of robust growth in demand at the international level, with average annual growth rates of more than 10% leading to a five-fold increase in the value of the world organic market throughout the 1990's and into the 21st century, even though the economic downturn after the financial crisis of 2008 contributed to the slow down in growth in some countries (Sahota, 2015).

Figure 2.1 - Growth of the world organic market 1999-2003



(Source: Sahota, 2015)

Sales are mainly concentrated in North America and Europe, namely in the United States of America (24 billion Euros), Germany (7 billion Euros) and France (4 billion Euros), although Switzerland and Denmark are the countries with the highest per-capita consumption with more than 200 and 160 Euros, and also with the highest market shares, with organic products comprising about 7% and 8% of the total food sales (Lernoud and Willer, 2015).

In many countries, the growth of demand for organic products outpaces the growth of organic food supply and dependence on imports has prompted organic production in countries all over the world and concomitant development of their domestic markets (Flores, 2015; Sahota, 2015; Willer and Schaack, 2015). Nevertheless, in many developing countries, the adoption of organic agriculture, which is not certified, to improve household food security, through crop diversification, and reduce input costs should not be overlooked (Giovanucci, 2005; Scialabba, 2015).

In total, there were 43.1 million hectares of land under organic management in 2013 (Lernoud and Willer, 2015). Almost half of it is in Australia (17.2 million

ha) and, to a much lesser extent, in Argentina (3.2 million ha), consisting mainly of rangeland areas for certified organic beef production supported both by domestic and export markets (Australian Organic, 2015; Lernoud *et al*., 2015).

Within the EU, Spain and Italy have the largest areas of organic agricultural land (1.6 and 1.3 million ha, respectively), where the prominent production of organic cereals, olives and grapes reflects their Mediterranean location (Lernoud and Willer, 2015). However, Spanish organic farming development has been primarily export-oriented while Italy represented the seventh largest world organic market with sales valued at 2 billion Euros in 2013 (Lernoud and Willer, 2015). In terms of the share of total agricultural land, the highest are in Liechtenstein (31%) and Austria (20%), due to their strong internal markets with more than 120 Euros per-capita consumption (Lernoud and Willer, 2015).

Overall, the European organic market totalled 24.3 billion Euros in 2013 and fruits, vegetables, meat, dairy and bakery products were the major organic foods in terms of turnover, although eggs had the highest market share of their total market, reflecting consumer concerns for animal welfare (Willer and Schaack, 2015). In the recent past, the involvement of major mainstream retailers has promoted strong organic market growth in many European countries but the years following the financial crisis brought about a turn in this trend, with sales growth occurring predominantly through specialized channels due to growing levels of professionalization and shop spaces (Willer and Schaack, 2015).

Organic production and market in Portugal

The roots of the organic agriculture movement in Portugal can be traced back to the 1950's although it was in 1985 that the first organic farming organization AGROBIO (Portuguese Organic Farming Association) was founded (Crisóstomo, 2011). Since then, organic production started to expand slowly, truly taking off after the EU regulation and support policies came into force (Crisóstomo, 2011).

According to the latest agricultural ministry data, the country had 212 346 ha of land surface under organic management in 2014 (DGADR, 2015), representing 5.8% of the total agricultural area, which is in line with the 5.7% of the EU-28 average for the year of 2013 (Willer and Schaack, 2015). This value represents a decrease of 3% of the organic land when compared to 2011, the former year for which there is official data from the agricultural ministry, although the number of certified organic farms increased by 30% and reached a maximum of 3 374, equalling 1.3% of all agricultural holdings and indicating that while some large-scale farmers have withdrawn, a much higher number of small farmers have joined organic farming. Furthermore, although most of the organic agricultural land remains permanent grassland for sheep and cattle production, it is noticed that the horticultural area has doubled (DGADR, 2015), which probably represents a market-driven shift in terms of land use. In fact, most of the marketed organic fresh products that can be produced in the country such as meat, fruits and vegetables, are actually of national origin (Crisóstomo, 2011).

DGADR (2015) further reports that in 2014 there were 515 organic processors certified according to the Regulation (EC) 834/2007 in Portugal, most of them dealing with fruit and vegetables, olive oil, wine and bakery products. Recently,

some national mainstream brands of pasta and dairy have also begun processing organic variants of their existing lead products. Nevertheless, the processing capacity is not yet fully developed with most organic processed products for sale being imported from other EU countries (Dias, 2008; Crisóstomo, 2011).

The origins of the Portuguese organic market lie in the foundation of BIOCOOP in 1993, a cooperative of organic consumers in Lisbon. Since then, the market for organic products has been growing continuously, most remarkably after the turn of the century (Crisóstomo, 2011). In 2004, by the initiative of AGROBIO, the first organic farmers' market was inaugurated in Lisbon and, after 2007, the number of organic specialized shops and organic farmers' markets opening in the main cities of the country rose every year, while mainstream retailers got increasingly involved, expanding the range of organic products and with some even launching their own private labels (Dias, 2008; Truninger, 2010; Crisóstomo, 2011).

On the grounds of an appraisal by the main organic food chain stakeholders, INTERBIO (Inter-Professional Organic Farming Association), which was created in 2005 aiming at representing the organic sector operators, estimated the retail sales value for organic food at 20 to 22 million Euros in 2010 (INTERBIO, 2011). This figure means that the market share for organic produce was less than 0.2% and the average annual expenditure per-capita was of about 2€ (Crisóstomo, 2011). Compared to other member states at that time, per-capita consumption was only lower in Bulgaria, Cyprus, Slovakia and Poland (Schaack *et al*., 2012).

Nevertheless, INTERBIO (2011) further reported an average annual growth rate of over 20% and, despite the absence of more up to date and complete market data, there are signs that the domestic organic market continued to grow robustly since the last report by Crisóstomo (2011). The number of specialized shops in Lisbon increased from three to eight and, according to AGROBIO (2015) and ARBIO (2015), at least twenty-two other specialized shops now exist, mainly, in the main city of the most populated districts, reflecting the higher concentration of organic consumers in these regions (Truninger, 2010). The foundation of ARBIO in 2014, an organic retailers association that seeks to promote organic food, fair commercial practices and cooperation among the organic food chain actors and currently represents fourteen specialized shops (ARBIO, 2015), further witnesses the dynamism of the market. The number of organic farmers' markets, which are held on a weekly basis, also increased from eight to twelve, while organic food box-schemes and online shops have gained visibility, enabling increased access to organic food throughout the country. In 2013, the director of AGROBIO confirmed an overall increase in sales volume based on a growing number of consumers (Diário de Notícias, 2013).

Thanks to the wide range, competitive prices, good service and personalized advice, the majority of organic food purchases should still be primarily made through specialized retail outlets, where they exist. In contrast, the market share of conventional retailers is likely to remain secondary, although the greater involvement of natural food and supplement store chains is noteworthy, selling an extensive range of mainly non-fresh organic products and thus widening its availability to more locations.

Determinants of organic food consumption

An extensive amount of studies in Europe, Australia and North America and reviews of the international research have been carried out on consumers' motives and barriers for organic food consumption and purchasing. Available evidence suggests that organic produce purchases seem to be based on similar driving forces, whereas there is also a high degree of consensus about the most important reasons for not purchasing organic food. Positive attitudes towards purchasing organic food are primarily related to beliefs about its healthiness, better taste and environmental friendliness, whereas high price, limited availability, lack of product knowledge and distrust of organic label hinder more widespread consumption (Schmid *et al*., 2004; Torjusen *et al*., 2004; Hughner *et al*., 2007; Aertsens *et al*., 2009; Pearson *et al*., 2011).

The reasons for moving towards purchasing organic produce are often themed into two broad categories consisting of individual or egoistic motives regarding personal safety and food enjoyment, and socio-ecological or altruistic concerns regarding environmental sustainability, animal and social welfare. Private benefits are often seen as more important than public benefits (Tregear *et al*., 1994; McEachern and McClean, 2002; Zanoli and Naspetti, 2002; Fotopoulos *et al*., 2003; Lockie *et al*., 2004; Chryssohoidis and Krystallis, 2005; Wier *et al*., 2008; Chen, 2009; Yin *et al*., 2010; Vega *et al*., 2013), although some researchers underline that the importance of driving motives is likely to vary according to product categories (Krystallis and Chryssohoidis, 2005; Padel and Foster, 2005).

Organic consumer research consistently demonstrates that the major motivation for buying organic food seems to be health-related (Tregear *et al*., 1994; Makatouni, 2002; Zanoli and Naspetti, 2002; Fotopoulos *et al*., 2003; Magnusson *et al*., 2003; Baker *et al*., 2004; Torjusen *et al*., 2004; Chryssohoidis and Krystallis, 2005; Padel and Foster, 2005; Hughner *et al*., 2007; Gracia and de Magistris, 2008; Chen, 2009; Yin *et al*., 2010; Vega *et al*., 2013).

Organic foods are believed to be healthier than their conventional counterparts (Schifferstein and Ophuis, 1998; Gil *et al*., 2000; Magnusson *et al*., 2001; Squires *et al*., 2001; Lockie *et al*., 2002; Saba and Messina, 2003; Lea and Worsley, 2005; Padel and Foster, 2005; Wier *et al*., 2005; Stobbelaar *et al*., 2007; Dean *et al*., 2008; Krystallis et al., 2008; Mondelaers *et al*., 2009; Hoefkens *et al*., 2009; Yin *et al*., 2010; Aertsens *et al*., 2011; Ruiz de Maya *et al*., 2011; Hamzaoui and Zahaf, 2012; Shafie and Rennie, 2012), which is primarily related to being considered free of chemical residues (Schifferstein and Ophuis, 1998; Padel and Foster, 2005; Wier *et al*., 2005; Dean *et al*., 2008; Mondelaers *et al*., 2009; Aertsens *et al*., 2011; Shafie and Rennie, 2012; Zagata, 2012). In fact, the perceived food safety of organic food plays an important role on organic consumers willingness to pay for these products (Williams and Hammit, 2000; Krystallis and Chryssohoidis, 2005), and food safety concerns about industrialized food production and processing, namely chemical residues and technological hazards, are found to be a key factor distinguishing organic consumers from non-consumers (Jolly, 1991; Huang, 1996; Loureiro *et al*., 2001; Lockie *et al*., 2002; Lockie *et al*., 2004; Chryssohoidis and Krystallis, 2005; Chen, 2007; Michaelidou and Hassan, 2008; Yin *et al*., 2010). Many studies have also found that most consumers believe that

organic foods are more nutritious than conventionally grown ones (Holt, 1993; Huang, 1996; Williams and Hammit, 2000; Saba and Messina, 2003; Lea and Worsley, 2005; Hoefkens *et al*., 2009; Shafie and Rennie, 2012; Zagata, 2012).

Accordingly, organic food buyers appear to be health conscious (Schifferstein and Ophuis, 1998; Chen, 2009; Smith and Paladino, 2010), considering themselves responsible for their own health and, thus, being more likely to engage in a healthy lifestyle (Gil *et al*., 2000; Chryssohoidis and Krystallis, 2005; Chen, 2009), to be interested in nutrition information (Huang, 1996; Schifferstein and Ophuis, 1998; Bravo *et al*., 2013) and to consider food healthiness an important purchase criterion (Magnusson *et al*., 2001; Lockie *et al*., 2002). Padel and Foster (2005) also noted that health motivated organic food purchase decisions were related to both personal experience with ill health and a more general concern about healthy eating, while Lockie *et al*. (2004) have linked them to care for family health, particularly of children, who are believed to be more vulnerable to the effects of chemical residues in food.

Several studies have also found that most organic food consumers consider its better taste a reason to purchase it (Davies *et al*., 1995; Roddy *et al*., 1996; Schifferstein and Ophuis, 1998; Zanoli and Naspetti, 2002; Fotopoulos *et al*., 2003; Lockie *et al*., 2004; Chryssohoidis and Krystallis, 2005; Padel and Foster, 2005; Dean *et al*., 2008; Ayres and Midmore, 2009; Yin *et al*., 2010; Aertsens *et al*., 2011; Hamzaoui and Zahaf, 2012), while Kilhberg and Risvik (2007) revealed that most Swedish organic consumers consider that organic food tastes better than conventional. McEachern and McClean (2002) further reported that taste is the major motivation for buying organic dairy products, while Zanoli and Naspetti (2002) noted that it is the Italian occasional buyers who are particularly attracted by the pleasure associated with consumption of tasty organic products.

Looking from another angle, Thøgersen (2009a) and Thøgersen and Zhou (2012) found that believing in its better taste is a significant predictor of attitude towards buying organic food, whereas Gil and colleagues, using factor analysis, showed that consumer attitude is positively related to the perception that organic food is tastier (Gil *et al*., 2000; Gil and Soler, 2006).

Some authors put forward that the better taste of organic food, especially of fruit and vegetables, is associated to small-scale farming, natural and traditional production methods, plant varieties and local origin (Davies *et al*., 1995; Padel and Foster, 2005; Stolz *et al*., 2010).

Most consumers further perceive organic food production to be more environmentally friendly (Saba and Messina, 2003; Lea and Worsley, 2005; Wier *et al*., 2005; Stobbelaar *et al*., 2007; Arvola *et al*., 2008; Dean *et al*., 2008; Krystallis *et al*., 2008; Mondelaers *et al*., 2009; Ruiz de Maya *et al*., 2011; Hamzaoui and Zahaf, 2012; Shafie and Rennie, 2012), and therefore concern for the environment is found to be another major reason for purchasing organic foods (e.g., Chen, 2007; Hughner *et al*., 2007; Chen, 2009; Aertsens *et al*., 2011). Particularly, Loureiro *et al*. (2001) and Durham and Andrade (2005) found that for USA consumers, concern for the environment is more influential than health in their decision to purchase organic fruit and vegetables. Nevertheless, most studies indicate that it is the individuals who buy organic food regularly or have

stronger purchase intentions that are likely to consider environmental concern as a motive when buying organic foods (Grunert and Juhl, 1995; Schifferstein and Ophuis, 1998; Magnusson *et al*., 2003; Padel and Foster, 2005; Verhoef, 2005; Gracia and de Magistris, 2008). Also Hamzaoui and Zahaf (2012) reported that the environmentally friendliness of organic food is a major motivation only for regular organic buyers, who also valued country of origin as food mileage is crucial to them, suggesting that this buyer group has a distinctive principle-oriented lifestyle. In line with these studies, Aertsens *et al*. (2011) found that the environmental motive was the most important for Flemish organic food consumption and assumed that it resulted from the primacy of heavy organic buyers within the sample.

Furthermore, examining the role of ecological consciousness, Sparks and Shepherd (1992) and Michaelidou and Hassan (2008) revealed that consumers' identification with green consumerism was a significant predictor of intention to purchase organic produce. In turn, Honkanen *et al*. (2006) found that ecological concerns, reflecting both environmental and animal rights issues, were important determinants of attitude towards organic food. A few studies also found that people who were more involved in environmental conservations practices were more likely to buy organic food products (Gil *et al*., 2000; Gracia and de Magistris, 2008).

Other public benefits related to the purchase of organic food that can act as motivations include animal welfare (Magnusson *et al*., 2003; McEachern and Willock, 2004; Wier *et al*., 2005; Chen, 2007; Lind, 2007; Stobbelaar *et al*., 2007; Aertsens *et al*., 2011; Shafie and Rennie, 2012), supporting the local economy (Padel and Foster, 2005; Hamzaoui and Zahaf, 2012), and political and human rights concerns (Lockie *et al*., 2002; Honkanen *et al*., 2006; Chen, 2007).

Aertsens *et al*. (2009) in their review of the literature concerning personal determinants of organic food consumption associated the different motivations to selected universal values proposed by Schwartz (1992) to provide a better insight into organic consumer behaviour. By way of conclusion, Table 2.1 depicts the motivations to consume organic food and their underlying values.

Table 2.1 - Organic food consumption motives and underlying values

Human Value	Definition	Motivations
Security	Safety, harmony, and stability of society, of relationships, and of oneself	Personal health
Hedonism	Pleasure and sensuous gratification for oneself	Good taste
Stimulation	Excitement, novelty, and challenge in life	Exploratory buying behaviour tendency
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature	Environmental protection and animal welfare
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact	Family's health and supporting local farmers
Achievement	Personal success through demonstrating competence according to social standards	Trendy and wealthy

Notes: Adapted from Aertsens *et al*. (2009). The other values of Schwartz' (1992) Human Values Theory - power, self-direction, conformity and tradition - are not considered influential.

On the other hand, the main consumption barrier for purchasing organic food is its higher price (Tregear *et al*., 1994; Davies *et al*., 1995; Roddy *et al*., 1996; Magnusson *et al*., 2001; McEachern and McClean, 2002; Zanoli and Naspetti, 2002; McEachern and Willock, 2004; Lea and Worsley, 2005; Hughner *et al*., 2007; Klöckner and Ohms, 2009; Yin *et al*., 2010; Aertsens *et al*., 2011; Shafie and Rennie, 2012). Nevertheless, Padel and Foster (2005) noted that price is an important barrier mainly for occasional buyers, whereas regular consumers tended to consider that organic food is a good choice in terms of value for money. In line with this finding, Zagata (2012) reported a negative relationship between the perception of organic food being expensive and the intention to purchase organic food. Other studies have also found that the greatest the importance consumers attributed to price as a food choice factor, the lowest was the likelihood of them purchasing organic food (Huang, 1996; Lockie *et al*., 2002; Gracia and de Magistris, 2008; Hamzaoui and Zahaf, 2012).

Another important reason for not buying organic food is the limited availability of organic products to which an inconvenient access is associated (Grunert and Kristensen, 1991; Davies *et al*., 1995; Makatouni, 2002; Zanoli and Naspetti, 2002; Lea and Worsley, 2005; Padel and Foster, 2005; Chen, 2007; Hughner *et al*., 2007; Ayres and Midmore, 2009; Yin *et al*., 2010; Aertsens *et al*., 2011). Moreover, Chryssohoidis and Krystallis (2005) found that low availability was the main factor hindering organic purchasing in Greece.

Lack of knowledge about organic food has also been reported to hamper organic food purchases (Roddy *et al*., 1996; Gil and Soler, 2006; Gracia and de Magistris, 2008; Klöckner and Ohms, 2009; Thøgersen, 2009a; Yin *et al*., 2010; Saleki *et al*., 2012). Padel and Foster (2005) further detailed that lack of knowledge about certification, labelling and what organic really stands for was preventing occasional buyers from purchasing more regularly. In turn, Aertsens *et al*. (2011) found a positive significant impact of knowledge about organic food production and processing techniques on attitude towards organic food consumption.

An additional barrier is the lack of trust in the organic certification process (Grunert and Kristensen, 1991; Krystallis and Chryssohoidis, 2005; Lea and Worsley, 2005; Padel and Foster, 2005; Hughner *et al*., 2007; Dean *et al*., 2008; Chen, 2009; Yin *et al*., 2010). Trust in the organic claim is particularly relevant given the credence nature of organic food products (Nelson, 1970), which in practical terms is virtually impossible to validate, even after consumption.

The poor appearance of organic products, although less often, has been also cited as a purchase barrier (Thompson and Kidwell, 1998; Zanoli and Naspetti, 2002; Padel and Foster, 2005; Hughner *et al*., 2007; Aertsens *et al*., 2009).

Organic consumer socio-demographic profile

The literature on organic consumer behaviour consists of another major stream that focuses on socio-demographic variables. A few studies reported not significant results with respect to the effect of these factors given the diversified socio-demographic profile of the studied organic consumers (e.g., Krystallis and Chryssohoidis, 2005; Gil and Soler, 2006), but others have found significant influences of these variables on organic food consumption or purchasing.

Given the price premiums attached to organically grown produce, many studies report a positive relationship between household income and the likelihood of buying organic products (Davies *et al*., 1995; Govindasamy and Italia, 1997; Torjusen *et al*., 2001; McEachern and McClean, 2002; Wier *et al*., 2008; Geen and Firth, 2006; Tsakiridou *et al*., 2006; Gracia and de Magistris, 2008; Thøgersen and Zhou, 2012).

Women also seem more likely to buy organic food products (Byrne *et al*., 1991; Davies *et al*., 1995; Govindasamy and Italia, 1997; McEachern and McClean, 2002; Lockie *et al*., 2004; Lea and Worsley, 2005; Onyango *et al*., 2007), as they are the main responsible for food shopping and primary family health carers.

Some authors reported that having a higher education level also significantly increased the probability of buying organic food (Onyango *et al*., 2007; Wier *et al*., 2008; Yue *et al*., 2008), while others found a negative relation (Byrne *et al*., 1991; Govindasamy and Italia, 1997; Thompson and Kidwell, 1998; Lockie *et al*., 2004). Byrne *et al*. (1991) and Lockie *et al*. (2004) assumed that the negative effect of education reflected the fact that the inquired women, the predominant organic buyers, were less educated than men.

Furthermore, a few studies mention that both income and education levels are positively related to the degree of knowledge about organic food (Gil and Soler, 2006; Thøgersen and Zhou, 2012), the former related with the lack of interest and the latter with aptitude to learn about the topic.

With respect to age, research also led to mixed results. While Geen and Firth (2006) and Wier *et al*. (2008) report that organic buyers tend to belong to older age groups, most studies found that older people were less likely to buy organic foods (Jolly, 1991; Davies *et al*., 1995; Govindasamy and Italia, 1997; Magnusson *et al*., 2003; Lockie *et al*., 2004; Onyango *et al*., 2007; Yue *et al*., 2008).

Several studies have also found that the presence of children in the household is positively related to organic food consumption (Davies *et al*., 1995; Thompson and Kidwell, 1998; Loureiro *et al*., 2001; McEachern and Willock, 2004; Yue *et al*., 2008; Aertsens *et al*., 2011). However, some studies support this relationship only concerning the presence of younger children (Hughner *et al*., 2007; Freyer and Haberkorn, 2008; Riefer and Hamm, 2008; Wier *et al*., 2008), reflecting their greater vulnerability to food safety risks, the increase in total expenditure when children reach adolescence and their own food preferences' development. Instead, family size is found to have a negative effect on the likelihood of choosing organic food due to household budget constraints (Govindasamy and Italia, 1997; Loureiro *et al*., 2001; Yue *et al*., 2008).

Organic consumer research in Portugal

Over the last 15 years, many studies have also attempted to describe organic food consumption in Portugal and the Portuguese organic consumer profile.

Truninger (2010) reported the results of a national survey conducted in 2000 on a representative sample of 1 844 individuals. She found that, despite 70% of the respondents were willing to pay more for organically grown food, only 36% have

done so and just 6% bought organic products regularly. Those who have bought organic food belonged to upper income classes, had significant higher levels of education and professional occupations, were less than 50 years old, agnostic or atheist, and lived in urban areas, mainly in Lisbon. Furthermore, in 2003, most of the 1 452 members of BIOCOOP, the first organic consumers cooperative, were also women, aged between 25 and 49 and with scientific or cultural occupations. There was also an over representation of foreigners, namely French and German.

But the analysis of in-depth interviews with 30 Portuguese organic consumers conducted during the winter of 2002/2003 is possibly the most valuable contribution of this study. According to Truninger (2010), organic food was most frequently related to the absence or limited use of chemical substances in its production, natural farming, and safe and quality food, in opposition to quantity-oriented and profit-seeking industrial or chemically intensive food production systems. Besides considering significant health risks and poorer nutrition derived from non-organic food consumption as a motive to purchase organic food, the interviewees were also concerned about the impacts of agriculture on the environment, animal welfare and socio-economic conditions of the rural population. Consequently, many consumers associated feelings of physical and emotional wellbeing to organic food consumption. The superior organoleptic characteristics of organic food, such as taste and freshness, were also appreciated purchase motivations, although its superior taste was not always consensual. Nonetheless, opposing views of organic and non-organic agriculture, did not completely translate into action, given that household organic shares were normally not dominant. The most committed consumers dismissed a fundamentalist approach and mentioned lack of complete control over purchase.

This study also noted that the entry of new organic farmers attracted by EU support payments and the involvement of mainstream retailers in organic food distribution initiated distrust of organic food that the formal inspection procedure in place was not considered appropriate to fully re-establish. Buying directly to the producer at the farm or through box-schemes, and at the trusted BIOCOOP were strategies usually employed to build up trust in organic food, enhanced by search and experience cues such as appearance, taste and shelf-life.

More recently, Dias (2008) conducted a face-to-face survey with a stratified sample of 625 individuals randomly selected in Oporto metropolitan region, in Northern Portugal, on the consumption of organic dairy products. This study found that 40% of the respondents have consumed at least once organic dairy, although more than half of them declared that consumption took place less than once a month, buying organic products out of curiosity rather than as a matter of conviction. Still, 14% of the respondents consumed organic dairy, mainly milk and yogurts, on a daily or weekly basis. Virtually all organic consumers valued the health benefits of organic products as a reason for purchasing, followed closely by taste, nutritional value and absence of additives, and only after respect for the environment. Regular consumers were more likely to have high income, a vegetarian diet and environmentally friendly practices, and to be less price and brand-sensitive. There was also a strong correlation between level of knowledge about organic food and health consciousness. The most common information sources were specialized literature, family, friends and the usual organic food

outlet, which, according to the author, are characteristics of a niche market.

Dias (2008) further reported an expressive lack of knowledge, given that 20% of the respondents did not know what was organic food and 36% have heard about it but were not able to define it or differentiate it from food produced with other farming methods. Still, the respondents consistently defined organic food as food produced, processed and preserved without chemicals. The main reason appointed for never having consumed organic dairy was difficulty to find, followed a long way behind by not having thought about it and price.

Finally, a cluster analysis differentiated three consumer groups (Dias, 2008; Rosa *et al*., 2009). The first segment valued information provided by mass media, tended to have a healthy diet, considered price in their purchase decision, were less educated, had a lower income and bought organic food at the hypermarket. The second cluster, comprising half of the organic dairy consumers, also put emphasis on healthy eating but were more concerned about the environment, valued information from their close social network and bought organic products mainly at the supermarket but also at specialized stores. The third segment, the smallest one, comprised the youngest, most affluent and most educated consumers, who had the higher level of knowledge about organic food, most valued the intrinsic characteristics of organic products, but were also the most price-sensitive, perceiving organic purchases as value for money.

Lucas *et al*. (2008) also conducted a face-to-face survey, but in Lisbon, with 214 adults selected using a quota sampling procedure with age and gender as control variables. Their results indicate that 76% of the respondents had already bought organic food and 20% were habitual organic consumers. Given the small size of the organic market, their sampling was most probably biased towards people more involved with organic food. The main reasons for buying organic products were taste, absence of chemical additives, nutritional value and, finally, environmental protection, and the most frequently consumed organic products were fruits and vegetables. Furthermore, more than half of the organic buyers stated that they bought organic food products from hypermarkets and the average organic share of total food consumption was less than 25%, reflecting the predominance of occasional buyers within the sample.

This study also shows that the overall sample believed organic food to be healthier, of better quality and tastier. Hence, organic consumers were more often described as health conscious and more demanding. Besides, three-quarters of the respondents claimed to have average knowledge about organic food products and alternative information sources such as experts, family and friends were considered the most important, again evidencing the niche character of the Portuguese organic market. The respondents almost unanimously agreed that organic products are more expensive than conventional ones, but higher price was ranked third as a reason for non-buying behaviour after unavailability in the usual food outlet and difficulty to find. In fact, 84% of the non-buyers said they would or probably would buy these products if they were available in their usual food outlet.

In contrast, Gaspar de Carvalho *et al*. (2010), using a discrete choice experiment, showed that it is habitual buying behaviour that determines Portuguese

consumers' milk choice, whereas price and availability, which were the main reasons advanced for not buying organic milk rather work as post-hoc justifications for maintaining the non-buying habit.

Two recent MSc. Thesis on the organic food consumer profile using online surveys (Cruz, 2011; Lima, 2013) held similar results as those reported by Dias (2008), Lucas *et al*. (2008) and Truninger (2010), with both further reporting that fruit and vegetables were the most frequently purchased organic products.

Within the sample of 594 respondents studied by Cruz (2011), 90% have bought organic food at least once and 46% were regular buyers. Organic food was most often described as produced without chemicals and in a natural way. Women, aged between 35 and 54, concerned about the effect of food on health and following a healthy diet were more likely to buy organic products regularly. Thus, the belief that organic food is healthier was the most cited motivation of regular buyers, followed by being tastier and environmental friendly. Regular buyers also preferred more direct marketing channels such as specialized shops, farmers' market and farm shops, although mainstream supermarkets were most often referred for organic food purchases within the all sample. Non-buyers were mainly deterred by the belief that organic food is expensive.

Lima (2013) reported that, of 271 respondents, 54% were organic consumers, the majority of which on a daily or weekly basis. As 86% of the sample lived in the North region, organic food was frequently bought directly to the producer, followed by farmers' markets, specialist stores and hypermarkets. Organic food healthiness was by far the main reason for consumption, whereas better taste and environmental friendliness were respectively the main motivation for the second and third largest groups of consumers. Nevertheless, three-quarters of the organic consumers spent less than half of the household food budget on organic food. The main reasons for the remaining respondents not buying organic products were price, difficulty to find and limited choice.

Marreiros *et al*. (2010), reporting on the same data used by Lucas *et al*. (2008), further found that the level of education has a significant impact on the declared level of knowledge about organic food products whereas income was significantly related to organic food buying behaviour.

In turn, Bazoche *et al*. (2014) conducted a study focused on the determinants of consumers' willingness to pay (WTP) for pesticide-use reduction in France, Greece, Netherlands and Portugal by comparing organic, IPM (Integrated Pest Management) and regular apples. Organic apples appeared clearly as the highest-valued option, with the highest absolute premiums being offered by women. This study further shows a highly significant increase of WTP for organic apples in all countries when participants were given information about the use of pesticide in the different production systems.

Because organic farms are subject to a conversion period of at least two years, Tranter *et al*. (2009) evaluated consumers' willingness to pay for conversion-grade carrots and chicken across five EU countries, including Portugal, in 2003. Portuguese consumers were willing to pay the lowest premium for conversion-grade carrots and the only ones who were not willing to pay any premium for

conversion-grade chicken, which, according to the authors, reflected their low frequency of organic food purchasing. Still, this study identified a core of dedicated organic buyers in Portugal who were relatively price-insensitive. Aside from price, the most significant variable determining WTP was supporting conversion of more farmers, whereas socio-economic factors such as age, education level and household income had no explanatory power.

It is finally worth noting that, in 2013, according to the Special Eurobarometer 410, only 14% of the Portuguese recognized the EU organic farming logo "Euro Leaf" (European Commission, 2014c), which supports the general low level of consumer knowledge about organic food products found by Dias (2008).

THEORETICAL FRAMEWORK

Theory of planned behaviour

The theory of planned behaviour (TPB), proposed by Ajzen (1985, 1991) has been used widely for predicting human behaviour and understanding its causes (Fishbein and Ajzen, 2010).

The TPB represents an extension of the theory of reasoned action (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980), which was proposed to explain behaviours that are not completely under volitional control, by including a measure of perceived behavioural control as an additional determinant of a person's intentions and actions (Ajzen, 1991).

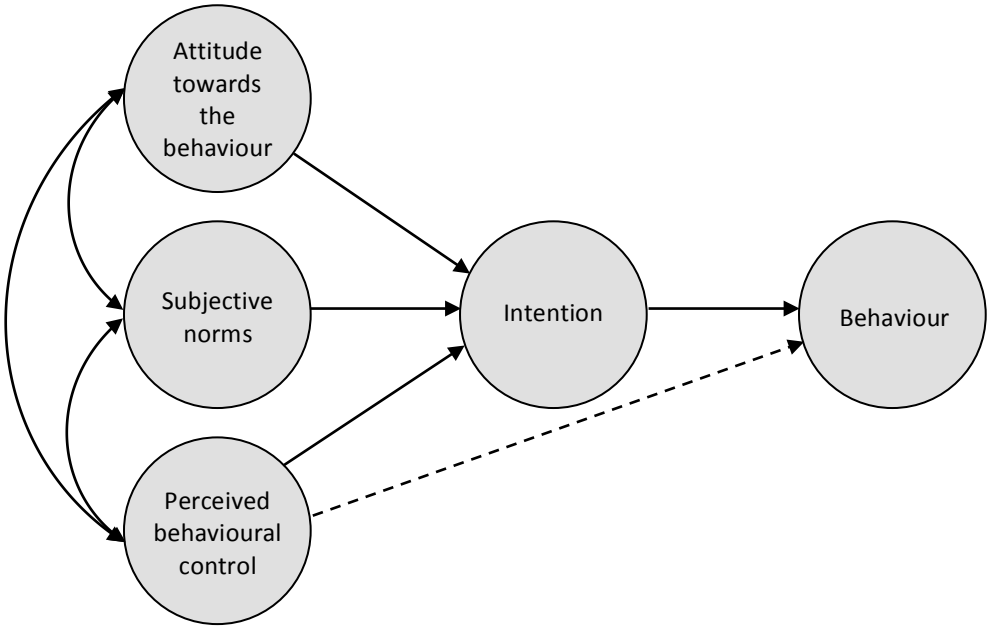
At the core of both theories, lies the individual's intention to perform a particular behaviour. Intentions are assumed to capture the motivational factors that influence behaviour and, when behaviours pose no serious problems of control, can predict behaviour with considerable accuracy. However, when dealing with behaviours over which people have incomplete volitional control, behavioural achievement also depends, at least to some extent, on non-motivational factors, such as the available resources and opportunities (e.g., skills, time, money, cooperation of others, etc.) that represent the individual's actual control over the behaviour (Ajzen, 1991, 2002).

According to Ajzen (1991), behavioural intention represents the effort individuals are willing to make in order to perform a certain behaviour and is determined by three conceptually independent variables termed as attitude towards the behaviour, subjective norms, and perceived behavioural control (PBC). Attitude towards the behaviour refers to the extent to which a person has a favourable or unfavourable evaluation of the consequences of performing the behaviour, subjective norm refers to the perceived social pressure to perform or not to perform the behaviour and PBC refers to the perceived ease or difficulty of performing the behaviour (Ajzen, 1991).

In addition, to the extent that people are realistic in their judgments, a measure of perceived behavioural control can serve as a proxy for actual behavioural control and contribute to the prediction of the behaviour in question, along with behavioural intention (Ajzen, 1991, 2002; Ajzen and Fishbein, 2005).

A graphic representation of the TPB is presented in Figure 2.2. The dashed arrow pointing from perceived behavioural control to behaviour indicates the role of volitional control over the behaviour of interest.

Figure 2.2 - Theory of planned behaviour



(Source: Ajzen, 1991)

It is important to note that each of the theoretical constructs shown in the above diagram are hypothetical or latent variables, and thus cannot be directly measured (Ajzen, 2006a). Instead, the measurements are inferred from observable responses on global rating scales (Ajzen, 1991). This demonstrates the importance of operationalizing the latent variables as originally conceptualized by Ajzen (1991, 2001, 2002, 2006a), such that the final set of items selected as direct measures of each theory's construct exhibits a high degree of internal consistency, which is a minimal requirement to confirm the assumption that they do in fact assess the same underlying construct (Ajzen, 2006a).

Theory's applications and sufficiency

The theory of planned behaviour is a research framework that proposes a model about how human action is guided (Ajzen, 2002, 2006a) and it was so called because it assumes that individuals consciously consider alternative behaviours under consideration and choose the one that leads to the most desirable consequences and that seems realistic to carry out (Peter *et al*., 1999).

In broad terms, the theory is found to be well supported by empirical evidence, accounting for a substantial amount of variance in both intention and behaviour (Ajzen, 1991; Sideridis *et al*., 1998; Armitage and Conner, 2001; Rivis and Sheeran, 2003; Staats, 2003; Francis *et al*., 2004). Furthermore, it has been extensively applied to investigate individual behaviour in a wide range of contexts. For instance, Ajzen (2015) reports a bibliography of over 1500 empirical studies using the TPB published over the last 20 years, and review

studies point to a systematic application of the TPB model to health-related behaviours such as physical activity, dieting, condom use, quitting smoking and binge drinking (McEachan *et al*., 2011), as well as, responsible environmental behaviours such as public transportation use, recycling, energy conservation and eco-friendly products purchasing (Bamberg and Möser, 2007; Steg and Vlek, 2008).

The TPB has also become the most widely adopted theoretical framework to examine food choice (Conner and Armitage, 2006), such as the consumption of fruit and vegetables (e.g., Bogers *et al*., 2004; Brug *et al*., 2006; Blanchard *et al*., 2009; Emanuel *et al*., 2012; Menozzi and Mora, 2012), and fast food (e.g., Dunn *et al*., 2011; Padgett *et al*., 2013), as well as, the purchase of such different food items as specialty food (Liang and Lim, 2011), halal food (e.g., Bonne *et al*., 2007; Alam and Sayuti, 2011), genetically modified food (e.g., Cook *et al*., 2002; O'Fallon *et al*., 2007; Prati *et al*., 2012), sustainably produced food (Robinson and Smith, 2002; Vermeir and Verbeke, 2006), local food (Rainbolt *et al*., 2012; Campbell, 2013) and fair trade grocery (e.g., Ozcaglar-Toulouse *et al*., 2006; Shaw and Shiu, 2002).

Particularly, the theory of reasoned action (TRA) and its extended theory of planned behaviour (TPB) have been successfully applied to an explanation of organic food consumption or purchasing (e.g., Sparks and Shepherd, 1992; Thøgersen 2002; Saba and Messina 2003; Tarkiainen and Sundqvist 2005; Verhoef, 2005; Honkanen *et al*., 2006; Thøgersen and Ölander, 2006; Chen, 2007; Gotschi *et al*., 2007; Arvola *et al*. 2008; Dean *et al*., 2008; Lodorfos and Dennis, 2008; Michaelidou and Hassan, 2008; Guido, 2009; Thøgersen, 2009a; Thøgersen, 2009b; Smith and Paladino, 2010; Guido *et al*., 2010; Aertsens *et al*., 2011; Ruiz de Maya *et al*., 2011; Voon *et al*., 2011; Dean *et al*., 2012; Pino *et al*., 2012; Saleki *et al*., 2012; Thøgersen and Zhou, 2012; Urban *et al*., 2012; Zagata, 2012; Çabuk *et al*., 2014; Othman and Rahman, 2014; Pomsanam *et al*., 2014).

However, it is important to note that most of the studies applying the TRA or the TPB in the organic food domain examined partial or extended versions of these theories. For instance, while the majority of the abovementioned studies have focused on explaining intention, a few regressed the predictor variables directly on behaviour (Thøgersen, 2002; Verhoef, 2005; Thøgersen and Ölander, 2006; Gotschi *et al*., 2007; Thøgersen, 2009b; Aertsens *et al*., 2011; Saleki *et al*., 2012) and only seven studies have focused on the prediction of both intention and behaviour (Saba and Messina 2003; Tarkiainen and Sundqvist 2005; Thøgersen, 2009a; Smith and Paladino, 2010; Voon *et al*., 2011; Thøgersen and Zhou, 2012; Zagata, 2012). Also, some studies lacked the measures of subjective norms and perceived behavioural control (Saba and Messina 2003; Honkanen *et al*., 2006; Pino *et al*., 2012; Çabuk et al., 2014) or attitude (Thøgersen, 2009b; Othman and Rahman, 2014; Pomsanam *et al*., 2014). On the other hand, several of the abovementioned studies have extended the TPB to improve its predictive capacity by including measures of moral norms (e.g., Thøgersen, 2002; Arvola *et al*., 2008; Guido *et al*., 2010), self-identity (e.g., Sparks and Shepherd, 1992; Michaelidou and Hassan, 2008), knowledge (e.g., Gotschi *et al*., 2007; Aertsens et al., 2011; Saleki *et al*., 2012), past behaviour (Dean *et al*., 2012), familiarity (e.g., Smith and Paladino, 2010), emotions (Verhoef, 2005) and brand personality

variables (Othman and Rahman, 2014).

In fact, the attractiveness of the theory of planned behaviour as a theoretical framework is relatively high as it provides a comprehensive and, at the same time, parsimonious model of human behaviour, given that it assumes that a relatively small number of variables are sufficient to understand any socially significant behaviour (Conner and Armitage, 1998; Fishbein and Ajzen, 2010). Furthermore, although background factors such as demographic variables and personality traits on behaviour are held to have their impact indirectly by their effects on the proximal determinants of behaviour (Ajzen and Fishbein, 1980; Ajzen and Fishbein, 2005), in face of early critics to the sufficiency of the TPB, Ajzen (1991) explicitly described its theory as a model open to the inclusion of additional predictor variables as long as they capture a significant proportion of the variance in intention or behaviour after the standard TPB variables have been taken into account.

Modified theory of planned behaviour

Extant research has suggested that considering a measure of personal norms in the TPB, especially in situations with an obvious moral component, can improve the explanatory power of this model (Conner and Armitage, 1998; Manstead, 2000; Armitage and Conner, 2001). In particular, Ajzen (1991) has acknowledged that in certain contexts, moral obligation may influence behavioural intention in parallel with the original TPB variables, drawing on the findings of his study on unethical behaviours, which revealed that the addition of a measure of perceived moral obligation made a significant contribution in the prediction of intention (Beck and Ajzen, 1991).

Indeed, the application of the TPB to environmentally responsible behaviours has especially benefited from the inclusion of personal norms (Harland *et al*., 1999; Staats, 2003; Bamberg and Möser, 2007). For instance, personal norms have contributed to increase the explanatory power of the TPB model in the use of public transportation (Bamberg *et al*., 2007), recycling (Thøgersen, 1996; Thøgersen, 2009b), conservationism (Kaiser, 2006) and environment-friendly packaging (Thøgersen, 1999).

Among the factors influencing food choice within the TPB framework, perceived moral obligation has also been found to be important (Shepherd *et al*., 1995; Shepherd, 1999), normally because of the impact of foods consumption in the family, animal and future generations welfare. These were normally high involvement products, including meat and GMO foods (Sparks and Shepherd, 2002), fair trade grocery products (Shaw and Shiu, 2002), ready-to-eat meals (Olsen *et al*., 2010) and food choices made on behalf of others, particularly for children (Raats *et al*., 1995).

The moral implications of buying organic food are evidenced in the literature. By applying the Schwartz's (1992) value inventory, organic consumer behaviour has been found to reflect personal values such as universalism (Grunert and Juhl, 1995; Dreezens *et al*., 2005; Lea and Worsley, 2005; Kihlberg and Risvik, 2007; Krystallis *et al*., 2008; Thøgersen, 2009a) and benevolence (Grunert and Juhl, 1995; Kihlberg and Risvik, 2007; Krystallis *et al*., 2008), which may be

considered to translate care for the welfare of the close family, protection of the environment, respect for the animals and societal concerns (e.g., Torjusen *et al*., 2001; Makatouni, 2002; McEachern and McClean, 2002; Zanoli and Naspetti, 2002; Magnusson *et al*., 2003; Brinkmann, 2004; Niva *et al*., 2004; Torjusen *et al*., 2004; Durham and Andrade, 2005; Midmore *et al*., 2005; Padel and Foster, 2005; Wier *et al*., 2005; Honkanen *et al*., 2006; Lind, 2007; Gracia and de Magistris, 2008; Stobbelaar *et al*., 2007; Ayres and Midmore, 2009; Guido, 2009).

Using the norm-activation model proposed by Schwartz (1977), Klöckner and Ohms (2009) demonstrated that personal norms were the most important driving force behind the purchase of organic milk, and that they were activated by an awareness of the ecological impacts of conventional milk production. Activation of personal or moral norms, however, depends on the self-relevance of the values associated with the consequences of performing a particular behaviour. In corroboration of this view, Michaelidou and Hassan (2008) found that consumers' identification with ethical issues affects their disposition towards organic food and related purchase intention, and Thøgersen (2009b) has demonstrated that organic food purchasing behaviour largely depends of personal norms because these were strongly embedded in the organic consumers' cognitive structure.

In support of a moral extension of the TPB in the context of organic food, several recent studies have pointed out that the inclusion of personal norms in the TPB increased the amount of variance explained in purchase intention (Arvola *et al*., 2008; Dean *et al*., 2008; Guido, 2009; Guido *et al*., 2010; Dean *et al*., 2012) or the prediction of organic food purchasing behaviour (Thøgersen, 2002; Thøgersen and Ölander, 2006; Thøgersen, 2009b). Moreover, nearly all these studies reported that the predictive ability of personal norms was stronger than the one of subjective norms.

TPB as an expectancy-value model

The theory of planned behaviour traces attitudes, subjective norms and perceived behavioural control to an underlying foundation of salient beliefs about the behaviour (Ajzen, 1991). That is to say, although a person may hold many beliefs about a particular behaviour, at any given moment only some of these are likely to be salient, i.e. readily accessible in memory, and these are the ones considered determinants of behaviour (Ajzen, 1991, 2006a).

According to the TPB, three kinds of salient beliefs are distinguished: behavioural beliefs which are assumed to produce a favourable or unfavourable attitude towards the behaviour, normative beliefs which result in perceived social pressure or subjective norms, and control beliefs which provide the basis of perceived behavioural control (Ajzen, 1991, 2006a).

Consistent with the expectancy-value model, these beliefs are assumed to result from the strength of each belief multiplied by the corresponding evaluative component and their summative index is defined as directly proportional to the underlying construct (Ajzen, 1991):

Behavioural beliefs and attitudes towards behaviours

Attitudes develop from the salient beliefs people hold about the attitude object. In the case of attitudes towards a behaviour, each belief links the behaviour to a certain outcome associated with performing the behaviour (Ajzen, 1991). Specifically, the strength of the outcome belief, i.e., the perceived likelihood that the behaviour will produce a given outcome, is combined in a multiplicative fashion with the outcome's subjective value (Ajzen, 1991, 2006a). The resulting products, which are referred to as behavioural beliefs, are summed to compute an indirect measure of a person's overall attitude towards the behaviour (Ajzen, 2006a).

Normative beliefs and subjective norms

Normative beliefs are social pressures from important referent individuals or groups who would approve or disapprove of performing the behaviour in question (Ajzen and Fishbein, 1980; Ajzen, 1991). In accordance with an expectancy-value formulation, the strength of each belief about the normative expectations of salient referents is multiplied by the person's motivation to comply with the referent in question, and the sum of the resulting products across all salient normative beliefs provides an estimate of the individual's subjective norms (Ajzen, 1991, 2006a).

Control beliefs and perceived behavioural control

Control beliefs refer to a person's perception of the presence or absence of resources and opportunities required to perform a specific behaviour (Ajzen, 1991). In particular, the subjective probability of a given control factor being present (strength of the control belief) is multiplied by the perceived power of the particular control factor to facilitate or inhibit performance of the behaviour, and the resulting products are summed across all accessible control beliefs to produce the global perception of behavioural control (Ajzen, 1991, 2006a).

For each new context, pilot work using a free-response format is required to identify accessible behavioural, normative and control beliefs from a sample of respondents that is representative of the research population (Ajzen and Fishbein, 1980; Ajzen, 1991, 2006a). Consequently, unlike the direct measures of attitude, subjective norm and perceived behavioural control described earlier, internal consistency is not a necessary feature of belief-based measures, since they may reflect an ambivalent set of beliefs and it is in their aggregate that they provide a single manifest indicator of the respective latent construct (Ajzen, 2002, 2006a). Moreover, to the extent that belief-based and direct measures are indicators of the same underlying latent construct, they are expected to be correlated (Ajzen, 1991, 2006a).

Finally, it should be noted that, although the TPB postulates that people are usually quite rational and make systematic use of the information available to them (Ajzen and Fishbein, 1980), the beliefs people hold may be inaccurate, biased or, even, irrational (Ajzen and Cote, 2008; Fishbein and Ajzen, 2010). Nevertheless, they constitute the informational foundation people have about the behaviour and therefore people's actions are assumed to follow reasonably

from their beliefs (Ajzen, 1991; Fishbein and Ajzen, 2010).

Among the studies using the TPB for better understanding organic consumer decision-making, several of them have elicited the salient beliefs underpinning the TPB main determinants. For instance, Thøgersen (2009a) and Thøgersen and Zhou (2012) have modelled attitude towards buying organic food as a function of behavioural beliefs, which were previously elicited on the basis of interviews with a separate convenience sample of individuals from the studied population. Also Saba and Messina (2003) elicited beliefs about the consequences of consuming organic fruits and vegetables from a pilot sample before applying a questionnaire to measure belief strength and respective outcome evaluation in order to assess the contribution of their summed product to the prediction of attitude towards the consumption of those foods. Dean *et al*. (2008) used open-ended questionnaires with 50 participants to elicit behavioural and moral beliefs, which were afterwards used on a wider sample to assess their impact on attitude and intention to buy organic apples and pizza. More comprehensively, Guido (2009) and Guido *et al*. (2010) have conducted elicitation studies to identify salient beliefs in order to develop a final questionnaire, which would assess the standard TPB and moral norms constructs at the basis of consumers' intention to buy organic food products. Finally, Zagata (2012) elicited behavioural, normative and control beliefs by means of four focus groups and, using an expectancy-value formulation, investigated the correlation between belief-based and direct measures of attitude, subjective norms and PBC.

TPB-based behavioural interventions

The theory of planned behaviour, besides being a powerful tool to predict human behaviour and understand the beliefs that ultimately determine it, can also be used as a conceptual framework for developing effective behavioural change interventions (Ajzen, 1991; Fishbein and Ajzen, 2010). According to Fishbein and Ajzen (2010), interventions designed to change behaviour should be directed at one or more of its major determinants: attitude towards the behaviour, subjective norms and perceived behavioural control. Changes in these components should influence behavioural intentions in the desired direction and, to the extent that there is a strong link from intentions to behaviour and adequate volitional control, the newly formed intentions should be able to be carried out (Ajzen, 2006b; Fishbein and Ajzen, 2010).

The TPB makes no specific claims that each of its three components will make a significant contribution to the prediction of intention and behaviour. On the contrary, their relative importance is likely to vary as a function of the behaviour and the population under consideration (Ajzen, 1991; Fishbein and Ajzen, 2010). Alternatively, the TPB outlines the methods and scaling procedures for directly measuring the theory's constructs and for estimating their relative weights by means of multiple regression or structural equation analyses (Fishbein and Ajzen, 2010). These estimates are needed to determine which component to target in the intervention, since it is argued that, all else being equal, the greater the relative contribution of a given predictor, the more likely it is that changing that component will influence intention and behaviour (Ajzen, 2006b; Fishbein and Ajzen, 2010). An exception to this rule may occur when a theoretical

construct shows only limited correlations with intention or behaviour, and thus contributes little to their prediction, due to low variability in responses across the sample (Ajzen, 2006b; Fishbein and Ajzen, 2010). In such cases, empirical research may reveal that the majority of a population holds low perceptions of a given theoretical construct, showing that an increase in that predictor can have a strong impact on behavioural change (Ajzen, 2006b). Hence, it is reasonable to target a behavioural intervention at the predictors that account for most of the variance in intention and behaviour although it should be taken in consideration whether there is room for change in the designated target (Ajzen, 2006b; Fishbein and Ajzen, 2010).

Furthermore, because beliefs provide the basis for the theory's constructs, this information should further guide the selection of salient beliefs to be targeted (Fishbein and Ajzen, 2010). As explained above, qualitative research within the framework of the TPB is required to identify accessible behavioural, normative and control beliefs about the behaviour in the population of interest. Thus, to change attitude, subjective norms or perceived behavioural control, an intervention must change the underlying set of salient beliefs by providing new information that changes existing beliefs or leads to the formation of new beliefs, for instance by targeting not readily accessible beliefs (Ajzen, 2006b; Fishbein and Ajzen, 2010). In either case, an intervention is successful when it produces a change in the value of the aggregated measure of the summated products of belief strength and subjective value of the belief, either by strengthening, weakening or replacing some of the relevant beliefs or by changing their subjective value (Ajzen, 2006b).

CHAPTER 3 - RESEARCH APPROACH

This chapter gives an overview of the research approach adopted in this study. It identifies the context, purpose and theoretical framework of this research and clearly states the specific research questions and objectives. It further introduces the use of a mixed methodological strategy to achieve the study's objectives.

Definition of the research domain

Organic farming evolved as a social movement based on an open criticism of mainstream agricultural practices (Michelsen *et al.*, 2001). Also, in recognition of its potential contribution to policy objectives regarding surplus reduction, the environment and rural development, the EU member states have provided financial support for organic farming under the agri-environmental measures since the beginning of the 1990's (Padel and Lampkin, 2007; Stolze and Lampkin, 2009). This position has been reinstated within the Common Agricultural Policy (CAP) for 2014-2020, which recognizes organic farmers as "green by definition" as they are automatically entitled to the green payment scheme and proposes a new specific measure to support organic farming integrated in the rural development policy (European Commission, 2014a).

With total retail sales valued at 22.2 billion Euros in 2013, the EU is the second largest market for organic products in the world after USA and much of its development has been driven by strong consumer interest in organic food, a well-developed organic sector and government support (Willer and Schaack, 2015). Still, although the highest organic market share worldwide was reached in Denmark (8%), it remains low as a proportion of the total food purchases in the country.

In Portugal, even if consumers have become interested in organic food since the early days of the movement, the scenario is not different. Organic farming development has been mainly driven by public policies providing financial support to this production system (Crisóstomo, 2011). Nevertheless, an increasing number of points of sale and marketing initiatives in the last decade shows the vivacity of the Portuguese organic market and that a considerable number of new consumers have entered into it, although average consumer spending remains negligible.

Against this background, it is believed that the Portuguese organic market has much room for development and the growth of consumer interest and domestic demand for certified organic products is an essential precondition to foster further conversion and the desirable future growth of organic agriculture in Portugal.

Hence, this study takes a consumer research perspective and employs the theory of planned behaviour (Ajzen, 1985, 1991) as a theoretical framework, to explore the determinants of certified organic food purchasing behaviour and to apply the understanding gained to influence and eventually change future consumer behaviour.

The studies concerning organic food consumption in Portugal to date have

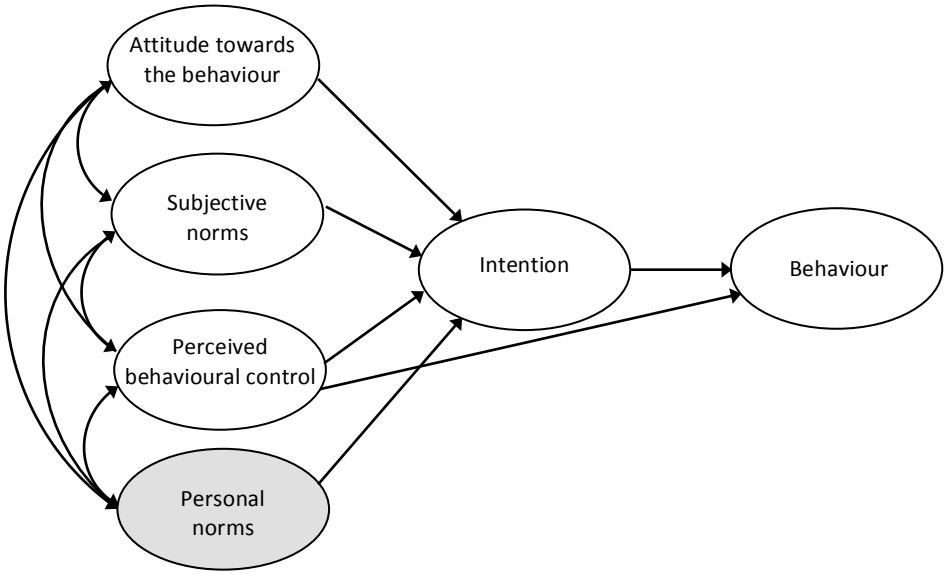
generally examined the factors that motivate and inhibit Portuguese consumers to buy organic food, using conceptual and methodological approaches that were not conducive to explain the role of those factors in shaping consumer behaviour. Exceptions are made to the works of Bazoche *et al*. (2014) and Tranter *et al*. (2009), which used regression analysis to examine the determinants of willingness to pay for organic apples and two selected organic conversion-grade food products, respectively. However, the former focused on the impact of socio-demographic factors, information and sensory characteristics and the latter analysed conversion-grade products, which are not believed to have the same intrinsic value as organic (Tranter *et al*., 2009). Also, Gaspar de Carvalho *et al*. (2010) explored the effect of situational barriers and constraints on the decisions to buy organic milk, thus focusing on perceived behavioural control, but used bivariate statistics, just being able to describe the strength of the relationship between the two variables. Apart from the cluster analysis of organic dairy consumers carried out by Dias (2008), the remaining studies were purely descriptive and used at the most univariate statistics.

So, as far as the researcher is aware, this is the first study to use the theory of planned behaviour (TPB) in its complete form to explain the purchase of certified organic food among the Portuguese. The TPB has been successfully applied to organic consumer behaviour in the United Kingdom, Spain, France, Belgium, Italy, Greece, Austria, Germany, Netherlands, Denmark, Norway, Sweden, Finland, Czech Republic, Turkey, Iran, Malaysia, Thailand, China and Australia, which make this study of additional interest as there is no agreement in the literature on the existence of a predominant effect of one of the three predictors included in the TPB regarding this particular behaviour.

Another contribution of this study is to test an extended version of the TPB (hereinafter designated extended TPB or ETPB) for certified organic food purchasing, which introduces personal norms as an additional predictor of purchase intention. Accounting for personal or moral norms in the TPB has been proposed in the literature to increase the prediction of morally relevant behaviours. A focus on the role of personal norms is particularly appropriate in the context of organic food purchasing, which has often been described as motivated by expected positive consequences both for the self and for others. Particularly, empirical evidence for the relationship between personal or moral norms and purchase intention or behaviour has been reported within this research field.

Such theoretical framework offers a well-established and comprehensive approach to complex social behaviour, aiding in delimiting and conceptualizing the factors that influence the behaviour that is to be investigated. Thus, the application of the TPB to certified organic food purchasing (hereinafter also simply referred to as organic food purchasing) can be described in the following way: Intention to purchase organic food is determined by the consumer's attitude towards the purchase, subjective norms about the purchase and perceived control over the purchase. In turn, purchasing behaviour is directly influenced by purchase intention and perception of control over the purchase. A modified TPB is established by adding personal norms as a determinant of intention to the TPB model. Figure 3.1 presents the proposed research models.

Figure 3.1 - Conceptual research models



Note: The grey background indicates the additional explanatory variable of the extended TPB model.

Research aim, questions and objectives

The purpose of the overall study is therefore to apply the theory of planned behaviour (TPB) and an extended version of the TPB (ETPB) integrating personal norms to gain a better understanding of the determinants of certified organic food purchasing behaviour, with a view of providing guidelines for the development of marketing communication strategies focused on increasing the organic market share in Portugal.

The central question of this research project is formulated as follows:

Which perceptions about certified organic food should be targeted in an effective communication strategy aiming at boosting demand in Portugal?

Being the first study in Portugal using the complete TPB and an extended TPB in the context of organic food purchasing, along with the mixed results reported in international research applying the TPB to organic consumer behaviour, understanding of dominant concepts and relationships was inadequate to adjust the research questions according to past research. Therefore, the theoretical framework guided the formulation of three research questions relevant to the central question of this study:

Research question 1: *To what extent and how do attitude, subjective norms and perceived behaviour control contribute to Portuguese consumers' intention to purchase certified organic food?*

Research question 2: *To what extent and how do behavioural intention (motivation) and behavioural control (ability) contribute to Portuguese consumers' certified organic food purchasing behaviour?*

Research question 3: *To what extent and how do personal norms make a further contribution to Portuguese consumers' intention to purchase certified organic food?*

Note that the focus is on purchase decision-making and not merely on perceptions of certified organic food. The process through which perceptions are created and transformed into purchase decisions, as well as, the relative importance and interplay of the various pathways through which those perceptions lead to choice, are a primary target of this study. In fact, one major advantage of the TPB is that it goes beyond merely identifying the main determinants of intention and behaviour, by theorizing about the factors that underpin these determinants as it proposes that salient behavioural, normative and control beliefs provide the cognitive foundation from which attitude, subjective norms and perceived behavioural control are assumed to follow.

Thus, the research objectives pursued in order to answer the research questions are two-fold, corresponding to distinct but interconnected approaches achieved through two complementary empirical studies:

Research objective 1: *Test the validity and explanatory power of two behavioural models and estimate the relative importance of each predictor in self-reported certified organic food purchasing behaviour by means of structural equation modeling on the basis of direct measures of the theoretical components assessed using a questionnaire.*

Research objective 2: *Elicit consumers' salient beliefs that provide the informational foundation for the theoretical components in both behavioural models, with a focus on exploring the role and relationships of the determinants of certified organic food purchasing behaviour, by using focus groups.*

The first research objective is carried out through a quantitative methodology and focuses on the "*to what extent*" part of the research questions. The second research objective seeks to answer the "*how*" part of the research questions based on qualitative methods.

Prior to undertaking an investigation based on the TPB framework, it is important to clearly identify the behaviour that is to be understood and possibly changed or reinforced (Fishbein and Ajzen, 2010). In accordance with the principle of compatibility (Ajzen and Fishbein, 2005; Ajzen, 2006a; Fishbein and Ajzen, 2010), all the components of the TPB and, in this case, of the proposed ETPB, must be specified at the same level of generality. More exactly, it is essential to ensure correspondence in terms of their target, action, context and time elements. As such, the formulation of questions for direct and indirect measurement of the models' variables adhered closely to this principle in that the behaviour of interest was explicitly defined as "purchasing certified organic food for the household". Here, the target is the respondents' household and the action is purchasing certified organic food whereas the context and time elements are not specified, as the focus is on explaining purchasing behaviour, irrespective of where and when it is performed.

It is also essential to delimit the population of interest to the investigation (Fishbein and Ajzen, 2010). The research population consists of individuals aged over 18, residents in Portugal and in charge of or sharing the responsibility for the household's grocery shopping, which, apart from gender[1], should generally reflect the socio-demographic characteristics of the national population. Yet, the research questions presented above cannot be given a generalized categorical answer, at least not within the limited scope of a doctoral study. A self-selecting population from which conclusions are drawn was required for feasibility purposes, although judgemental and quota sampling attempted to ensure that the sample is representative of the research population.

Mixed methods research

This study makes complementary use of qualitative and quantitative methods to carry out the application of Ajzen's (1985, 1991) theory and an extended version of it, including personal norms, to organic food purchasing behaviour. The greatest value in using mixed methods research to examine the same phenomenon lies in the ability of one type of data to compensate for the weaknesses of the other, extending the knowledge generated (Small, 2011).

Focus groups and surveys are one of the leading ways of combining qualitative and quantitative methods (Morgan, 1996). While focus groups allow a more in-depth understanding of a topic, by spending a considerable amount of time conducting well-designed research with a small number of people, a survey is applied to hundreds of people using close-ended questions with limited response choices thus offering a greater breadth (Krueger, 1998c). The analysis of such different kind of data, although not directly comparable, serves to extend the researcher' understanding of the research problem (Bloor *et al*., 2001).

This study used the survey as the primary research method, which was combined with focus groups in two different ways previously described by Morgan (1996): in the preliminary stage of the study and in follow up research. On the one hand, focus groups serve as a pilot work for developing the content of the survey questionnaire as suggested by the founder of the TPB (Ajzen, 1991). Focus groups provide data on how the respondents think and talk about the topics of the survey, becoming particularly useful in the formative stages of research for selecting appropriate items to measure the study variables. On the other hand, focus group findings will assist in interpreting, clarifying and enhancing the meaning of survey results, by establishing patterns and variation in behaviour and in its determinants and, thus, deepening understanding of complex decision-making. Particularly, the quantitative study systematically collected data and used a statistical approach to test the hypotheses stemming

[1] Despite increasing participation of women in the labour market, in the Global North they still have the primary responsibility for food purchasing and preparation within the home (Riley and Hovorka, 2015). This assumption was confirmed at the market research department of one major supermarket chain, which revealed that 77% of its costumers were female (Jerónimo Martins, personal communication, 10 January 2013).

from theory about the relationship among variables and a qualitative exploration of narratives informed the quantitative study, by aiding in the conceptualisation of the standard TPB and personal norms constructs and by exploring how the relationships between theoretical constructs operate.

Furthermore, evidence from both the survey and focus group discussions are crucial to develop guidelines for a relevant and effective intervention aimed at changing behaviour. The survey provides accurate quantitative information, estimating the influence of each predictor variable on certified organic food purchasing behaviour, while qualitative data collection through focus groups furthers this information by identifying the salient beliefs underlying the determinants of behaviour.

CHAPTER 4 - QUANTITATIVE RESEARCH STUDY

This study intends to investigate the factors that contribute to certified organic food purchasing in Portugal, based on the theory of planned behaviour (TPB) and a modified TPB, by applying structural equation modeling. The sections below describe the development of the two models and their underlying hypotheses, following an outline of the proposed research design and the instruments and procedures used for data collection and analysis in order to test the research hypotheses. The chapter closes with presentation and subsequent discussion of empirical findings in light of prior research.

RESEARCH THEORETICAL FRAMEWORK

This section briefly reviews the purpose and the theoretical framework adopted in this study. The research hypotheses deriving from this theoretical framework are then introduced.

Purpose and specific objectives

This quantitative study applies a standard TPB model and an extended TPB model integrating personal norms to identify the main determinants of certified organic food purchasing behaviour.

To enable testing with statistical methods, each research question was formulated as one or more hypothesis. The hypotheses reflect the causal relationships established in the TPB model and its modified version. A survey methodology was undertaken to measure the independent and dependent variables related to the behaviour of interest. The data was obtained from a sample population of adult food shoppers, residents in Portugal, representing different levels of purchasing frequency of certified organic food.

Two structural equation models were then developed, establishing causal paths between latent constructs, each represented by several measured variables. The overall models and the hypothesized relationships among the research constructs were empirically tested using the maximum likelihood estimation method. The resulting parameter estimates support inferences about the relative importance of the predictor variables included in the models in influencing purchase decisions with regard to organic food.

Proposed theoretical framework

The theory of planned behaviour (Ajzen, 1985, 1991) offers a comprehensive and parsimonious theoretical framework for understanding purposive behaviour by integrating influential behavioural determinants and theorizing the structural relationships among them. Thus, following the TPB, the intention to purchase certified organic food was modelled as a function of attitude towards the behaviour, subjective norms with respect to the behaviour and perceived control over the behaviour. In turn, purchasing behaviour is co-determined by purchase intention and, when the behaviour is not under complete volitional control, by perceived behavioural control.

Furthermore, this study also aimed to test the validity and improved explanatory power of an extended version of the TPB, which incorporates the construct personal norms as an antecedent of behavioural intention, in combination with the standard TPB variables.

In both models, all theoretical constructs are assessed using direct global measures based on standard scaling procedures as recommended by Ajzen (1991, 2006a), which serve as manifest indicators of the latent constructs.

Statement of research hypotheses

To test the nature and direction of the theoretical relationships among the latent constructs posited by the two research models in the context of certified organic food purchasing (see Figure 3.1, p. 30), the following hypotheses are proposed:

Attitude towards the behaviour

Attitude has been a key concept in psychology and one of the most important concepts in the study of consumer behaviour (Peter *et al*., 1999).

An individual's attitude towards performing a particular behaviour is likely to be positive if that person perceives that there are positive outcomes resulting from that behaviour (Ajzen, 1985, 1991). Typically, attitude is measured as a single concept using semantic differential scales and bipolar adjectives that reflect both affective and evaluative judgments, which are though to be the basis of a person's overall evaluation or attitude (Ajzen, 1991, 2001). The evaluative component of attitude concerns the perceived costs and benefits of performing a given behaviour whereas the affective component of attitude is related to beliefs about positive or negative feelings derived from the behaviour (Ajzen, 1991).

Numerous studies found a strong positive relationship between consumers' attitudes towards buying organic food products and buying intentions (e.g., Sparks and Shepherd, 1992; Saba and Messina, 2003; Tarkiainen and Sundqvist, 2005; Honkanen *et al*., 2006; Chen, 2007; Gotschi *et al*., 2007; Arvola *et al*., 2008; Dean *et al*., 2008; Michaelidou and Hassan, 2008; Guido, 2009; Thøgersen, 2009a; Guido *et al*., 2010; Smith and Paladino, 2010; Ruiz de Maya *et al*., 2011; Dean *et al*., 2012; Pino *et al*., 2012; Thøgersen and Zhou, 2012; Urban *et al*., 2012; Zagata, 2012; Çabuk *et al*., 2014). Moreover, in many of these studies that included other TPB determinants, attitudes were unequivocally found to be the most important predictor of intention to buy organic food (e.g., Tarkiainen and Sundqvist, 2005; Chen, 2007; Arvola *et al*., 2008; Dean *et al*., 2008; Thøgersen, 2009a; Smith and Paladino, 2010; Thøgersen and Zhou, 2012). Hence, the more positive the attitude towards purchasing organic food, the greater is a person's intention to purchase it. Accordingly, it was hypothesized that there is a positive and significant relationship between attitude towards buying organic food and purchase intention. Thus, hypothesis 1.1 states that:

H1.1: *Attitude towards purchasing certified organic food is positively related to purchase intention.*

Subjective norms

The TPB holds that subjective norms also predict individual behavioural intentions. In the original formulation of the theory of reasoned action, which preceded the TPB, subjective norms reflected the individuals' perception about how most people, who are important to them, would view them engaging in a particular behaviour (Fishbein and Ajzen, 2010). According to Fishbein and Ajzen (2010), the influence of what important others think one should do may be derived from anticipated punishments or rewards, a sense of identification or perceived expertise or legitimacy to prescribe, desire or expect the performance or non-performance of the behaviour.

In view of the relatively weak contribution of subjective norms, which captured merely the injunctive norm component to the prediction of intentions, Ajzen (2006a) recommended the addition of descriptive norms. That is, besides the expectations of important others' approval or disapproval of their performing the behaviour, a second major source of perceived social pressure are the perceptions of others' behaviour, such as important, esteemed or similar referents (Fishbein and Ajzen, 2010). Fishbein and Ajzen (2010) also noted that the degree of identification with social referents may influence the importance of descriptive norms regarding the prediction of behavioural intentions.

The role of social normative factors within the TPB framework is particularly relevant in cases of environmentally responsible behaviour where the existence of socially accepted and desirable ethical values lead to normative pressures on consumers (Staats, 2003; Biel and Thøgersen, 2007; Lee, 2008). A strong relationship between subjective norm and intention has been shown in research on green consumer behaviour (Kalafatis *et al*., 1999; Bamberg, 2003), and Vermeir and Verbeke (2006) reported that the willingness to comply with the opinions of others could explain strong intentions to purchase sustainable dairy products despite having rather low personal attitudes.

Within the context of organic food purchasing behaviour, many empirical studies have also demonstrated a significant positive relationship between subjective norms and behavioural intention (Sparks and Shepherd 1992; Chen, 2007; Arvola *et al*., 2008; Dean *et al*., 2008; Guido, 2009; Thøgersen, 2009a; Guido *et al*., 2010; Smith and Paladino, 2010; Ruiz de Maya *et al*., 2011; Dean *et al*., 2012; Urban *et al*., 2012, Zagata, 2012; Pomsanam *et al*., 2014). From the three intention antecedents in the TPB, Ruiz de Maya *et al*. (2011) found that, subjective norms exerted the highest influence on people's intentions to buy organic products in seven European countries, and Urban *et al*. (2012) and Zagata (2012) drawn the same conclusion with regard to the Czech Republic. In line with this research, individuals' are more likely to intend to buy organic food products if they believe that relevant others expect them to do so and if they wish to be identified with referents that are purchasing organic food. Therefore, in this study, a positive relationship between subjective norms components and purchase intention was expected. Hence, hypothesis 1.2 is proposed as follows:

H1.2: *Subjective norms towards purchasing certified organic food are positively related to purchase intention.*

Perceived behavioural control

Perceived behavioural control (PBC) is an important concept in the theory of planned behaviour, distinguishing it from the theory of reasoned action (Ajzen, 1985, 1991). PBC refers to the individuals' perception of their ability to perform a given behaviour (Ajzen, 2002) and it is assumed to reflect anticipated impediments and obstacles, as well as, availability of requisite opportunities and resources, such as time, money, skills, information and will power, to overcome these inhibiting factors (Ajzen, 1985, 1991). The overarching concept of perceived behavioural control comprises perceived self-efficacy, dealing with the relative ease or difficulty of performing a behaviour, and perceived controllability, referring to the extent to which its performance is up to the actor (Ajzen, 2002).

According to Ajzen (2002) perceived behavioural control can account for considerable variance in behavioural intentions. As Ajzen and Fishbein (2005) pointed out, even if a person has strong positive attitudes towards certain behaviour, she or he might have little or no sense of control over it. On the contrary, where performance of behaviour is deemed to be relatively easy and within the means of the individual, intention to perform the behaviour will be strengthened.

In the context of organic food, the preponderance of generally favourable attitudes stands in contrast with the small size of the organic market share (Padel and Foster, 2005; Hughner *et al*., 2007; Aertsens *et al*., 2009; Thøgersen, 2009a). In fact, several studies found that largely positive attitudes towards organic food products were not expressed in buying intentions or purchase behaviour (e.g., Roddy *et al*., 1996; Magnusson *et al*., 2001; Padel and Foster, 2005; Lucas *et al*., 2008; Truninger, 2010). The general consensus in the literature is that control issues related to market imperfections such as prices, marketing and sales channels, to which adds lack of trust in the organic certification process are a powerful constraint on purchasing behaviour (Hughner *et al*., 2007; Aertsens *et al*., 2009; Pearson *et al*., 2011). Following this line of reasoning, perceptions of control over organic food purchasing may be enhanced by certain factors, such as higher income, increased choice and availability of organic food products, and greater levels of trust, resulting in stronger buying intentions.

Previous research reported that perceived behavioural control contributed significantly to predict the intention to purchase organic food (Chen, 2007; Guido *et al*., 2010; Thøgersen and Zhou, 2012; Zagata, 2012; Pomsanam *et al*., 2014). Dean *et al*. (2008) also found a significant positive effect from PBC on the intention to buy organic apples, although this relation was not significant for organic pizza. Using a different approach to PBC, Thøgersen (2009a) and Aertsens *et al*. (2011) have demonstrated that perceived barriers negatively influenced intention to buy organic tomato products and organic vegetables consumption, respectively. Consequently, intention to buy organic food is likely to be higher when consumers perceive more control over buying these products. Given the higher prices and access difficulties ascribed to organic food products when compared to their conventional alternatives (Lucas *et al*., 2008; Truninger,

2010), this study assumed that perceived behavioural control has a positive influence on purchase intention for organic food products and hypothesis 1.3 is postulated as:

H1.3: *Perceived behavioural control over purchasing certified organic food is positively related to purchase intention.*

Behavioural achievement

Finally, according to Ajzen (1985, 1991), behavioural achievement is a joint function of motivation (behavioural intention) and ability (behavioural control). Given a sufficient degree of actual control over the behaviour, intention is assumed to be the immediate antecedent of behaviour (Ajzen, 2002). In other words, the TPB requires that individuals have intention to perform the behaviour in order to successfully achieve their purpose.

Confirming the central role of intentions within the TPB, several studies have found a positive and significant path from intentions of buying organic food to buying behaviour (Saba and Messina, 2003; Tarkiainen and Sundqvist, 2005; Smith and Paladino, 2010; Voon *et al*., 2011; Thøgersen and Zhou, 2012; Zagata, 2012). Thøgersen (2009a), who studied the consumer decision-making with regard to organic food products across eight European countries, also found a strong positive relationship between buying intentions and behaviour in the North countries. Given that behavioural intentions were reported to be significant predictors of actual behaviour, it is, thus, hypothesised that:

H2.1: *Intention to purchase certified organic food is positively related to purchasing behaviour.*

However, as volitional control over the behaviour declines, the addition of a direct causal path from perceived behavioural control to behavioural achievement becomes increasingly useful (Ajzen, 1991). The inclusion of PBC as a predictor of behaviour is based on the rationale that holding intention constant, performance of the intended behaviour should increase with behavioural control, and that perceived behavioural control can be used as a proxy measure for actual control (Ajzen, 1991).

Zagata (2012) reported that PBC significantly contributed to the explained variance of organic food purchasing behaviour, although purchase intention was a better predictor variable. More strikingly, the abovementioned research conducted by Thøgersen (2009a) found a positive but weak relationship between buying intentions and buying behaviour in the south European countries, which have the least developed organic market, suggesting that perceived constraints and barriers prevent consumers from acting on their intentions. In China, another laggard country, the perceived ease or difficulty of buying organic food emerged as a stronger predictor of behaviour than behavioural intentions (Thøgersen and Zhou, 2012). The very small size of the Portuguese organic market (Crisóstomo, 2011), on the one hand, and the fact that even the most committed consumers cannot always put their intentions into practice (Truninger, 2010), on the other hand, led to hypothesize the following:

H2.2: *Perceived behavioural control over purchasing certified organic food*

products is positively related to purchasing behaviour.

The theory of planned behaviour proposes that intention to engage in a particular behaviour mediates the relationships between the three independent TPB predictors and behavioural achievement. Specifically, it is postulated that more favourable attitudes and subjective norms towards the behaviour and greater perceived behavioural control would result in a stronger behavioural intention, which in turn, is believed to make its performance more likely (Ajzen, 1991). In other words, intention serves as an explanatory mechanism for the associations between intention antecedents and the performance of the behaviour.

From all the studies that applied the TPB to organic food purchasing, only Zagata (2012) included all the antecedents of intention and measures of purchase intention and behaviour within the same model. In order to fill this gap, this study also sought to explore the mediating effect of attitude, subjective norms and perceived behaviour control on behaviour through purchase intention. Therefore, it was expected that individuals who hold favourable attitudes, positive subjective norms and adequate PBC would purchase more organic food, because they have a greater intention to do so. Assuming that all the previous hypotheses hold, it is thus hypothesized that:

H2.3: *Intention to purchase certified organic food fully mediates the effects of attitude and subjective norms on purchasing behaviour and partially mediates the effects of perceived behaviour control.*

Personal norms

Within the field of food choice research, personal norms have often been operationalized according to Schwartz's concept (1977), referring to perceived moral obligation to act on one's internalized norms, which reflect the individual's personal beliefs about right and wrong. Personal norms are assumed to be a product of reasoning about the behaviour's self-relevant consequences or reflect norms which have been learned from important others during life (Schwartz, 1977). Furthermore, according to Schwartz (1977), the motivation to act upon one's own personal moral principles arises from anticipated emotional consequences to the self, such as obligation or guilt when violating one's own personal norms, and pride and contentment with oneself when adhering to one's own personal norms.

The inclusion of the personal norms in the TPB has received empirical support in predicting behaviours with an ethical dimension (Conner and Armitage, 1998; Thøgersen, 2002) and the choice of foods which are grounded on some kind of moral reasoning (Shepherd *et al*., 1995).

Purchases of organic food may be guided by personal norms to the extent to which it is motivated by altruistic considerations, such as care for the environment, animal welfare and people involved in the food chain or who are affected by the use of natural resources, as well as, for people who one serves food (Niva *et al*., 2004; Torjusen *et al*., 2004; Midmore *et al*., 2005; Ayres and Midmore, 2009). Consequently, several studies have shown an independent

predictive effect of personal norms on behavioural intention or behavioural achievement, thus increasing the amount of explained variance in the dependent variable (Thøgersen, 2002; Thøgersen and Ölander, 2006; Arvola *et al*., 2008; Dean *et al*., 2008; Guido, 2009; Thøgersen, 2009b; Guido *et al*., 2010; Dean *et al*., 2012). In agreement with this research stream, it is expected to find support for the usefulness of including a measure of personal norms into the TPB framework. Particularly, it is anticipated that personal norms have a role, distinct from the other TPB constructs, in predicting intentions to purchase organic food, improving model fit and the predictive ability of the model. Therefore, it is hypothesized that:

H3.1: *An alternative model comprising all the TPB constructs and personal norms can more accurately explain certified organic food purchasing behaviour, compared to the original TPB model.*

More specifically, it is expected that strong personal norms about purchasing organic food positively influence purchase intention. Thus, hypothesis 3.2 is formulated as follows:

H3.2: *Personal norms about purchasing certified organic food are positively related to purchase intention.*

METHODOLOGY

This section provides a description of the research sampling strategy, development of the research questionnaire and implementation of data collection undertaken in order to adequately address this study's objectives, namely by testing the TPB model and an extended TPB model, henceforth designated ETPB, in the context of certified organic food purchase in Portugal. Thereafter, the statistical methods and procedures used to analyse the hypotheses postulated for the study are explained.

Research design

Sampling method and design

The use of such a theoretical framework to understand the influences of factors predicting consumers' decisions about purchasing certified organic food requires a data-collection strategy that meets such demand at an operational level. Obtaining data from a sample consisting of regular, occasional and non-buyers seemed therefore the most appropriate choice. In addition, a large sample was required in order to provide high statistical power and precise estimation of the model parameters, and hence this study targeted a sample size of 600 respondents.

Given the small size of the organic market, organic buyers can be considered a rare population, defined as a small, often geographically dispersed, part of the whole population (Lohr, 2008). In the absence of a sampling frame covering this group of people that were of interest to the research from which to draw a random sample, sample selection was done by non-probability methods using convenience quota sampling. Equal quotas were imposed based on the frequency

of purchase of certified organic food in order to capture an adequate number of respondents from each of the three buyer groups. Buyer groups were defined on the basis of the following criterion: respondents who asserted they purchased organic food at least once a week were considered regular buyers, whereas those who indicated that they purchased organic food at least once a month were considered occasional buyers (cf. Roddy *et al*., 1996; Zanoli and Naspetti, 2002; Naspetti *et al*., 2008). The remainder respondents were considered non-buyers given that self-reported sporadic purchase behaviour is usually interpreted in terms of general lack of importance of organic food.

In addition, women were specifically targeted because, in most developed countries they are still the main responsible for household food shopping. In line with other studies (e.g., Klöckner and Ohms, 2009; Ness *et al*., 2010), a quota of approximately 70% was set for women to reflect the gender split for food purchasing responsibility.

To circumvent the lack of representativeness of the target population inherent to non-probability sampling designs, sampling quotas were also set for age, education level, professional occupation, marital status, geographical region, nationality, household size, composition and income, on the basis of the National Statistical Office projections (INE, 2012a, 2012b).

Taking into account the main objective of the overall study, the respondents were further recruited according to the criteria that they were aged 18 and over, at least partially responsible for the household food shopping and residents in Portugal.

Operationalization of the study constructs

To secure accurate estimation of the hypothesized relations among the theoretical constructs and the models' predictive ability it is necessary to formulate appropriate measurement items for those constructs in the formative stages of the investigation (Ajzen, 2006a).

This study has six latent constructs, which are inferred from the responses to multiple indicators derived from the pertinent literature and findings from focus group discussions with regular, occasional and non-buyers of certified organic food, in order to establish greater content validity. Furthermore, two experienced researchers familiarized with the topic and with the constructs under investigation participated in the content evaluation of the operational definition of the study constructs.

The structure of the survey questionnaire was prepared in accordance with a standard application of the TPB (Ajzen, 2006a) and consisted of close-ended questions with defined response scales, such that higher values indicated more of the construct measured. To better capture variations in opinion, with the exception of the construct behaviour, wide seven-point bipolar scales with a neutral middle point were chosen. Each construct was represented by at least two items and all items were formulated at the same level of specificity, in terms of the defined behavioural criterion, i.e. purchasing certified organic food for the household.

The wording of measurement items for the study variables is displayed in Table 4.1 and their source and rationale are detailed below.

Table 4.1 - Multi-item measurement scales for latent variables of the TPB and ETPB models

Item	Wording	Rating scale
Attitude towards the behaviour		
att1	Purchasing certified organic food for my household is…	Very unpleasant - Very pleasant
att2		Very harmful - Very beneficial
att3		Very negative - Very positive
Subjective norms		
sn1	Most people who are important to me purchase certified organic food for their household	Completely disagree - Completely agree
sn2	My doctor or nutritionist thinks I should purchase certified organic food for my household	Completely disagree - Completely agree
sn3	Most of my close relatives would approve my choice to purchase certified organic food for my household	Completely disagree - Completely agree
sn4	Most of my friends would approve my choice to purchase certified organic food for my household	Completely disagree - Completely agree
sn5	The approval of my household members is important to me when purchasing certified organic food for the household	Completely disagree - Completely agree
Perceived behavioural control		
pbc1	If I wanted to purchase certified organic food for my household, I would find it…	Very difficult - Very easy
pbc2	Whether or not I purchase certified organic food for my household, is under…	No control - Complete control
Personal norms		
pn1	I feel I should purchase certified organic food for my household instead of conventional one	Completely disagree - Completely agree
pn2	I would feel guilty if I purchased conventional food for my household instead of certified organic one	Completely disagree - Completely agree
pn3	Purchasing certified organic food for my household instead of conventional one would feel like the morally right thing	Completely disagree - Completely agree
pn4	Purchasing certified organic food for my household instead of conventional one would make me feel like a better person	Completely disagree - Completely agree
Behavioural intention		
int1	Willingness to pay more for certified organic food products for the household	Very unwilling - Very willing
int2	Likelihood of purchasing certified organic food for the household next month	Very unlikely - Very likely
Behavioural achievement		
beh1	In the past year, I purchased certified organic food for my household…	1=never; 2=less than once a month; 3=at least once a month; 4=at least once a week
beh2	Average weekly expenditure on certified organic food for the household in the past year	1= 0€; 2= 1-25€; 3= 26-50€; 4 >50€

Note: All responses were made on 7-point bipolar scales unless otherwise indicated.

Attitude towards the behaviour

Attitude towards a specific behaviour represents a summary evaluation of the behaviour under consideration (Ajzen, 1991, 2001). Respondents' attitude towards buying certified organic food for their household was developed using three items adapted from Ajzen's (1991, 2006a) work, selected judgmentally to

reflect an affective, an evaluative and an overall response. Following the procedure suggested by Ajzen (1991, 2001), each item was measured on a seven-point semantic differential scale ranging from 1 to 7, labelled at the extremes as ‘‘very unpleasant/very pleasant’’, “very harmful/very beneficial” and ‘‘very negative/ very positive’’, respectively.

Subjective norms

Subjective norm is the perceived social pressure for a person to perform or not to perform a given behaviour (Ajzen, 1985, 1991). For an adequate conceptualisation of perceived normative pressure, this study followed Ajzen’s (2006a) recommendation and measured both descriptive norms (*sn1*), to disclose perceptions of whether important others perform the behaviour in question, and injunctive norms, to unveil what significant others think should be done (*sn2* to *sn5*). Salient normative referents were identified through elicitation conducted during focus group discussions. The items were adapted from Ajzen (2006a) and measured using a seven-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree).

Perceived behaviour control

Direct measures of perceived behavioural control are designed to capture respondent’s perception of the degree to which they are capable of performing a given behaviour (Ajzen, 2002). As recommended by Ajzen (2002, 2006a), the perceived behavioural control scale was jointly composed by two items, which captured both facets of PBC. The first item referred to self-efficacy and was rated on a seven-point scale ranging from “very difficult” to “very easy”. The second item evaluated controllability and was scored using a scale from 1 (no control) to 7 (complete control).

Personal norms

Personal norms may be translated into negative or positive moral feelings that prompt the individuals to act in a way that corresponds to one’s own views about right and wrong (Schwartz, 1977). This additional construct was devised to test an extended version of the TPB (ETPB) and was operationalized with four items in order to reflect negative feelings of moral obligation (*pn1*) and guilt (*pn2*), as well as, self-enhancing feelings of doing the morally right thing (*pn3*) and of contributing to something better (*pn4*). The first item was taken from Thøgersen and Ölander (2006) and the remainder were adopted from Dean *et al*. (2008), and they were all measured on seven-point Likert scales ranging from 1 (completely disagree) to 7 (completely agree).

Behavioural intention

Behavioural intention is an indication of a person's readiness to perform a given behaviour (Ajzen, 1985; Fishbein and Ajzen, 2010) and consisted of two items. One item was adapted from Ajzen (2006a) and asked the respondents to indicate the likelihood of purchasing certified organic food for their households within the next month. Response options ranged from 1 (very unlikely) to 7 (very likely). Ajzen (2006a) suggests various expressions of behavioural readiness to ensure high internal consistency of the scale, but consideration of semantic

similarities could result in significant item redundancy and narrowness of the scale (Boyle, 1991). Thus, to maximize the breadth of the measurement, a measure of willingness to pay for purchasing certified organic food products was considered as a proxy for behavioural intention based on findings from the focus groups and previous research (Ajzen and Driver, 1992; Pouta and Rekola, 2001; Bernath and Roschewitz, 2008; Voon *et al*., 2011). The answers were collected through a scale of 1 (very unwilling) to 7 (very willing).

Behavioural achievement

The primary dependent variable was measured by means of self-reports of past purchase behaviour, which is typical in TPB studies (Armitage and Conner, 1991). To the extent that the behaviour in question has a high degree of temporal stability, past behaviour can serve as a proxy measure of future behaviour, given that past behaviour may be seen as a function of all factors that determine the behaviour of interest (Ajzen, 1991; Fishbein and Ajzen, 2010).

Two items assessed extent of purchasing certified organic food in the past year. The first item asked about frequency of purchase and was derived from the literature (Grunert and Juhl, 1995; Saba and Messina, 2003; Tarkiainen and Sundqvist, 2005; Thøgersen, 2009a; Thøgersen and Zhou, 2012; Zagata, 2012; Bravo *et al*., 2013), using a four-point scale in which 1=never, 2=less than once a month, 3=at least once a month and 4=at least once a week. The second item arose from exploratory research using focus groups, which made it clear that the share of the food budget allocated for organic food also contributed to distinguish participants' level of purchasing experience, which finds support in the study of Wier *et al*. (2008). This question requested the average amount of money weekly spent on certified organic food and was directed only to those who answered 3 or 4 to the previous question. The responses consisted of continuous data, which were grouped into three categories: 2 (1-25€), 3 (26-50€) and 4 (>50€). The remainder participants were automatically given a score of 1 (0€) for this item.

Survey instrument development

For the purpose of data collection, a structured questionnaire comprising three major parts was designed based on prior literature.

Its first section was aimed at screening potential respondents for age, food shopping responsibility and Portuguese residence and, in case of eligibility, it posed a filter question to determine participants' awareness of certified organic food. Respondents with no prior knowledge of the topic were not considered to have a meaningful opinion on the following questions and were guided to the last section of the survey. Inversely, respondents who had previously heard about certified organic food answered to the second part of the survey, which comprised questions concerning measurement of the TPB constructs, i.e. attitude, subjective norms, perceived behavioural control, behavioural intention and behavioural achievement; and personal norms as an added construct.

The final part of the questionnaire collected data on demographic and socio-economic characteristics of the respondents to generate descriptive statistics

about the study sample.

The questionnaire was developed in English and translated into Portuguese. In order to check the validity of the translation, a professional translator not involved in the study back translated the questionnaire into English. The two versions were then contrasted to ensure overall conceptual equivalence and the minor discrepancies identified were amended.

Finally, the questionnaire was pretested by a purposive sample of 74 adults similar to those from the population to be studied (Hair *et al*., 2010). The survey was administered by e-mail through the personal network of the researcher and provided space for comments to allow the respondents to give their feedback about the overall survey, software functioning, questions interpretation, untapped dimensions of the constructs and other issues they though relevant. Empirical analyses were conducted on data collected from the pilot study to examine the scales' internal consistency by using Cronbach's alpha with the purpose of establishing the reliability of the direct measures of the study latent constructs as recommended by Ajzen (2006a). Modifications were made to the PBC construct which showed a low degree of internal consistency due to the lack of semantic overlap between its items, leading to the inclusion of a relevant item (*pbc3*) intended to improve the measurement of perceived behaviour controllability. This additional item was adapted from Ajzen (2002) and assessed the extent to which the respondents could purchase certified organic food whenever they wanted or needed it, using a seven-point Likert scale, which ranged from 1 (completely disagree) to 7 (completely agree).

The final version of the questionnaire used in this study is shown in Appendix A.

Data collection technique

To collect primary data, the questionnaire was self-administered and disseminated through the Web.

Online surveys have the potential to reach a large number of individuals from a geographically dispersed population within a short period of time at a reasonable cost to the researcher, as compared with an equivalent face-to-face, postal or telephone survey (Wright, 2005; Sue and Ritter, 2007; Bethlehem, 2010). Furthermore, this type of surveys takes advantage of the ability of the Internet to provide access to individuals who would otherwise be difficult to reach through other channels (Wright, 2005; Bernard, 2006), such as groups that represent a small proportion of an overall population.

Trough the use of self-administered questionnaires, respondents are more willing to report socially undesirable behaviours and traits due to a sense of security, which is enhanced by the anonymity ensured by website-based surveys (Bernard, 2006; Sue and Ritter, 2007). Besides, there is no possible interviewer bias and standardization of measurement is ensured, given that all interviewees are asked precisely the same questions and provided the same information (Bernard, 2006). Online surveys have the further benefits of being perceived as less intrusive and giving respondents the opportunity to answer at a time that is convenient for them (Evans and Mathur, 2005).

Most online survey software packages offer the availability of survey flow logic, which makes contingency questions effective (Bernard, 2006; Sue and Ritter, 2007), avoiding respondents answering questions that do not apply to them. In addition, advanced options may be used to randomize items within blocks of questions to control for any possible systematic influences of the questions order (Wright, 2005; Smith and Albaum, 2010). Survey error is further reduced because responses are automatically documented (Bernard, 2006; Sue and Ritter, 2007), therefore eliminating error associated with data entry, coding and transcription. Finally, item non-response may be excluded by requiring answers to all the questions before allowing survey data submission (Wright, 2005).

However, a major limitation of online surveys is their inability to represent the general population. Online sampling frames have innate coverage bias given that not all elements of the target population have access to the Internet (Sue and Ritter, 2007; Bethlehem, 2010; Smith and Albaum, 2010). Furthermore, although the gap is closing, the online population is potentially different from the general population (Evans and Mathur, 2005; Bethlehem, 2010). On the other hand, participants select themselves for the survey causing self-selection bias (Wright, 2005; Bethlehem, 2010). This may signify that respondents will be individuals who are more likely than others to complete the questionnaire for reasons that may be related to the topic of the study itself or the provision of incentives (Smith and Albaum, 2010). There may also be survey difficulties due to the lack of familiarity with Internet (Evans and Mathur, 2005). Therefore, online surveys have a potential of high non-response rates (Bethlehem, 2010). Finally, the possibility of multiple responses from participants may further bias the results (Wright, 2005).

Data collection plan

Although best fitted for the purpose of this study, online surveys have some potential weaknesses that were addressed through careful planning.

The survey was implemented between October 1 and December 15, 2013, through a hyperlink posted on Facebook using both a profile and a page especially created for this purpose.

According to the EUROSTAT (2015), Internet penetration has reached 65% of the population over 15 years old in Portugal in 2013, which limited coverage error. Furthermore, at the end of 2012, Facebook statistics indicated that, out of the 10,5 million Portuguese, almost 4,7 million were Facebook subscribers (Internet World Stats, 2015).

To improve response rates and reduce response and self-selection bias several techniques were used.

Professionalism

Survey responses were captured by commercial software developed especially for use with online surveys (QuestionPro), for which it was paid an annual license fee for unlimited responses and technical support. Besides offering user friendliness and sophisticated visual appearance, this software for creating

online questionnaires includes many useful features such as filter questions to determine if the respondent can participate in the survey, skip logic which lead the respondent to the correct question based upon previous responses, randomizing answer options so as to reduce position bias within items designed to assess the same construct, a required answer option to avoid missing data, text validation to set character limit or numeric data range, radio buttons and dropdown lists to allow respondents to swiftly select one of a predefined set of answer options, and a progress bar that denotes how far the respondent has come in the questionnaire. Furthermore, QuestionPro provides tools for distributing the questionnaire such as Facebook integration, prevents multiple responses from the same computer by enabling ABBS (Anti Ballot Box Stuffing) option and allows exporting data into different formats over time, as it collects and records survey results in real time. Also, the link to the survey was made public so anyone with the link could complete the questionnaire and its text customized to reflect the study topic.

Facebook page and profile

Both a Facebook page and profile were set up with the sole intent of conducting survey research. The main aim of using this social media platform was to distribute the questionnaire and simultaneously to foster engagement of those who were members of the target population. For this, it was important to reveal the identity and credentials of the researcher, disclose which university institution was behind the study, and announce the 26 organic sector companies that were sponsoring the study by offering their products for a final draw among the interested respondents. By the end of the survey period, more than 350 people became friends and the official page received up to 300 likes.

Each Facebook option offered different advantages. The page allowed running ads targeted by location, shown interests, age and gender, while the profile ensured that posted contents were more visible through friends' timelines and newsfeeds, and joined Facebook groups that offered access to people who share specific interests and characteristics. Both the page and the profile provided the "like" function, which further assisted in dissemination of posts.

Throughout the survey data collection process, constant communication was maintained in the two Facebook environments, posting the updated number of participants who completed the questionnaire and reminders of the closing date.

Reaching the target population

During the survey period, both Facebook page and profile were means for establishing contact with potential respondents to ensure that the target population was reached. Friends and groups were selected purposely to meet the quota requirements, starting with food-related (including organic food) virtual communities. With the due permission, invitations to participate in the survey were posted sporadically in their timelines. After data collection started, the researcher continuously assessed whether the sampling quotas were skewed in any way by matching the survey sample socio-economic and demographics to known population data. Based on tracking results, the number of those who were elderly, lived out of the main cities, had lower education levels and,

particularly, have never bought certified organic food was systematically underrepresented. Thus, distribution efforts focused on addressing self-selection bias by adding new friends who fulfilled those characteristics and joining a variety of regional and food-related thematic Facebook groups. Until the closing date of the survey, a great number of personalized contacts were endeavoured to obtain higher response rates. One-off solicitations were also placed into diverse Facebook pages of national food-related movements and major companies.

Introductory note

Each time the survey was announced on Facebook, a brief message attached to it, entitled "Survey on Organic Food in Portugal" explained the academic purpose of the study, the topic of the survey, eligibility requirements, the estimated time to complete the questionnaire and the incentive provided. To enhance credibility and accuracy of responses, it noted that the anonymity of all respondents will be preserved and included the name of the researcher and e-mail contact to clarify any issues. Finally respondents were encouraged to share the link to the survey with friends and relatives.

Incentives

To encourage potential respondents to complete the questionnaire and secure access to groups with less social capital (Tyldum, 2012), respondents were offered the chance to win one 100€ or two 50€ gift boxes including organic food products endowed by various Portuguese organic producers and processors. The remainder could still win one of 100 packages of organic tea or coffee. To qualify for the draw, the respondents needed to complete the questionnaire, leave an e-mail contact and express their interest in participating. All who met these conditions were assigned numbers according to the sequence in which they entered the study and the winners were randomly selected using an online randomization system. For the sake of transparency, the first names and region of residence of the first three winners as well as, photos of the awarded organic food boxes were published in the Facebook page and profile.

Questionnaire accessibility, usability and engageability

The respondents accessed the questionnaire by clicking on the link posted on Facebook and submitted the completed questionnaire by using a submit button on the final page the questionnaire.

An initial welcome note included information on the scope of the research, general instructions for questionnaire completion (see Appendix A), confidentiality and voluntary participation statements and contact details. A final thank you page was also incorporated.

The questionnaire was made as short as possible, and questions were grouped together in short blocks. Instructions for question completion were kept simple and concise and questions and items wording were carefully revised to ensure ease of comprehension. Only closed ended questions were included, although respondents were allowed to write comments at the end of each set of questions

Timing

To achieve a sufficiently high response rate, the questionnaire was kept online for a period of two and half months during which people are not normally on holidays. Furthermore, links to the survey were preferably posted early in the evening during the weekdays to increase the likelihood that people will notice the questionnaire and will also have ample time to answer.

Data analysis

Structural equation modeling

Structural equation modeling (SEM) was used to model and examine the hypothesized relationships between the research constructs derived from the theory of planned behaviour and its modified version as it became the most prominent statistical method for testing the implicit causal assumptions of theories (Hair *et al*., 2010; Byrne, 2010; Schumacker and Lomax, 2010).

SEM is a multivariate statistical analysis technique that combines aspects of factor analysis and multiple regression analysis enabling to simultaneously analyse dependence relationships between measured variables and latent constructs, as well as, between several latent constructs (Hair *et al*., 2010).

Particularly, one of the main advantages of SEM is that it is possible to incorporate unobserved theoretical variables into the analysis that may only be indirectly measured through multiple manifest variables or indicators, while accounting for their measurement error, thus improving the statistical estimation of the relationships between constructs (Hair *et al*., 2010; Schumacker and Lomax, 2010; Kline, 2011).

Moreover, SEM's strength in accommodating multiple dependent variables is further distinguished in that it allows simultaneous estimation of multiple dependence relationships among independent and dependent variables, which can be independent variables in other relationships, by combining a series of multiple regression equations within one structural model (Hair *et al*., 2010).

Finally, SEM offers the advantage of providing global measures of fit for the overall model compared to the observed data, determining if the estimated covariance matrix that results from the proposed model has acceptable correspondence to the sample covariance matrix (Hair *et al*., 2010; Kline 2011). Besides enabling to accept the theoretical model as plausible, which is required before examining any specific structural relationship, measures of fit allow for overall model comparisons and hence testing of competing theories (Hair *et al*., 2010).

Two-step approach

A structural equation model consists of both structural and measurement levels of analysis (Hair *et al*., 2010). The measurement model specifies the relationships between the observed variables and the latent variables while the structural model specifies the relationships amongst the latent variables according to the study hypotheses.

A two-step approach is used to estimate the models (Anderson and Gerbing, 1988), which emphasizes the analysis of the measurement and structural models as two conceptually distinct models. The evaluation of the measurement model is carried out before testing the structural model to ensure that the latent constructs are adequately measured by their indicators and the measurement model achieves acceptable fit (Hair *et al*., 2010; Schumacker and Lomax, 2010). The measurement model is evaluated with confirmatory factor analysis (CFA) based on the covariance between all the observed variables. Once a satisfactory measurement model is obtained, the second step is to test the structural model with structural equation modeling (SEM), by estimating the nature, magnitude and significance of the hypothesized structural relationships between the theoretical constructs, while taking into account the measurement error of the observed variables.

Estimation method

Maximum likelihood (ML) is the most widely used fitting function in SEM research (Brown, 2006; Hair *et al*., 2010). It aims to find the parameter estimates that maximize the likelihood of drawing the observed data from a particular population, by minimizing the difference between sample covariance values and those predicted by the model in an iterative procedure (Brown, 2006; Hair *et al*., 2010; Kline, 2011).

Maximum likelihood parameter estimates are asymptotically unbiased, efficient and consistent, i.e. as the sample size increases, the ML estimates tend in probability to the true value of the population parameter, with minimum variance and approximate normal distributions (Hair *et al*., 2010; Kline, 2011; Marôco, 2014).

In this study, the maximum likelihood method was used to estimate parameters of the two models, albeit it assumes that the observed variables are continuous and multivariate normally distributed. Given the limitations of alternative estimation methods, treating categorical variables derived from the use of ordinal scaled measures as if they were continuous has been the norm in SEM analyses (Byrne, 2010), as well as, in the research field of organic food purchase decisions (e.g., Tarkiainen and Sundqvist, 2005; Honkanen *et al*., 2006; Arvola *et al*., 2008; Thøgersen, 2009a; Urban *et al*., 2012).

Indeed, the most appropriate estimation methods to model ordered categorical data are mean-adjusted weighted least squares (WLSM), mean- and variance-adjusted weighted least squares (WLSMV) and diagonally weighted least squares (DWLS) (Kline, 2011). However, these robust weighted least squares methods require much larger sample sizes or fairly simple models for obtaining reliable estimates (Brown, 2006; Finney and DiStefano, 2013).

Instead, when the variables have five or more categories, the data can be treated as continuous in nature, and the failure of the ML method to address the ordinality of the data is likely negligible (Byrne, 2010; Finney and DiStefano, 2013). Furthermore, the ML estimator is found to be reasonably robust to violations of the normality assumption (Hair *et al*., 2010; Finney and DiStefano, 2013). Finally, larger sample sizes reduce the detrimental effects of non-

normality (Hair *et al*., 2010). That is, the central limit theorem reassures that sufficiently large samples support the tenability of an asymptotic distribution of estimates regardless of the distribution of the variables.

However, nonnormality can lead to spuriously low standard errors and inflated chi-square values and, thus, to statistically significant parameter estimates and fit statistics more often than is correct (Kline, 2011). As such, when analysing severely non-normal data with a method that assumes normality, an alternative remedial strategy known as the bootstrap procedure is recommended (Byrne, 2010; Schumacker and Lomax, 2010; Kline, 2011; Finney and DiStefano, 2013). The value of this non-parametric technique lies in the fact that it may be used without making the assumption of normality of the sampling distribution (Finney and DiStefano, 2013). In a bootstrap approach, a large number of samples are randomly drawn (with replacement) from the original data set and the results are averaged to examine the stability and precision of model parameters and, depending on the software program, the stability of fit statistics (Brown, 2006; Byrne, 2010; Kline, 2011). Specifically, bootstrapping is used to compute confidence intervals and their associated *p*-values for significance tests of individual parameter estimates based upon bias-correction, as well as, to implement the Bollen-Stine bootstrap approach to model fit testing (Bollen and Stine, 1992). For a greater degree of accuracy given by bootstrapped results, a moderately large sample (e.g., N ≥ 200) and a high number of replications (e.g., 500; 2000) are required.

Preliminary statistical analyses

Data preparation and screening

Prior to model estimation, Kline (2011) recommends careful data screening for accuracy of data input, missing data, outliers, and assumptions associated with the method used to estimate the parameters in SEM.

Data editing and coding

Careful scrutiny of the completed questionnaires should be undertaken to ensure response completeness and to check for duplicate and unengaged responses before further statistical analyses. Frequency distributions of all the observed variables are examined to determine the number of missing values for each variable. Additionally, data cases with negligible variance reveal the presence of unengaged responses and should be discarded, as they are useless for finding significant relationships. Finally, a visual assessment should be carried out to identify any duplicate submissions within the database.

Of all measurement items *beh2* was the only continuous observed variable, which was coded into a scaled ordinal variable with four categories.

Detecting and handling outliers

Problematic outliers can seriously distort statistical tests. Therefore, the presence of outliers must be assessed and their influence examined within the context of the analysis to decide on their retention or exclusion (Hair *et al*., 2010). Furthermore, deletion of outliers may also contribute to multivariate

normality and homoscedasticity (Kline, 2011).

Univariate outliers are cases with extreme scores on a single variable and are identified by inspecting frequency distributions of *z*-scores (e.g., $|z| > 3.29$). Although not generally likely in ordinal scale questions, potential outliers should be examined among continuous variables to determine whether they are erroneous observations due to misreporting in the data-collection process.

Multivariate outliers have extreme scores on two or more variables, or their pattern of scores is atypical. A common approach to the detection of multivariate outliers is the Mahalanobis distance (D^2) statistical test that allows for significance testing, where higher D^2 values represent observations farther removed from the general distribution of observations (Hair *et al*., 2010). Several authors (Hair *et al*. 2010; Kline, 2011) recommend a conservative level of statistical significance (i.e. *p1* and *p2* < .001) as a threshold value for designation as an outlier.

Effective sample size

SEM is a large-sample technique (Kline, 2011). That is, a sample size should be large enough to ensure adequate statistical power as it provides a basis for accurate estimation of individual parameters (Hair *et al*., 2010; Kline, 2011). In absolute terms, Barret (2007) suggests a minimum sample size of 200 cases for reliable SEM. However, an adequate sample size depends on the complexity of the model, the estimation method used and the distributional characteristics of the data (Kline, 2011).

In ML estimation, Kline (2011) recommends a minimum sample size in terms of the ratio of cases (*N*) to the number of model parameters that require statistical estimates (*q*) of 10:1.

Descriptive research

Means and standard deviations were computed for all observed variables of both models' latent constructs. Each question set was merged together and averaged to reveal respondents mean reply to each research construct. In addition, frequency and percentage distributions were used to summarize the demographic and socio-economic characteristics of the sample, upon which SEM analyses are based.

Two-tailed, zero-order correlations were conducted to examine the relationship between observed variables and between latent constructs. Considering the sample size and the wide range of available responses in the ordinal scaled measures, the equal interval properties of the response choices may be assumed making it appropriate the use the Pearson's correlation coefficient (*r*) to assess the magnitude of the association among variables. Particularly, Ajzen (2006a) and Ajzen and Fishbein (1980) recommend the use of correlational analysis to establish that the items selected to be a direct measure of a theoretical construct do in fact assess the same underlying construct and the strength of the relationships between the predictor and the dependent variables. For this purpose, measures of the latent constructs were based on composite variables

calculated as a linear combination of its indicators.

SEM required assumptions

Multivariate normality

The ML estimation assumes multivariate normality of the observed variables, which is assessed through evaluation of the normality of all the univariate distributions and Mardia's test.

Univariate Normality

All items were examined for univariate normality. According to Kline (2011), variables with absolute values of the skew index greater than 3.0 and kurtosis index greater than 10.0 are assumed to severely violate the normal distribution assumption.

Mardia's multivariate normality test

Regardless of whether the individual variables are normally distributed, the set of variables may not be distributed as multivariate normal. This assumption is assessed using Mardia's test for multivariate normality based on the index of multivariate kurtosis and, most importantly, its associated critical ratio. In very large samples, this critical ratio is equivalent to a *z*-score, representing Mardia's normalized estimate of multivariate kurtosis (Byrne, 2010). Thus, if the critical ratio of Mardia's coefficient of multivariate kurtosis is smaller than 1.96, a sample can be considered multivariate normal at the 0.05 significance level.

Linearity and homoscedasticity

The second assumption of SEM deals with linearity of the relationships between dependent and independent variables and homoscedasticity (uniform distributions) among residuals. Linearity and the assumption of uniform variance of the residuals across all levels of the predictors are checked by examining the studentized residuals of the regression plots provided for each independent variable against the predicted dependent values (Hair *et al*. 2010). In order to simplify analyses, Hair *et al*. (2010) suggest to replace the original set of variables with composite variables, combining the factor loadings of the variables within each latent construct into a single score.

Multicollinearity

Multicollinearity refers to the extent to which an independent variable can be explained by the other independent variables in the analysis, which is told by their correlation coefficient. When two or more independent variables are highly correlated, they are close to being identical, which reduces their ability to predict the dependent construct and makes it more difficult to ascertain the effect of each independent variable owing to their interrelationships (Hair *et al*., 2010).

Bivariate collinearity is assessed by computing the correlation matrix for the independent variables using the Pearson correlation coefficient whereas a diagnostic for multivariate collinearity is obtained for each independent variable by calculating the variance inflation factor (VIF) of the other independent

variables after running a multivariate regression where each predictor variable is regressed against the remainder predictor variables.

Collinearity between two variables is considered a potential problem if $r > 0.85$ (Kline, 2011) and multicollinearity problems are almost certain if VIF > 10 (Hair *et al*. 2010; Kline, 2011). In such cases, one of the variables should be excluded from further analysis (Kline, 2011). Hair *et al*. (2010) further advise to assess the degree and impact of multicollinearity for VIF values greater than 3, which represents a multiple correlation of 0.82.

Basic stages in the SEM process

Both the measurement model and the structural model assessments undergo five steps of model specification, identification, estimation, evaluation and modification, provided that modification is theoretically justifiable (Hair *et al*., 2010; Schumacker and Lomax, 2010; Kline, 2011).

Model specification

In accordance with Ajzen's (1985, 1991) theory of planned behaviour (TPB), a structural equation model (SEM) comprising five first-order intercorrelated latent constructs, representing organic food purchasing behaviour, purchase intention, attitude towards the behaviour, social normative influence, and perceived behavioural control (PBC) was hypothesized. The purpose was to test whether behavioural intention is a function of attitude, subjective norms and PBC. Additionally, it was anticipated that behavioural intention mediates the influence of these independent constructs on the outcome variable behaviour and that PBC also has a direct effect on behaviour. An alternative structural model that extends the TPB by incorporating personal norms as an additional predictor of intention was also estimated.

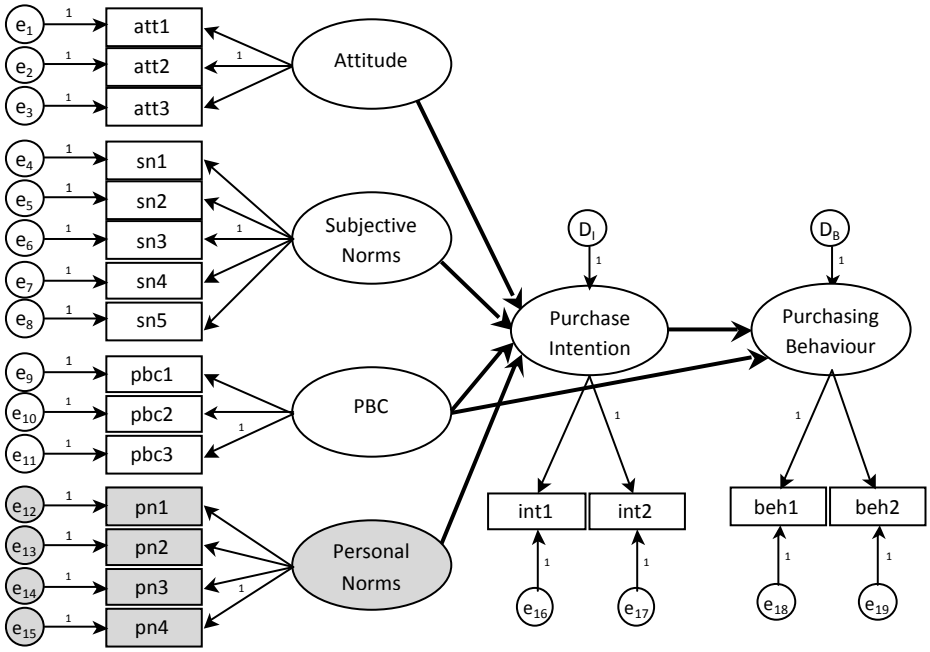
The hypothetical constructs are not directly observable. Instead, they are specified as latent variables, each defined by a set of two to three reflective indicators, which are the observed variables corresponding to the questionnaire measurement items. Each indicator has an error term representing the variance within the indicator that is not accounted for by its underlying construct and it is assumed that all error terms are uncorrelated with each other (Kline, 2011).

In the measurement model, confirmatory factor analysis (CFA) focuses on assessing the extent to which latent independent and dependent variables are well measured by their respective observed variables (Byrne, 2010; Schumacker and Lomax, 2010). In the CFA model, latent variables are thus allowed to correlate with each other and, as such, all the constructs are considered exogenous variables (Hair *et al*., 2010).

The structural model is specified by replacing some of the correlational relationships between latent variables with dependence relationships or constraining them to equal zero in order to represent the hypothesized relationships proposed by the theoretical models (Hair *et al*., 2010; Kline, 2011), while retaining the measurement specifications between constructs and indicators. At this stage, only the explanatory constructs are exogenous variables

because their causes are not represented in the model. These are assumed to be correlated with each other and measured without error. Intention and behaviour are endogenous variables, which are influenced by the exogenous variables, either directly or indirectly, given that intention also influences behaviour. Unknown omitted causes of each endogenous variable are manifested in their disturbances which represent the variance left unexplained by its predictors and it is assumed that the disturbances are uncorrelated both with each other and with the exogenous variables (Kline, 2011).

Figure 4.1 - Hypothetical SEM models



(PBC) perceived behavioural control, (e) measurement error term, (D) disturbance. Note: The grey background indicates the additional explanatory variable of the extended TPB model.

Figure 4.1 above shows the path diagram of both hypothesized models, involving both the measurement and structural models in one analysis and depicting the modified version of the TPB as an extension of the TPB model. The latent constructs (ellipses) are each estimated by multiple observed variables (rectangles). A straight line with an arrow at the end represents a direct effect from one variable to another. Ticker lines represent the hypothesized structural relations between the latent variables based on the aforementioned theoretical background. Circles with a single-headed arrow indicate residual terms, which represent measurement errors when associated with observed variables and disturbances when associated with endogenous latent variables.

Model identification

In SEM, models need to meet the criterion of overidentification in order to be estimated and to test hypotheses about the relationships among variables. An

overidentified model is one in which the number of observations available for analysis in the sample covariance matrix exceeds the number of parameters to be estimated (Kline, 2011). This results in a unique solution for each free parameter and in positive degrees of freedom[2] that allow for goodness-of-fit (Brown, 2006; Byrne, 2010). In general, if a model has two or more constructs, a minimum of two indicators per construct is required for model identification (Brown, 2006; Kline, 2010).

In addition to specifying an overidentified model, every latent trait must have its scale determined. This includes not only latent variables but also all residual terms (measurement errors and disturbances) because these are unobserved variables and therefore have no definite metric scale. This scaling requisite is satisfied by constraining to 1.0 the regression coefficient for the direct effect of all the disturbances and measurement errors and of one indicator for each latent construct (Byrne, 2010; Kline, 2011). This constrained indicator is termed a reference variable and should be one with the most reliable scores (see Figure 4.1), given that this specification assigns to the construct a scale based on the explained variance of the reference variable (Kline, 2011).

Model estimation

As mentioned before, the maximum likelihood estimation method is used to obtain estimates for each of the free parameters specified in the model.

In the measurement model, the direct effects of latent constructs on indicators are given by factor loadings and are interpreted as regression coefficients. Estimates of the relationships between each pair of exogenous constructs are covariances in the unstandardized solution or correlations in the standardized form (Kline, 2011).

In addition, the structural model estimates the direct effect of exogenous variables on endogenous variables and of one of the endogenous variables on the other endogenous variable, as path estimates, which are also interpreted as regression coefficients (Kline, 2011). SEM also computes the standardized total, direct and indirect effects between independent and dependent latent variables and displays the squared multiple correlation coefficient or coefficient of determination (R^2) for endogenous variables that represents the extent to which the variance of the dependent variable is explained by the set of predictor variables, thus indicating the predictive power of the model (Schumacker and Lomax, 2010; Kline, 2011).

Model evaluation

The objective of the estimation process in SEM is to find the most parsimonious model to represent the interrelationships among latent variables that accurately

---

[2] The difference between the number of observations and the number of its parameters is the model degrees of freedom.

reflects the associations observed in the data (Kline, 2011).

Goodness-of-fit indices

A perfectly fitting model is one whose parameter estimates produce estimated covariance values that match the observed covariance among the measured items (Hair *et al*., 2010). The assessment of overall model fit measures allows to determine whether the proposed model gives an acceptable representation of the sample data (Byrne, 2010; Kline, 2011).

The model chi-square (χ^2) is the most fundamental model test statistic. For an overidentified model, the χ^2 tests the exact-fit hypothesis that the model-implied covariance matrix is identical to the sample covariance matrix. In general, higher chi-square values lead to reject the null hypothesis. Thus, the best well-fitting model has the lower χ^2 value and is not significant, i.e. its corresponding *p*-value is greater than 0.05 (Kline, 2011).

When the multivariate normality of the data is not evident, the Bollen-Stine bootstrap procedure allows to obtain an adjusted chi square statistic which attempts to correct for distributional misspecification of the model when using the maximum likelihood estimator (Bollen and Stine, 1992). Non-significant *p*-values ($p > .05$) associated with the Bollen-Stine corrected chi-square indicate that the proposed model is plausible and adequately fits the observed data.

However, due to limitations of χ^2 statistic associated with large sample size and deviations from multivariate normality (Brown, 2006; Schumacker and Lomax, 2010), other absolute fit indices should also be examined, namely, the goodness-of-fit index (GFI), the standardized root mean square residual (SRMR) and the root mean square error of approximation (RMSEA), with its 90% confidence interval.

The GFI assesses the amount of covariance in the sample data matrix explained by the model (Schumacker and Lomax, 2010; Kline, 2011). GFI values close to 0.90 or 0.95 reflect a good fit (Hair *et al*. 2010; Schumacker and Lomax, 2010).

The SRMR is based on correlation residuals, i.e. the difference between the observed and predicted values, indicating the amount of error resulting from the estimation of the specified model (Kline, 2011). A SRMR below 0.05 suggests a well-fitting model (Hair *et al*. 2010; Schumacker and Lomax, 2010).

The RMSEA represents how well the model would fit the population covariance matrix and attempts to correct for both model complexity and sample size (Hair *et al*., 2010). According to Browne and Cudeck (1993), RMSEA values of 0.05 or less with *p*-values greater than 0.05 support the close-fit hypothesis. Moreover, the upper bound of the 90% confidence interval should not exceed 0.08.

Apart from evaluating the model absolute fit, the incremental fit of the model is also assessed. Incremental or relative fit indices typically compare the proposed model with a null model, which assumes that all observed variables are uncorrelated (Hair *et al*., 2010; Schumacker and Lomax, 2010). The comparative fit index (CFI) is an incremental fit index that reflects the relative improvement in the fit of the proposed model over that of the baseline model (Kline, 2011). A

CFI value of 0.95 indicates excellent model fit (Hu and Bentler, 1999).

Furthermore, when testing alternative models, the primary objective is to ensure that the proposed model not only has acceptable model fit, but that it performs better than the alternative one. In this study, alternative models arise from model trimming, when the original model is simplified by eliminating free parameters, and from the proposed modification of the TPB model, which incorporates personal norms as an additional predictor variable.

In the first case, competing nested models are compared by using the chi-square difference statistic ($\Delta\chi^2$) along with differences in incremental fit indices (Hair *et al*., 2010). The chi-square difference statistic evaluates the equal-fit hypothesis for the two alternative models and is given by the simple difference between each model χ^2 statistic, and its degrees of freedom equal the difference between the two models' degrees of freedom, thus enabling to test for statistical significance (Hair *et al*., 2010; Kline, 2011).

However, to compare two different theoretical models the chi-square difference test does not apply to. Instead, the Akaike Information Criterion (AIC) is used to compare competing non-nested models in addition to examination of other measures of fit (Kline, 2011). The AIC considers both model complexity and model fit and is therefore particularly useful in selecting the most parsimonious, best performing model. Specifically, the model with the smallest AIC value is chosen as the one most likely to replicate (Kline, 2011).

Parameters fit

Even though model-fit criteria indicate an acceptable measurement or structural model, individual parameter estimates can be insignificant and, therefore, meaningless (Schumacker and Lomax, 2010). Thus, besides assessing the overall fit of the data to the model, the parameter estimates are examined for statistical significance (Byrne, 2010; Schumacker and Lomax, 2010). The statistical test used is the critical ratio, which is computed by dividing the unstandardized parameter estimates by their respective standard errors and, as such, it operates as an approximately normally distributed quantity (*z*-score) in large samples (Byrne, 2010). At the 0.05 level of significance for a two-tailed test, the null hypothesis that the estimate equals zero is rejected if the absolute value of its critical ratio is greater than 1.96.

Similarly to the chi-square stability test, a bootstrap procedure can be conducted to examine whether the violation of the multivariate normality assumption underlying ML estimation affects the accuracy of parameter estimates. Bootstrapping allows to estimate confidence intervals for parameter estimates with accurate coverage probabilities based on the bias-corrected percentile method (Efron and Tibshirani, 1983), while avoiding the distributional assumption of normality. A statistical significant *p*-value ($p < .05$) for the bias-corrected 95% confidence interval confirms that the estimate is statistically different from zero.

Additionally, the magnitude and direction of the parameter estimates are also assessed to ensure that they are consistent with the theoretical relationships

(Byrne, 2010; Schumacker and Lomax, 2010).

Model modification

When the overall fit of the model is less than satisfactory, evaluation of parameter estimates, standardized residuals and modification indices (MI) is undertaken (Brown, 2006). Indicators with large factor loadings are strongly related to their underlying construct whereas loadings below 0.5 suggest that the variables may be candidates for elimination, depending on the other diagnostic measures (Hair *et al*., 2010). The residual covariance matrix represents the difference between the model-implied covariance matrix and the observed covariance matrix (Byrne, 2010). In examining the standardized residuals, i.e. the ratio of the covariance residuals over their standard errors, these values are interpreted as a *z* test of whether the covariance residual is zero (Kline, 2011). Standardized residual covariances > 2.58 ($p < .01$) may indicate that the model does not adequately explain the data (Byrne, 2010). Finally, modification indices provide an estimate of the amount by which the overall model chi-square statistic (χ^2) would decrease if a particular parameter was added (Kline, 2011). Large modification indices argue for the presence correlated errors, cross-loadings and structural paths, and therefore should be examined (Byrne, 2010). A threshold of 11 ($p < .001$) is used (Marôco, 2014). Every time a change is made, the model is re-evaluated through model comparison to see if it resulted in an improvement of fit.

Evaluation of the measurement model

The SEM technique of confirmatory factor analysis (CFA) is used to ensure that all the latent constructs to be used in the structural model are accurately represented by their observed measures or indicators, thus providing evidence of the overall goodness of fit, validity and reliability of the proposed latent factor structure.

CFA is an appropriate technique to estimate the relationship between each item and its underlying construct because the TPB and ETPB measurement items were selected and mapped onto latent constructs a priori, on the basis of prior conceptual and empirical studies.

The measurement model is developed in several phases by diagnosing possible sources of misspecification and, when theoretically justifiable, eliminating free parameters in order to improve model fit (Kline, 2011). Using a competing nested models strategy, such respecified models are compared to less restricted models to demonstrate their relative superiority (Hair *et al*., 2010).

Construct validity

Construct validity is defined as the extent to which a set of items accurately represents the theoretical latent construct that they are intended to measure (Hair *et al*., 2010) and encompasses convergent and discriminant validity. Convergent validity is the degree to which a measure correlates with other measures of the same construct whereas discriminant validity is the degree to which a measure does not correlate with measures of other constructs that are

theoretically distinct (Nunnaly, 1978).

Hair *et al*. (2010) suggest that convergent validity is adequate when constructs have an average variance extracted (AVE) of at least 0.5. In addition, all indicators specified to measure a common construct should have relatively high standardized factor loadings on that construct, i.e. at least 0.5 and preferably 0.7.

For adequate discriminant validity, the square root of the AVE of each latent construct should exceed any correlation with the other constructs in the model (Fornell and Larcker, 1981; Hair *et al*., 2010).

The AVE was estimated as defined by Fornell and Larcker (1981) and shown in Appendix B.

Construct reliability

Reliability refers to the degree of consistency between multiple measurements of a variable and is examined in terms of internal consistency, i.e. the extent to which the items within a scale measure the same construct (Hair *et al*., 2010).

The reliability coefficient most widely used is Cronbach's coefficient alpha (Hair *et al*., 2010; Kline, 2011). However, Cronbach's alpha is more likely to underestimate scale reliability whereas composite reliability (CR) is a reliability measurement derived from confirmatory factor analysis results and therefore is considered a more accurate estimate of construct reliability within SEM context (Brown, 2006, Hair *et al*., 2010, Marôco, 2014). Both reliability coefficients of all the latent constructs should be equal to or greater than 0.7 or higher (Hair *et al*., 2010). Composite reliability was calculated as suggested by Fornell and Larcker (1981) and indicated in Appendix B.

Evaluation of the structural model

After establishing the adequacy of the measurement models, the proposed TPB and ETPB models are tested using structural equation modeling (SEM). At this point, dependence relationships are assigned between constructs based on the respective theoretical models to identify the variables that account for the variation in certified organic food purchasing behaviour.

This stage involves testing the validity of both the structural model and its corresponding hypothesized relationships. According to Hair *et al*. (2010), this requires assessing measures of overall goodness-of-fit, estimating the direction, size and significance level of the path coefficients between the latent constructs and determining the coefficient of determination (R^2).

The overall fit of the structural model is improved based on diagnostic information about sources of model misfit (Byrne, 2010; Hair *et al*., 2010). Comparative evaluation of the proposed and alternative models entails competing models assessment and comparison to the measurement model.

Finally, in order to understand the full impact of the dependence relationships, decomposition of total effects is also examined (Kline, 2011).

Structural model validity

The validity of the structural model is assessed by comparing its overall fit to the fit of the measurement model with the chi-square difference test (Hair *et al*., 2010; Kline, 2011). Also, the factor loading estimates obtained from the structural model should not change noticeably when compared to the ones provided from the validated CFA model.

Furthermore, a theoretical model is considered valid to the extent that the individual parameter estimates for each structural relationship are statistically significant and in the predicted direction (Hair *et al*., 2010), as they provide direct empirical evidence relating to the hypothesized relationships depicted in the structural model.

Predictive power of the model

The squared multiple correlations (R^2) are examined to determine the proportion of variance that is explained in the dependent variables by the independent variables in the theoretical model. The higher the value of R^2, the greater the explanatory power of the model, and therefore the better the prediction of the dependent variable (Hair *et al*., 2010).

Hair *et al*. (2011) describe R^2 values of 0.75, 0.50 or 0.25 for endogenous latent variables in the structural model as substantial, moderate or weak, respectively. However, the same authors point out that, in consumer behaviour research, R^2 results of 0.20 would be considered high.

Hypotheses testing

The direction, significance and magnitude of each path must be examined against the corresponding hypothesis of the theoretical model (Hair *et al*., 2010). Statistical significance is determined by the critical ratio and, when data does not meet the normality criterion, by the bootstrap *p*-value of the unstandardized path coefficients, while direction and size is given by the corresponding standardized path coefficients.

Mediation effects are tested using the product of coefficients method (MacKinnon *et al*., 1995, 2002), which involves the multiplication of path coefficients for the direct effect of the independent variable on the mediator (a) and for the direct effect of the mediator on the outcome variable (b), where $a \times b$ estimates the strength of the mediated or indirect effect. Given the nonnormal distribution of the product of two normal variables, bias-corrected bootstrapping is used to test the significance of the mediated paths, i.e. if the ab product differs significantly from zero (MacKinnon *et al*., 2004). Mediation is partial or complete, depending if the direct path (c') from the independent to the outcome variable is or is not statistically significant (Warner, 2013). The proportion of the total effect that is mediated (ab/c) is also considered as an informative measure of the relative magnitude of the mediated effect (MacKinnon *et al*., 1995).

The total effect (c) is the sum of direct effects (c') and indirect effects (ab) of an independent variable on a dependent variable (Kline, 2011; Warner, 2013).

Following the recommendation by Albers (2010), in addition to direct effects, the total effects are also evaluated for a meaningful explanation of interrelationships among the theoretical constructs. Standardized total effects are interpreted as path coefficients and their statistical significance is estimated using bootstrapping (Kline, 2011).

Finally, to test competing theories a non-nested models comparison is applied, in addition to improved predictive accuracy evaluation, indicated by an incremental change in R^2 (Kline, 2011).

Computer analytic programs

All data recorded by the Web-based survey software QuestionPro was first imported into Microsoft Office Excel 2007 for data screening and editing, including examination of frequency distributions and measures of dispersion.

The data was thereafter imported to the statistical package IBM SPSS 20 for Windows in order to conduct preliminary statistical analyses such as descriptive and correlational statistics, and calculation of *z*-standardized scores to detect univariate outliers, and of univariate normality values, residual plots and VIF values to test standard maximum likelihood assumptions.

The raw data file was also imported to the software IBM SPSS Amos 21.0 and used for model establishment and testing. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were carried out using the maximum likelihood method for estimation procedures and the bootstrap technique. AMOS also provided goodness-of-fit statistics, conducted multivariate normality and multivariate outlier analyses, and imputed composite variables needed for previous analyses in SPSS. During measurement model evaluation, SPSS and Excel respectively assisted in computing Cronbach's alpha reliability, and calculating AVE and composite reliability.

RESULTS

This chapter provides the research findings of structural equation modeling (SEM) applied to survey data for examining the hypotheses proposed in this study in the context of certified organic food purchasing. First, descriptive statistics for characterisation of the final sample of respondents, as well as, for research variables are presented. Prior to testing and discussing the hypothesized structural models, measurement models for latent constructs are evaluated as a means of assessing the distinctiveness and accurate measurement of each study construct.

Preliminary statistical analyses

Before SEM analyses, the dataset was screened for accuracy of input, missing data and outliers. Subsequent removal of multivariate outliers resulted in a final sample that was sufficiently large for reliable hypothesis testing. Descriptive statistics are used to depict its demographic and socio-economic characteristics, as well as, its purchase frequency of certified organic food.

Questionnaire completion overview

By the imposed deadline, a total of 775 complete questionnaires were collected from the research population. The online questionnaire was viewed by 2763 and initiated by 1744 persons, of which 161 were ineligible for participation mostly because they were not responsible for household food purchases. These numbers may be considered to roughly indicate a response rate of 30% and a completion rate of 49%.

Of the respondents who completed the questionnaire, 74% opted for participating in the final drawing of organic food gift boxes and individual products.

Data Preparation

Data editing revealed that there were no missing values except for the household net income of the respondents, which was a voluntary question and not planned for structural modeling analyses. Respondents also revealed a fair level of engagement since the standard deviation of their responses was at least greater than 0.7 on seven-point scale items.

However, close examination of the data revealed that three respondents completed the questionnaire twice. The duplicate responses were identified by the same e-mail address in the voluntary contact information section. Randomly omitting duplicate responses resulted in a database containing 772 cases.

Of the total 772 respondents, 27 never heard about certified organic farming food products. As this question was the basis for the conditional logic that directed the respondent to more specific survey questions aimed at measuring the models' variables, these cases were discarded and a final sample of 745 was retained.

Potential univariate outliers were examined on a case-by-case basis and none

was considered a data entry error; hence no changes were made in the data set. Instead, data screening for multivariate outliers resulted in the removal of 41 observations that were identified as potentially harmful outliers.

Thus, the final sample submitted for SEM analysis comprised 704 usable cases.

Sample size

In the present study, the sample of respondents that have heard about certified organic food, free from outliers, consisted of 704 cases, whereas the most complex model investigated in this study contained 53 estimated parameters.

The sample-to-parameters ratio (N:q) for the two hypothesized models are summarized in Table 4.2, implying that the final sample size met Kline's (2011) recommendation of a minimum of 10 observations per each estimated parameter and, therefore, it appeared to be appropriate to conduct reliable SEM.

Table 4.2 - Sample size-to-free parameters ratio of the TPB and ETPB models

Model	q	N	N:q Ratio
TPB	40	704	17.6
ETPB	53	704	13.3

(q) number of estimated free parameters, (N) final sample size submitted for SEM analysis.

Sample description

The socio-economic and demographic characteristics of the final sample used in this study are displayed in Table 4.3.

The sample comprised 704 adults, aged between 18 and 80 years, where the majority identified as the main food purchasers for their household (54%), while the remaining ones indicated that they shared food shopping responsibilities with other household members.

Most of the respondents were women (71%), aged between 25 and 55 years old (81%), with university education (71%), economically active (65%), of Portuguese nationality (98%), married or living with a partner (62%), and living in a urban area (69%), with at least two other persons (60%), but without children under 15 years (66%) neither elderly persons (85%).

The geographically dispersed distribution of the sample is striking, with respondents mainly living in densely populated coastal districts, such as, Lisboa (28%), Aveiro (11%), Porto (10%) and Setúbal (8%). The professional background of the respondents who were not students also covered a wide range, but the substantive participation of teaching professionals (17%), clerical workers (11%) and science and engineering professionals (10%) is noteworthy. With regard to household net income, 23% of the respondents did not answer, as it was not mandatory to do so. Of those who have answered, the majority belongs to lower or middle income classes (76%).

Table 4.3 - Descriptive statistics of sample characteristics

Socio-economic and demographic variables		Frequency	%
Responsibility for food shopping	Primary	381	54.1
	Shared	323	45.9
Gender	Female	501	71.2
	Male	203	28.8
Age (years)	18-24	39	5.5
	25-34	159	22.6
	35-44	247	35.1
	45-54	162	23.0
	55-64	74	10.5
	> 65	23	3.3
Level of education	Nine-year compulsory education or below	28	4.0
	High-school or upper secondary school	179	25.4
	University or college education	475	67.5
	PhD.	22	3.1
Marital status	Single	185	26.3
	Married	295	41.9
	Unmarried couples	140	19.9
	Divorced/Separated	76	10.8
	Widowed	8	1.1
Employment situation	Employed and self-employed	458	65.1
	Unemployed	125	17.8
	Retired	52	7.4
	Homemaker	25	3.6
	Student	44	6.3
Household size	1	82	11.6
	2	202	28.7
	3	200	28.4
	4	160	22.7
	> 4	60	8.6
Children in the household (<15 years)	Yes	242	34.4
	No	462	65.6
Elderly persons in the household (≥ 65 years)	Yes	104	14.8
	No	600	85.2
Region of residence	Aveiro	76	10.8
	Lisboa	195	27.7
	Porto	67	9.5
	Setúbal	58	8.2
	Coimbra	43	6.1
	Leiria	36	5.1
	Faro	32	4.5
	Braga	31	4.4
	Other 12 regions	166	23.7
Urbanisation degree of place of residence	Urban	485	68.9
	Rural	219	31.1
Portuguese nationality	Yes	691	98.2
	No	13	1.8
Professional occupation (actual or previous[a])[b]	Managers	48	7.2
	Science and engineering professionals	64	9.7
	Teaching professionals	110	16.7
	Science and engineering technicians	42	6.4
	Clerical workers	72	10.9
	Skilled agricultural, forestry and fishery workers	43	6.5
	Other 16 categories	281	42.6

Socio-economic and demographic variables		Frequency	%
Household net income	< 1000	183	33.9
(€ per month)[c]	1000-1999	227	42.0
	2000-2999	86	15.9
	≥ 3000	44	8.1

([a]) Previous professional occupation of unemployed, retired and home workers. N=704, except ([b]) N=660 and ([c]) N=540.

Except for gender and organic food purchasing behaviour, quota sampling was used to draw a sample closely representative of the characteristics of the national adult population. A detailed overview of the demographic and socio-economic characteristics of the respondents, as well as, of the latest data for the adult population and households at the national level are given in Appendix C.

The distribution of the respondents' residence place across regions and level of urbanisation broadly reflects the national situation. Other socio-demographic characteristics of the sample such as nationality, presence of children in the household and average household net income also seem to be well balanced in comparison with statistics at the country level.

However, in comparison with the Portuguese adult population, the group of respondents has a strong overrepresentation of highly educated people because of their greater willingness to participate in surveys, and probable greater sensitivity to the research topic. In direct correspondence with the level of education, respondents with high-skill jobs are also overrepresented. However, among the less specialized skill occupations, the category "agricultural, forestry and fishery workers" is clearly oversampled, probably due to a high level of interest in the research topic, particularly of organic farm workers.

There is also a certain overrepresentation of unemployed people in the sample, as this group is more likely than others to take the time to complete an online survey. In contrast, despite covering a wide age range, the sample has a severe underrepresentation of people aged 65 or older, which is a possible consequence of this age group being underrepresented on Internet. Consequently, the retired, the widowed and households with elderly members are also undersampled. Another limitation may be seen in the underrepresentation of single person households, which is probably due to their lower level of involvement in food purchase.

Therefore, despite the efforts to maintain representativeness for the Portuguese population, extrapolations should not be made beyond the sample characteristics.

Finally, Table 4.4 summarizes the respondents' frequency of purchase of certified organic food products for their household.

The final sample was expected to incorporate the same percentage of respondents in each of the buyer groups, which was achieved. Of the 704 respondents, 30% claimed that they buy organic food every week (regular buyers), 36% reported buying organic food at least once a month (occasional buyers), while 34% seldom or never bought organic food products (non-buyers).

Table 4.4 - Certified organic food purchase frequency of the sample

Frequency of purchase of certified organic food for the household	Frequency	%
Never	67	9.5
Less than once a month	169	24.0
At least once a month	253	35.9
At least once a week	215	30.5

(N=704)

Structural equation modeling analyses

In this section, basic descriptive statistics and bivariate correlations provide a first look at the observed variables and main constructs of the TPB and ETPB models. Based on these, the assumptions required to conduct SEM are evaluated and discussed before moving on to confirmatory factor analysis (CFA). Then, the findings related to testing and improvement of the measurement models are introduced and the validity and reliability of the scales underlying each construct are discussed. Finally, the results related to evaluation of the two theoretical models and hypotheses testing are presented.

Descriptive and correlational analysis

Descriptive statistics for the measures of the TPB and ETPB models applied in this study, including means, standard deviation and range of scores, are reported in Table 4.5. See Appendix D for complete frequency distributions of observed variables and of the average score for each underlying construct.

The means show that attitudes towards buying certified organic food are unquestionably positive (*att3*: *M*=6.0; SD=1.1) among the vast majority of the respondents, including non-buyers. Indeed, only 1% of the respondents reported an average negative attitude whereas 89% reported an average positive attitude. Emotional feelings derived from buying organic food are slightly less rated (*att1*: *M*=5.7; SD=1.3) than evaluative judgments (*att2*: *M*=6.0; SD=1.1), suggesting that the affective component of the attitude towards the behaviour, although clearly favourable, is not as important as the instrumental consequences of performing the behaviour.

On the other hand, social pressure regarding organic food buying behaviour is rather neutral, with just 28% of the respondents reporting average positive subjective norms. At a more detailed level, slightly positive values in the items regarding the approval of relevant others reflect greater importance of injunctive norms, where friends and close relatives seem to be the most salient social referents (*sn3*: *M*=4.4; SD=1.5 and *sn4*: *M*=4.4; SD=1.4). On the contrary, respondents did not perceive descriptive norms as significant (*sn1*: *M*=3.2; SD=1.5), suggesting a lack of explicit normative pressure deriving from important others' behaviour.

On average, the respondents have a moderate sense of control over purchasing certified organic food for their household (*pbc2*: *M*=5.1; SD=1.5) and, accordingly, believe that performing the behaviour is somewhat up to them (*pbc3*: *M*=4.6; SD=1.6). Furthermore, performing this behaviour is seen as neither difficult nor easy (*pbc1*: *M*=4.0, SD=1.5). In line with these results, 51% of

the respondents reported an average positive perceived behavioural control whereas 31% perceived a neutral control over purchasing certified organic food.

In the organic food purchase context, personal norms seem to have a more significant role than social norms since the percentage of respondents evidencing average positive moral norms is much higher (67%). Respondents reported feelings of moral obligation (*pn1*: *M*=5.6; SD=1.5), as well as, positive self-enhancing feelings (*pn3*: *M*=5.4; SD=1.5 and *pn4*: *M*=5.1; SD=1.6). Organic food purchasing behaviour was not usually associated with negative feelings of guilt (*pn2*: *M*=3.7; SD=1.8).

Table 4.5 - Descriptive statistics for observed variables of the TPB and ETPB models

Model Construct	Item	Min	Max	*M*	SD	Sk	Ku
Attitude towards the behaviour							
Very unpleasant - Very pleasant	*att1*	1.0	7.0	5.67	1.255	-.944	.855
Very harmful - Very beneficial	*att2*	2.0	7.0	5.99	1.089	-1.056	.642
Very negative - Very positive	*att3*	2.0	7.0	6.00	1.070	-.975	.279
Subjective norms							
Most people who are important to me purchase organic food	*sn1*	1.0	7.0	3.17	1.496	.108	-.779
My doctor or nutritionist thinks I should purchase organic food	*sn2*	1.0	7.0	3.85	1.328	-.354	1.040
Most of my close relatives would approve my choice to purchase organic food	*sn3*	1.0	7.0	4.44	1.517	-.252	-.055
Most of my friends would approve my choice to purchase organic food	*sn4*	1.0	7.0	4.44	1.403	-.233	.330
The approval of my household members is important to me when purchasing organic food	*sn5*	1.0	7.0	3.87	1.931	-.107	-1.032
Perceived behavioural control							
Very difficult - Very easy	*pbc1*	1.0	7.0	3.95	1.525	.241	-.758
No control - Complete control	*pbc2*	1.0	7.0	5.14	1.501	-.889	.539
I can purchase certified organic food whenever I want or need it	*pbc3*	1.0	7.0	4.61	1.625	-.274	.-783
Personal norms							
I feel I should purchase organic food instead of conventional one	*pn1*	1.0	7.0	5.56	1.462	-1.121	1.007
I would feel guilty if I purchased conventional food instead of organic one	*pn2*	1.0	7.0	3.74	1.797	-.024	-.970
Purchasing organic food instead of conventional one would feel like the morally right thing	*pn3*	1.0	7.0	5.37	1.520	-1.005	.698
Purchasing organic food instead of conventional one would make me feel like a better person	*pn4*	1.0	7.0	5.13	1.612	-.821	.250
Behavioural intention							
Willingness to pay more for organic food	*int1*	1.0	7.0	4.16	1.522	-.562	-.660
Likelihood of purchasing organic food	*int2*	1.0	7.0	4.98	1.712	-.727	-.343
Self-reported behaviour							
Organic food purchasing frequency	*beh1*	1.0	4.0	2.88	.955	-.407	-.819
Average weekly expenditure on organic food	*beh2*	1.0	4.0	2.03	.938	.578	-.573

(Min) minimum, (Max) maximum, (*M*) means, (SD) standard deviation, (Sk) skewness, (Ku) kurtosis. (N=704)

The general intention to buy certified organic food is slightly positive reflecting the sample composition in terms of buyers groups. More specifically, 62% of the respondents reported an average positive intention while 26% scored below

mid-point. However, respondents reported less willingness to pay more for organic food (*int1*: *M*=4.2; SD=1.5) than likelihood of purchasing it (*int2*: *M*=5.0; SD=1.7), putting in evidence that some likely buyers also protested against paying a premium for organic food.

Organic food expenditure classes vary considerably across respondents (*beh2*: *M*=2.0; SD= 0.9) whilst organic food buying frequency mirrors the prevalence of occasional and regular buyers within the sample (*beh1*: *M*=3.0; SD=1.0). Reflecting the sample design, 34% of the respondents reported an average null organic food purchasing behaviour.

Bivariate correlations examining the relationships among all indicators used in the TPB and ETPB models are presented in Table 4.6.

All indicators within the same construct are significantly and moderately to strongly correlated with each other. Furthermore, each independent variable item has a moderate significant relationship to the measures of the mediator and outcome variables *int2*, *beh1* e *beh2*. The only exceptions are *pbc2*, *sn1*, *sn2* and *sn5*, which show to correlate weakly with both the items intended to assess the same latent variable and the dependent variables, with *sn5* even having a non significant relation with all the intention and behaviour measurement items. As expected, the likelihood of purchasing organic food (*int2*) is strongly correlated to the frequency of purchase (*beh1*), but below the threshold level, not posing a multicollinearity problem (*r*=0.72). On the contrary, the very high correlation coefficient between *att2* and *att3* (*r*=0.85) indicates a considerable degree of collinearity between them. A VIF = 3.7 confirms that these variables are not clearly distinct from one another and, as such, the impact of their collinearity is assessed later on.

Table 4.6 - Pearson correlations for observed variables of the TPB and ETPB models

	att1	*att2*	*att3*	*sn1*	*sn2*	*sn3*	*sn4*	*sn5*	*pbc1*	*pbc2*	*pbc3*	*pn1*	*pn2*	*pn3*	*pn4*	*int1*	*int2*	*beh1*	*beh2*
att1	1																		
att2	.55	1																	
att3	.58	.85	1																
sn1	.19	.12	.15	1															
sn2	.22	.17	.19	.43	1														
sn3	.26	.33	.33	.37	.25	1													
sn4	.22	.31	.32	.36	.29	.77	1												
sn5	.10	.07^{ns}	.09*	.24	.17	.20	.20	1											
pbc1	.23	.23	.20	.20	.10	.15	.17	.04^{ns}	1										
pbc2	.17	.17	.16	.04^{ns}	.03^{ns}	.11	.09*	.01^{ns}	.19	1									
pbc3	.17	.18	.17	.20	.14	.20	.18	.10	.54	.25	1								
pn1	.46	.55	.57	.22	.26	.37	.41	.15	.11	.10	.18	1							
pn2	.27	.33	.34	.20	.28	.22	.24	.17	.05^{ns}	.03^{ns}	.11	.51	1						
pn3	.40	.47	.51	.19	.27	.33	.36	.19	.07^{ns}	.09*	.14	.68	.52	1					
pn4	.41	.46	.48	.20	.31	.34	.37	.19	.09*	.06^{ns}	.14	.66	.55	.70	1				
int1	.22	.26	.27	.11	.10	.21	.17	.05^{ns}	.18	.14	.20	.22	.14	.19	.20	1			
int2	.35	.45	.47	.22	.21	.32	.31	.04^{ns}	.29	.16	.29	.45	.29	.39	.35	.53	1		
beh1	.42	.48	.52	.20	.18	.30	.30	.04^{ns}	.30	.11	.28	.46	.32	.39	.38	.37	.72	1	
beh2	.38	.40	.42	.20	.16	.28	.28	.06^{ns}	.26	.12	.26	.40	.30	.37	.34	.32	.60	.79	1

Note: All correlations are significant at the 0.01 level, unless otherwise noted. (*) correlation is significant at the 0.05 level, (^{ns}) not significant. (N=704)

The correlations between latent variables are shown in tables 4.7 and 4.8 for the

TPB model and the ETPB model, respectively. All the Pearson correlation coefficients are significantly different from zero ($p < .01$).

Given the proposed models, the results show that all independent variables have moderate correlations among themselves, with the exception of personal norms, which are strongly correlated to attitude (r=0.72), but not at a high enough level to suggest that they are the same construct. Another noticeable remark in the extended TPB model is that, although distinct from each other, personal and subjective norms correlate more strongly with each other (r=0.57) than they do with any of the dependent variables.

Furthermore, all the independent variables are moderately to highly correlated with the mediator and outcome variables in both models. A preliminary analysis suggests that the respondents who purchased certified organic food were mainly driven by positive attitudes towards the behaviour (r=0.60). In turn, the correlation coefficients in Table 4.8 indicate that the added personal norms construct has the second most significant correlation to purchasing behaviour (r=0.56). Accordingly to the hypothesized relationships, intention to purchase organic food is strongly correlated to self-reported purchasing behaviour (r=0.77 and r=0.76 in the TPB and ETPB models, respectively), but the correlation is not so high as to imply that the variables contained redundant information.

Table 4.7 - Pearson correlations for latent variables of the TPB model

	ATT	SN	PBC	INT	BEH
ATT	1				
SN	.44	1			
PBC	.36	.36	1		
INT	.52	.40	.47	1	
BEH	.60	.40	.48	.77	1

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour. Note: All correlations are significant at the 0.01 level (two-tailed). (N=704)

Table 4.8 - Pearson correlations for latent variables of the ETPB model

	ATT	SN	PBC	PN	INT	BEH
ATT	1					
SN	.44	1				
PBC	.37	.36	1			
PN	.72	.57	.26	1		
INT	.52	.40	.48	.51	1	
BEH	.60	.40	.48	.56	.76	1

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour. Note: All correlations are significant at the 0.01 level (two-tailed). (N=704)

Assumptions testing

Multivariate normality

Table 4.5 above also displays univariate skewness and kurtosis values for the items included in the two models. The results show no evidence of severe departure from univariate normality according to Kline (2011), taking into account that absolute values of skewness and kurtosis are below 3 and 10, respectively. However, despite deletion of outlier observations, Mardia's normalized estimate of multivariate kurtosis for both the TPB and ETPB models

are well above the cut-off (32.23 and 26.71, respectively), which indicates a non-normal multivariate distribution of the data ($p < .001$).

Linearity and homoscedasticity

Scatter plots of the composite variables (Appendix E) do not indicate any nonlinear relationships or heteroscedasticity needing corrective action between the independent and dependent variables, for both the TPB and the ETPB models.

Multicollinearity

With the exception of the very strong correlation between the two attitude items (*att2* and *att3*), no further multicollinearity problems were detected.

Correlations between the latent exogenous variables ranged from 0.36 to.44 in the TPB model and from 0.26 to 0.72 in the ETPB model (see Tables 4.7 and 4.8 above), i.e. in both models none of the independent variables is collinear with the remainder independent variables.

Additionally, multicollinearity problems were discarded since the VIF values of the independent composite variables ranged from 1.1 to 1.2 for the TPB model and from 1.2 to 2.5 for the ETPB model.

Confirmatory factor analysis

The proposed latent factor structures of the fifteen-item TPB model and of the nineteen-item extended TPB model were evaluated, modified and validated in a confirmatory factor analysis (CFA).

Evaluation of the measurement models

From the unstandardized factor loading estimates and standard errors for the TPB and ETPB models (see Tables 4.9 and 4.10, respectively), it can be seen that all the measured variables significantly loaded on their latent variables ($p < .001$). Tables 4.9 and 4.10 also outline the bootstrap estimates and their associated bias-corrected 95% confidence intervals for both models[3], making clear that nonnormality did not inflate the maximum likelihood (ML) parameter estimates, given that all unstandardized factor loading estimates are largely comparable and kept statistically significant at the 0.001 level.

The ML standardized results also show that most of the indicators have fair to strong factor loadings on their respective factors, ranging from 0.53 to 0.99 in the TPB model and from 0.53 to 1.00 in the ETPB model. Nonetheless, four items have reached low factor loadings in both models, namely *sn1* (λ=0.44 and 0.45),

[3] For the bootstrap analyses, 2000 bootstrap replications with the ML estimator were used to perform the Bollen-Stine bootstrap approach to model fit testing and to estimate the *p*-values associated to the bias-corrected confidence intervals (95%) for testing the statistical significance of factor loadings.

sn2 (λ=0.35 and 0.36), *sn5* (λ=0.25) and *pbc2* (λ=0.31), suggesting that these variables would be possible candidates for deletion.

Table 4.9 - Factor loading and bootstrap estimates for the TPB measurement model

Items	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	λ	*L*	SE	*p*-value		lower bound	upper bound	*p*-value
att1	0.62	0.79	.04	***	0.79	0.68	0.88	.001
att2[b]	0.90	1.00			1.00	1.00	1.00	...
att3	0.94	1.03	.03	***	1.03	0.97	1.10	.001
sn1	0.44	0.50	.04	***	0.50	0.41	0.61	.001
sn2	0.35	0.35	.04	***	0.35	0.24	0.45	.001
sn3[b]	0.87	1.00			1.00	1.00	1.00	...
sn4	0.88	0.93	.04	***	0.93	0.86	1.01	.001
sn5	0.25	0.36	.06	***	0.36	0.23	0.49	.001
pbc1	0.71	0.88	.08	***	0.88	0.71	1.08	.001
pbc2	0.31	0.38	.06	***	0.38	0.26	0.50	.001
pbc3[b]	0.76	1.00			1.00	1.00	1.00	...
int1	0.53	0.48	.04	***	0.48	0.40	0.55	.001
int2[b]	0.99	1.00			1.00	1.00	1.00	...
beh1[b]	0.97	1.00			1.00	1.00	1.00	...
beh2	0.81	0.82	.03	***	0.82	0.77	0.89	.001

(ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) $p < .001$, ([a]) based on 2000 bootstrap samples, ([b]) loadings fixed to 1.0 cannot be tested for statistical significance because they have no standard errors. (N=704)

Table 4.10 - Factor loading and bootstrap estimates for the ETPB measurement model

Items	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	λ	*L*	SE	*p*-value		lower bound	upper bound	*p*-value
att1	0.63	0.80	.04	***	0.80	0.69	0.89	.001
att2[b]	0.90	1.00			1.00	1.00	1.00	...
att3	0.94	1.03	.03	***	1.03	0.97	1.08	.001
sn1	0.45	0.51	.04	***	0.52	0.41	0.62	.001
sn2	0.36	0.36	.04	***	0.36	0.25	0.47	.001
sn3[b]	0.86	1.00			1.00	1.00	1.00	...
sn4	0.88	0.95	.04	***	0.95	0.87	1.03	.001
sn5	0.25	0.37	.06	***	0.37	0.24	0.51	.001
pbc1	0.73	0.92	.09	***	0.92	0.73	1.15	.001
pbc2	0.31	0.39	.06	***	0.38	0.26	0.52	.001
pbc3[b]	0.74	1.00			1.00	1.00	1.00	...
pn1	0.83	0.92	.04	***	0.92	0.84	1.00	.001
pn2	0.63	0.85	.05	***	0.85	0.77	0.93	.001
pn3	0.83	0.96	.04	***	0.96	0.89	1.02	.001
pn4[b]	0.82	1.00			1.00	1.00	1.00	...
int1	0.53	0.48	.04	***	0.48	0.40	0.56	.001
int2[b]	1.00	1.00			1.00	1.00	1.00	...
beh1[b]	0.97	1.00			1.00	1.00	1.00	...
beh2	0.82	0.83	.03	***	0.83	0.77	0.89	.001

(ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) $p < .001$, ([a]) based on 2000 bootstrap samples, ([b]) loadings fixed to 1.0 cannot be tested for statistical significance because they have no standard errors. (N=704)

Examination of the goodness-of-fit statistics for the TPB and ETPB models (Table 4.11) indicates that the models provided adequate rather than good fit for the

data. The measurement model for the TPB model had a significant chi-square statistic (χ^2 (80) = 232.5, p < .001) although several of the other model fit indices indicated a reasonable fit to the data (GFI=.956, RMSEA=.052, SRMR=.048, CFI=.966), and the same holds for the ETPB model (χ^2 (137) = 369.6, p < .001, GFI=.944, RMSEA=.049, SRMR=.048, CFI=.963). Due to nonnormality, the Bollen-Stine bootstrap adjusted p-value was also calculated, revealing a corrected chi-square also statistically significant for both models and confirming the need to investigate the magnitude and patterns of discrepancies between the hypothesized models and the actual relationships among observed data.

Modification of the measurement models

In model respecification, several diagnostic measures were examined and the improvement in fit of the revised measurement models assessed.

In a first stage, the items *sn1*, *sn2*, *sn5* and *pbc2* were dropped from both the original models. Besides having factor loadings below 0.50, these items showed high standardized residuals covariances in both models (see Appendix F). In the TPB model, there were statistically significant discrepancies in the covariances between *sn1* and *sn2* (7.24), *sn1* and *sn5* (3.50), *sn1* and *pbc1* (2.71), *sn2* and *att1* (3.50), *pbc2* and *att1* (2.89), and *sn1* and *pbc3* (2.60). Comparable results are found in the standardized residual covariance matrix of the ETPB model. The largest standardized residuals were between *sn1* and *sn2* (7.08), *sn1* and *att1* (3.41), *sn1* and *sn5* (3.39), *pbc2* and *att1* (2.85), *sn1* and *pbc3* (2.67) and *sn1* and *pbc1* (2.63). Additionally, the covariances between *sn2* and the personal norms construct's items also exceed the cutpoint of 2.58 (ranging from 2.78 to 4.46).

Furthermore, modifications indices for the TPB and ETPB models pointed to the presence of error covariances between the error terms of *sn1* and *sn2* (79.49 and 77.22), *sn1* and *sn5* (17.05 and 16.16) and *sn2* and *sn3* (14.93 and 16.28). High modification indices for the ETPB model additionally suggested adding an error covariance between *sn2* and *pn2* (13.30), as well as, a regression path from the latent variable personal norms to *sn2* (16.57), meaning that this item was associated with more than one factor.

The CFA output (Table 4.11) indicates a better fit to the data of the respecified TPB model with a non-significant chi-square statistic (χ^2 (34) = 45.8, p=.086) and all the other model fit indices showing substantial improvement (GFI=.988, RMSEA=.022, SRMR=.025, CFI=.997). Moreover, the Bollen-Stine bootstrap p-value (p=.114) confirms that the refined eleven-item TPB model fits the data reasonably well and the chi-square difference test indicates that the overall fit of the restricted model is statistically better than that of the original model ($\Delta\chi^2$ (46) = 186.8, p < .001).

The respecification of the ETPB measurement model also led to a notable improvement in model fit compared with that for the original model (see Table 4.11), producing excellent fit indices values (GFI=.976, RMSEA=.033, SRMR=.030, CFI=.990) and a statistically significant difference between the two models chi-squares ($\Delta\chi^2$ (62) = 235.9, p < .001). However, the respecified ETPB model still failed the chi-square test (χ^2 (75) = 133.7, p < .001) and had a significant Bollen-Stine bootstrap p-value of 0.002, suggesting that some misspecification remained.

Table 4.11 - Goodness-of-fit indices for alternative TPB and ETPB measurement models

	No. Items	χ^2	*df*	*p*-value	B-S *p*-value	GFI	CFI	SRMR	RMSEA [90% CI]	p_{close}
TPB model										
Original version	15	232.54	80	.000	.000	.956	.966	0.048	.052 [.048-.065]	.319
1st respecification	11	45.76	34	.086	.114	.988	.997	0.025	.022 [.000-.037]	.999
2nd respecification	10	28.75	25	.275	.315	.992	.999	0.017	.015 [.000-.035]	.999
ETPB model										
Original version	19	369.58	137	.000	.000	.944	.963	0.048	.049 [.043-.055]	.582
1st respecification	15	133.72	75	.000	.002	.976	.990	0.030	.033 [.024-.042]	.999
2nd respecification	14	91.76	62	.008	.050	.982	.994	0.026	.026 [.014-.037]	1.000
3rd respecification	13	62.47	50	.111	.221	.987	.997	0.020	.019 [.000-.032]	1.000

(χ^2) chi-square statistic, (*df*) degrees of freedom, (B-S *p*-value) Bollen-Stine bootstrap adjusted *p*-value, (GFI) goodness-of-fit index, (CFI) comparative fit index, (SRMR) standardized root mean square residual, (RMSEA) root mean square error of approximation, (CI) confidence interval, (p_{close}) probability of close fit. (N=704)

Returning to the residual matrix of the original ETPB model (Appendix F), it was noticed that the item *pn1* besides having a high standardized residual covariance with *sn2* (2.78), also had a statistically significant covariance with *att1* (2.90). Thus, the ETPB model was respecified for a second-time by deleting *pn1* and, although this modification did not result in an acceptable overall model fit (see Table 4.11), inferring from both the value of the chi-square statistic (χ^2 (62) = 91.8, *p*=.008) and the Bollen-Stine bootstrap *p*-value for the corrected chi-square (*p*=.050), it did yield a further improvement of fit to the data when considering other fit indices values (GFI=.982, RMSEA=.026, SRMR=.026, CFI=.994) and the statistically significant difference between the chi-square values ($\Delta\chi^2$ (13) = 42.0, $p < .001$).

Finally, the impact of multicollinearity was addressed. Items *att2* and *att3* were found to be highly correlated which may be attributable to item content overlap. Apparently, respondents did not distinguish between the two items that measured whether purchasing organic food was harmful/beneficial (*att2*) and negative/positive (*att3*). In order to consider the underlying two components for affective (*att1*) and evaluative (*att2*) attitudes, it was decided to exclude the global evaluation attitude item (*att3*) to assess if multicollinearity had substantive effects on results.

Values for all fit statistics for this more restricted TPB model (see Table 4.11) show its superiority (χ^2 (25) = 28.7, *p*=.275, Bollen-Stine adjusted *p*=.315, GFI=.992, RMSEA=.015, SRMR=.017, CFI=.999), and the improvement in overall fit compared with the eleven-item TPB model is statistically significant at the 0.05 level of significance ($\Delta\chi^2$ (9) = 17.0, *p*=.048). Moreover, the model chi-square for the respecified ETPB model without *att3* (see Table 4.11) became not significant (χ^2 (50) = 62.5, *p*=.111) and the Bollen-Stine bootstrap *p*-value (*p*=.221) reinforced good overall model fit. The chi-square difference test between this revised model and the fourteen-item ETPB model indicates a

statistically significant improvement in model fit at the 0.01 level ($\Delta\chi^2$ (12) = 29.3, p=.004) and the remaining goodness-of-fit indices also put in evidence that the most restricted ETPB model represents the best fit to the data (GFI=.987, RMSEA=.019, SRMR=.020, CFI=.997).

Validity and reliability of the measurement models

Overall, goodness-of-fit results suggested the more restricted versions of the TPB and ETPB models as the most appropriate factor structures to test the research hypotheses. Additionally, as shown in Tables 4.12 and 4.13 concerning the CFA parameter estimates for both respecified measurement models, all factor loadings are significant at the 0.001 level, a result confirmed by bootstrapping, and the standardized factor loadings of the observed variables on their latent constructs were all above 0.5 as required for convergent validity.

Table 4.12 - Factor loading and bootstrap estimates for the TPB measurement model after respecification

Items	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	λ	*L*	SE	*p*-value		lower bound	upper bound	*p*-value
att1	0.67	0.95	.07	***	0.96	0.79	1.12	.001
att2[b]	0.82	1.00			1.00	1.00	1.00	…
sn3[b]	0.90	1.00			1.00	1.00	1.00	…
sn4	0.86	0.89	.06	***	0.89	0.76	1.03	.001
pbc1	0.75	0.97	.11	***	0.98	0.74	1.27	.001
pbc3[b]	0.72	1.00			1.00	1.00	1.00	…
int1	0.53	0.48	.04	***	0.48	0.40	0.55	.001
int2[b]	0.99	1.00			1.00	1.00	1.00	…
beh1[b]	0.97	1.00			1.00	1.00	1.00	…
beh2	0.82	0.83	.03	***	0.83	0.77	0.89	.001

(ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) p < .001, ([a]) based on 2000 bootstrap samples, ([b]) loadings fixed to 1.0 cannot be tested for statistical significance because they have no standard errors. (N=704)

Table 4.13 - Factor loading and bootstrap estimates for the ETPB measurement model after respecification

Items	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	λ	*L*	SE	*p*-value		lower bound	upper bound	*p*-value
att1	0.68	0.98	.06	***	0.98	0.86	1.12	.001
att2[b]	0.80	1.00			1.00	1.00	1.00	…
sn3[b]	0.87	1.00			1.00	1.00	1.00	…
sn4	0.89	0.95	.06	***	0.96	0.84	1.09	.001
pbc1	0.78	1.06	.11	***	1.07	0.78	1.42	.001
pbc3[b]	0.69	1.00			1.00	1.00	1.00	…
pn2	0.63	0.83	.05	***	0.83	0.74	0.91	.001
pn3	0.83	0.92	.04	***	0.92	0.84	1.01	.001
pn4[b]	0.85	1.00			1.00	1.00	1.00	…
int1	0.53	0.48	.04	***	0.48	0.40	0.56	.001
int2[b]	1.00	1.00			1.00	1.00	1.00	…
beh1[b]	0.97	1.00			1.00	1.00	1.00	…
beh2	0.82	0.83	.03	***	0.83	0.77	0.89	.001

(ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) p < .001, ([a]) based on 2000 bootstrap samples, ([b]) loadings fixed to 1.0 cannot be tested for statistical significance because they have no standard errors. (N=704)

In terms of convergent validity, all the scales in the TPB and ETPB models showed to be reasonable approximations of the underlying factors (see Tables 4.14 and 4.15) once values of average variance extracted (AVE) of the latent constructs ranged between 0.54 and 0.81 in both models.

Tables 4.14 and 4.15 also show that all constructs that composed the two respecified models had acceptable reliability, as estimated by Cronbach's alpha (α) and composite reliability (CR) equal to or greater than 0.70. For all practical purposes, the reliability of the construct representing purchase intention is adequate given that in both models its Cronbach's α is only 0.01 below 0.70 and, the more accurately estimated CR, is equal to 0.76.

On the contrary, the values for construct reliability and convergent validity of the original TPB and ETPB models (Table 4.16 and 4.17) reveal that before respecification took place, the AVE for the constructs PBC and SN was below the threshold of 0.5, indicating that the items removed were not explained in the most appropriate way by their corresponding latent construct. Also the reliability of the original PBC construct was lower than the recommended value of 0.7, suggesting that its three items were not measuring the same concept.

Table 4.14 - Validity and reliability of the final TPB constructs

	No. Items	α	CR	AVE	ATT	SN	PBC	INT	BEH
ATT	2	0.70	0.72	0.56	**0.75**				
SN	2	0.87	0.87	0.77	0.43	**0.88**			
PBC	2	0.70	0.70	0.54	0.36	0.27	**0.73**		
INT	2	0.69	0.76	0.64	0.55	0.36	0.40	**0.80**	
BEH	2	0.88	0.89	0.81	0.62	0.36	0.41	0.75	**0.90**

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour, (α) Cronbach's alpha, (CR) composite reliability, (AVE) average variance extracted. Note: Diagonal values in bold correspond to the square root of AVE. (N=704)

Table 4.15 - Validity and reliability of the final ETPB constructs

	No. Items	α	CR	AVE	ATT	SN	PN	PBC	INT	BEH
ATT	2	0.70	0.71	0.56	**0.75**					
SN	2	0.87	0.87	0.77	0.43	**0.88**				
PBC	2	0.70	0.70	0.54	0.37	0.26	**0.74**			
PN	3	0.81	0.82	0.60	0.69	0.47	0.16	**0.78**		
INT	2	0.69	0.76	0.64	0.55	0.36	0.39	0.45	**0.80**	
BEH	2	0.88	0.89	0.81	0.62	0.36	0.40	0.48	0.75	**0.90**

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour, (α) Cronbach's alpha, (CR) composite reliability, (AVE) average variance extracted. Note: Diagonal values in bold correspond to the square root of AVE. (N=704)

Table 4.16 - Validity and reliability of the original TPB constructs

	No. Items	α	CR	AVE	ATT	SN	PBC	INT	BEH
ATT	3	0.85	0.87	0.70	**0.83**				
SN	5	0.69	0.72	0.38	0.40	**0.62**			
PBC	3	0.60	0.63	0.39	0.30	0.29	**0.63**		
INT	2	0.69	0.76	0.64	0.50	0.37	0.40	**0.80**	
BEH	2	0.88	0.89	0.81	0.57	0.36	0.40	0.74	**0.90**

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour, (α) Cronbach's alpha, (CR) composite reliability, (AVE) average variance extracted. Note: Diagonal values in bold correspond to the square root of AVE. (N=704)

Table 4.17 - Validity and reliability of the original ETPB constructs

	No. Items	α	CR	AVE	ATT	SN	PN	PBC	INT	BEH
ATT	3	0.85	0.87	0.70	**0.84**					
SN	5	0.69	0.72	0.38	0.40	**0.62**				
PBC	3	0.60	0.63	0.39	0.31	0.29	**0.62**			
PN	4	0.85	0.86	0.61	0.67	0.51	0.20	**0.78**		
INT	2	0.69	0.76	0.64	0.50	0.37	0.40	0.48	**0.80**	
BEH	2	0.88	0.89	0.81	0.57	0.37	0.41	0.52	0.74	**0.90**

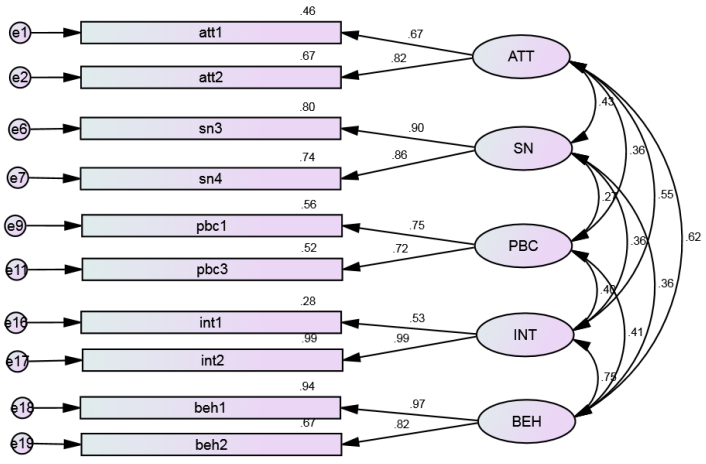
(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour, (α) Cronbach's alpha, (CR) composite reliability, (AVE) average variance extracted. Note: Diagonal values in bold correspond to the square root of AVE. (N=704)

Expectedly, the original construct attitude showed better reliability in both models (α =0.85 and CR=0.87) due to the presence of a redundant item that was not adding any new information to the scale. Also, the reliability of the respecified scale for personal norms decreased from α =0.85 and CR=0.86 (Table 4.17) to α =0.81 and CR=0.82 (Table 4.15), which is attributed to the shortening of the scale and may be seen as a sacrifice for increased ETPB model fit.

Both before and after respecification, all the TPB and ETPB latent factors revealed discriminant validity and therefore were considered to be sufficiently distinct from each other, given that the correlation of every pair of constructs was lower than the square root values of their individual AVE (see Tables 4.14, 4.15, 4.16 and 4.17).

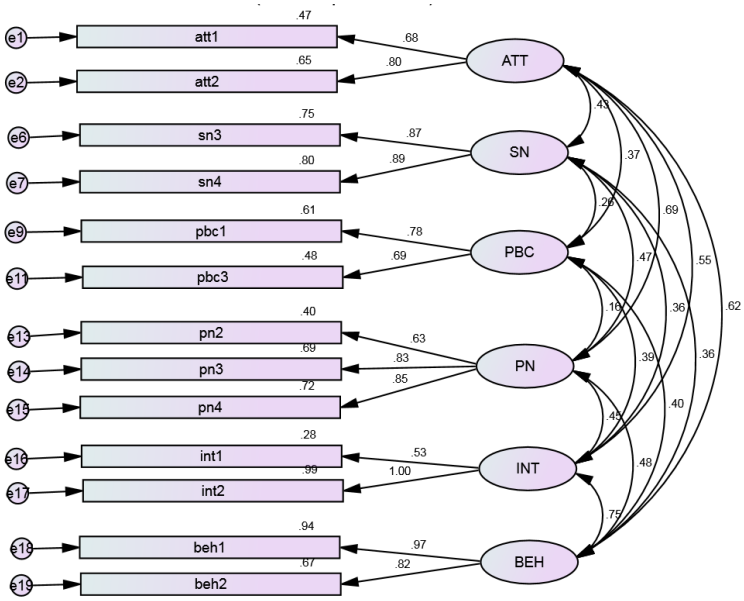
Figures 4.2 and 4.3 show the AMOS output for the final first-order CFA models, depicting the standardized parameter estimates for the five-factor TPB model with 10 items and the six-factor extended TPB model with 13 items, respectively.

Figure 4.2 - Estimates for the final TPB measurement model



(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour. Notes: For all covariances between latent variables and all unstandardized factor loadings, $p < .001$ and bootstrap p=.001. (N=704)

Figure 4.3 - Estimates for the final ETPB measurement model



(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour. Notes: For all covariances between latent variables and all unstandardized factor loadings, $p < .001$ and bootstrap $p = .001$, except for $Cov_{(PBC,PN)}$ ($p < .01$ and bootstrap $p < .01$). (N=704)

Structural equation modeling

Once the measurement model was validated and achieved acceptable model fit, the structural equation model was established by specifying the relationships between the exogenous and endogenous variables, as well as, between the two endogenous variables according to the hypothesized paths. The theoretical models, applying the TPB and the ETPB to organic food purchasing behaviour, were then tested using structural equation modeling (SEM).

Evaluation of the structural models

Table 4.18 shows the estimated unstandardized and standardized structural path estimates for the TPB and ETPB structural models.

In both models, all but one structural path estimates were significant ($p < .05$) and in the expected direction. The exception was the path between the constructs PBC and behaviour, which, although in the hypothesized direction, was not significant at the 0.05 level ($p = .092$ and $p = .155$, in the TPB model and ETPB model, respectively). Given that the multivariate normality of the data was not evident, these results were confirmed by the bootstrapped *p*-values associated to the bias-corrected 95% confidence intervals [4].

[4] As the data did not meet the normality criterion, a nonparametric bootstrapping was conducted to calculate an adjusted chi-square statistic and test the statistical significance of path coefficients. For the bootstrap analyses, 2000 bootstrap replications with the ML estimator were used to estimate the Bollen-Stine adjusted *p*-value for model fit testing and the *p*-values associated to the bias-corrected confidence intervals (95%).

Table 4.18 - Path coefficients and bootstrap estimates for structural relationships in the TPB and ETPB models

Structural relationships	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	β	*B*	SE	*p*-value		lower bound	upper bound	*p*-value
TPB model								
ATT→ INT	0.50	0.50	.06	***	0.50	0.38	0.66	.001
SN→ INT	0.13	0.08	.03	.003	0.08	0.03	0.14	.003
PBC→ INT	0.22	0.16	.04	***	0.16	0.08	0.26	.001
PBC→ BEH	0.07	0.06	.03	.092	0.05	-0.02	0.12	.160
INT→ BEH	0.79	0.87	.06	***	0.88	0.72	1.07	.001
ETPB model								
ATT→ INT	0.42	0.41	.08	***	0.41	0.27	0.62	.001
SN→ INT	0.10	0.06	.03	.026	0.06	0.01	0.13	.026
PBC→ INT	0.23	0.16	.04	***	0.16	0.08	0.26	.001
PN→ INT	0.15	0.11	.05	.025	0.11	0.01	0.21	.027
PBC→ BEH	0.06	0.04	.03	.155	0.04	-0.03	0.12	.222
INT→ BEH	0.80	0.89	.07	***	0.91	0.74	1.10	.001

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour, (ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) $p < .001$, ([a]) based on 2000 bootstrap samples. (N=704)

Table 4.19 below shows the fit of both structural models using the same fit indices applied in testing of measurement models. Most of the indices indicated an adequate model fit (GFI=.982/.978, RMSEA=.044/.036, SRMR=.028/.030, CFI=.988/.988, for the TPB model and ETPB model respectively), except for the chi-square statistic. The chi-square test of the TPB structural model was statistically significant ($\Delta\chi^2$ (27) = 64.1, $p < .001$) as did the chi-square test of the ETPB structural model ($\Delta\chi^2$ (53) = 102.0, $p < .001$), and the two structural models had a significant Bollen-Stine bootstrap *p*-value of 0.001.

Given that, in the structural model, the relationships between some constructs are constrained to zero and therefore are not estimated, the χ^2 value for the measurement model is expected to be lower although ideally not statistically different than for the structural model[5]. However, the chi-square difference test indicates that the overall fit of both structural models was statistically worse than the model fit of their measurement models ($\Delta\chi^2$ (2) = 35.4, $p < .001$ and $\Delta\chi^2$ (3) = 39.5, $p < .001$, for the TPB and ETPB models, respectively). Hence, diagnostic measures were applied with the aim of achieving an acceptable fit of the structural models among latent variables.

Modification of the structural models

Examination of the standardized residual covariances for the TPB and the extended TPB structural models (Appendix F) indicated that there were no large

[5] In both structural models, while direct relationships were specified between all the exogenous constructs and purchase intention, PBC was the only exogenous construct specified as being directly related to purchasing behaviour, as posited by the theoretical models. Instead, in their corresponding measurement models, there was a correlational relationship between each pair of constructs.

standardized residuals between pairs of observed variables.

At the recommended thresholds, the only large modification index in both models was for the error covariance between the indicators *int1* and *int2* (11.3 and 15.6 in the TPB and ETPB models, respectively). Because these items represent measures of the same factor it is plausible that shared item content across the two indicators could be the basis for a common omitted cause. However, allowing the error covariance between indicators of this construct to be freely estimated raised concerns about capitalization on chance, since the factor structure corresponding to the measurement theory has already been validated in the CFA stage. This is especially true, given that the standardized factor loadings of *int1* obtained for the TPB and ETPB models (see Table 4.20 below) were the only loading estimates that changed markedly (0.08 and 0.10, respectively) when the structural models were specified according to the theoretical models, which means that the empirical definition of the construct intention was significantly affected by the pattern of relationships between the constructs (Hair *et al*., 2010; Kline, 2011). If the hypothesized structural models do not adequately explain the observed association among indicators, adding measurement error correlations can be a way to mask this shortcoming (Kline, 2011). Thus, it seemed plausible that the difference in model fit was due to the relationships between constructs represented in the structural model that may have been oversimplified in relation to a more saturated model.

Hence, the structural equation model was re-evaluated, using a less conservative threshold ($p < .05$), to identify the reasons for the lack of fit. The diagnostic information about possible structural paths suggested that the absence of a direct relationship between attitude towards organic food and purchasing behaviour might represent a model misspecification in both models. This path had the highest modification index (9.90 and 9.61 in the TPB and ETPB models, respectively). Furthermore, analysing the pattern of residuals between indicators of these two constructs (Appendix F), it was noticed a significant standardized residual between indicators *att1* and *beh2* (2.45 and 2.04, in the TPB and ETPB models, respectively).

These results indicated that there might exist a substantial relationship omitted between these two constructs. From a substantively meaningful perspective, it could be expected that favourable attitudes towards organic food would generate high levels of organic food purchasing[6]. Thus, to further improve model fit of the two SEM models, a post hoc analysis was conducted by adding a structural relationship between the constructs attitude and behaviour, which was not hypothesized, to the TPB and ETPB structural models.

Estimation of these less constrained structural models resulted in a significant

[6] In the past, Bentler and Speckart (1979), facing difficulties to attain model fit when using a structural equation model to represent the theory of reasoned action (Fishbein and Ajzen, 1975), which is embedded in the TPB, have proposed that attitudes not only influence intentions but also have a direct effect on behaviour.

improvement in terms of model fit for both models. Values of fit statistics for the original and respecified TPB and ETPB structural models, as well as, for their respective final measurement models are reported in Table 4.19.

Table 4.19 - Goodness-of-fit indices for the TPB and ETPB final CFA models and alternative structural models

	No. Items	χ^2	*df*	*p*-value	B-S *p*-value	GFI	CFI	SRMR	RMSEA [90% CI]	p_{close}
TPB model										
final CFA model	10	28.75	25	.275	.315	.992	.999	0.017	.015 [.000-.035]	.999
original SR model	10	64.12	27	.000	.001	.982	.988	0.028	.044 [.030-.058]	.735
final SR model	10	28.91	26	.315	.369	.992	.999	0.017	.013 [.000-.033]	1.000
ETPB model										
final CFA model	13	62.47	50	.111	.221	.987	.997	0.020	.019 [.000-.032]	1.000
original SR model	13	102.01	53	.000	.001	.978	.988	0.030	.036 [.026-.047]	.985
final SR model	13	63.40	52	.133	.260	.987	.997	0.021	.018 [.000-.031]	1.000

(CFA) confirmatory factor analytic model, (SR) structural model, (χ^2) chi-square statistic, (*df*) degrees of freedom, (B-S *p*-value) Bollen-Stine bootstrap adjusted *p*-value, (GFI) goodness-of-fit index, (CFI) comparative fit index, (SRMR) standardized root mean square residual, (RMSEA) root mean square error of approximation, (CI) confidence interval, (p_{close}) probability of close fit. (N=704)

The respecified TPB structural model had a non-significant chi-square statistic (χ^2 (26) = 28.9, p=.315) and equivalent or more favourable values of approximate fit indexes than the values for the CFA model (GFI=.992, RMSEA=.013, SRMR=.017, CFI=.999). A Bollen-Stine bootstrap *p*-value of 0.369 also led to retain the null hypothesis that the model is consistent with the data and its overall fit was not statistically worse than that of the final CFA model ($\Delta\chi^2$ (1) = 0.2, p =.684).

The exact-fit hypothesis was also not rejected for the respecified ETPB structural model (χ^2 (52) = 63.4, p=.133) and the values of other fit statistics were practically the same as those for the final measurement model (GFI=.987, RMSEA=.018, SRMR=.021, CFI=.997). Moreover, the Bollen-Stine bootstrap *p*-value (p=.260) confirmed that the respecified ETPB structural model had adequate structural fit which was not statistically different from that of the CFA model ($\Delta\chi^2$ (2) = 0.9, p=.625).

Furthermore, the fit of the less restrained structural models is significantly better than that for their corresponding original structural models ($\Delta\chi^2$ (1) = 35.2, p < .001 and $\Delta\chi^2$ (1) = 38.6, p < .001, for the TPB and ETPB models respectively).

Validity of the structural models

For the purpose of comparison, Table 4.20 shows the standardized factor loading estimates obtained from the final CFA and from the original and respecified structural models for both the TPB and ETPB models.

Table 4.20 - Standardized factor loading estimates for the TPB and ETPB final CFA models and alternative structural models

Standardized factor loadings (λ)													
TPB model	*att1*	*att2*[a]	*sn3*[a]	*sn4*	*pbc1*	*pbc3*[a]	*int1*	*int2*[a]	*beh1*[a]	*beh2*			
final CFA model	0.67	0.82	0.90	0.86	0.75	0.72	0.53	0.99	0.97	0.82			
original SR model	0.66	0.83	0.90	0.86	0.75	0.72	0.55	0.91	0.97	0.82			
final SR model	0.68	0.81	0.90	0.86	0.75	0.72	0.53	0.99	0.97	0.82			
ETPB model	*att1*	*att2*[a]	*sn3*[a]	*sn4*	*pbc1*	*pbc3*[a]	*pn2*	*pn3*	*pn4*[a]	*int1*	*int2*[a]	*beh1*[a]	*beh2*
final CFA model	0.68	0.80	0.87	0.89	0.78	0.69	0.63	0.83	0.85	0.53	1.00	0.97	0.82
original SR model	0.68	0.81	0.87	0.89	0.78	0.69	0.63	0.83	0.85	0.55	0.90	0.97	0.82
final SR model	0.68	0.80	0.87	0.89	0.78	0.69	0.63	0.83	0.85	0.53	0.99	0.97	0.82

(CFA) confirmatory factor analytic model, (SR) structural model. Notes: For all unstandardized estimates, $p < .001$ and bootstrap $p=.001$, except for ([a]) which were not tested for statistical significance. Boostrap analyses based on 2000 bootstrap samples and bias-corrected 95% confidence intervals. (N=704)

Both respecified structural models performed adequately given that the loading estimates remained virtually unchanged compared to those of the final CFA models (Table 4.20). Furthermore, all the hypothesized relationships between the proposed constructs became statistically significant at the 0.05 level and in the hypothesized direction (Table 4.21). Comparable results were found with the use of the bootstrap procedure, except for the path between the constructs PBC and behaviour that was slightly above the 0.05 level of significance in the ETPB model.

Table 4.21 - Path coefficients and bootstrap estimates for structural relationships in the TPB and ETPB models after respecification

Structural relationships	ML estimates				Bootstrapping unstandardized estimates[a]			
	Standardized	Unstandardized			Mean	95% CI		
	β	*B*	SE	*p*-value		lower bound	upper bound	*p*-value
TPB model								
ATT→ INT	0.42	0.40	.06	***	0.40	0.29	0.56	.001
SN→ INT	0.12	0.07	.03	.004	0.07	0.02	0.13	.003
PBC→ INT	0.22	0.15	.04	***	0.16	0.08	0.25	.001
ATT→ BEH	0.28	0.31	.06	***	0.31	0.21	0.42	.001
PBC→ BEH	0.08	0.07	.03	.031	0.06	0.01	0.13	.028
INT→ BEH	0.56	0.64	.06	***	0.64	0.52	0.78	.001
ETPB model								
ATT→ INT	0.34	0.32	.07	***	0.32	0.18	0.52	.001
SN→ INT	0.09	0.06	.03	.026	0.06	0.01	0.12	.019
PBC→ INT	0.22	0.15	.04	***	0.15	0.08	0.25	.001
PN→ INT	0.13	0.08	.04	.037	0.08	0.00	0.16	.038
ATT→ BEH	0.30	0.32	.05	***	0.33	0.22	0.43	.001
PBC→ BEH	0.07	0.06	.03	.044	0.06	0.00	0.12	.056
INT→ BEH	0.55	0.63	.06	***	0.63	0.52	0.77	.001

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour, (ML) maximum likelihood, (SE) standard error, (95% CI) bootstrap bias-corrected 95% confidence interval, (***) $p < .001$, ([a]) based on 2000 bootstrap samples. (N=704)

Table 4.21 shows the maximum likelihood and bootstrap estimates for the structural relationships of the final TPB and ETPB structural models, both with an additional freely estimated path from attitude to intention.

Direct effects of attitude towards organic food on purchase intention and behaviour were statistically significant ($p < .001$), positive and appreciable in magnitude (respectively, β=0.42 and β=0.28). To a lower extent, a positive

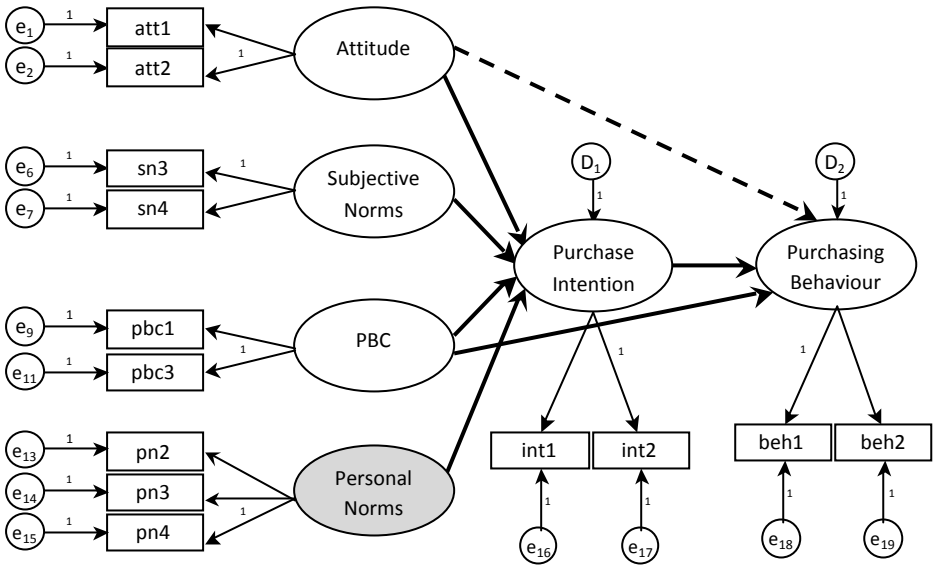
significant path was also detected between perceived behaviour control (PBC) and purchase intention (β=0.22, $p < .001$), while the effect of subjective norms on intention, although positive and statistically significant, was rather weak (β=0.12, $p < .01$). Moreover, intention to purchase organic food plays a significant and meaningful positive role on respondents' self-reported purchasing behaviour (β=0.56, $p < .001$), whilst the direct effect of PBC on behaviour is positive and statistically significant but very small (β=0.08, $p < .05$).

Examination of the individual path estimates for the extended TPB model yields the same picture as the one described for the TPB model, except for the relationship between the constructs PBC and behaviour which is found to be not significant, albeit very close to significance, with bootstrap resampling. In what regards its inherent distinctiveness, the path coefficient for the direct effect of personal norms on purchase intention was positive and significant at the 0.05 level, but relatively weak (β=0.13).

These findings suggest that the less constrained structural models reproduced almost perfectly the observed covariance matrix and, apart from the non hypothesized structural relationship between attitude and behaviour added to both models and the path from PBC to behavioural achievement that remained not significant in the extended TPB model, structural path estimates were consistent with theoretical expectations. Therefore, the respecified structural models with a direct path from attitude to behaviour were retained as they were the most properly specified to test the research hypotheses.

The final version of the TPB and extended TPB models, encompassing both the measurement and structural models, is schematically presented in Figure 4.4. Each of the hypothesized relationships is depicted in the path diagram, as well as, the direct effect that was predicted by Ajzen (1991) to be zero (dashed line).

Figure 4.4 - Validated version of the hypothetical SEM models



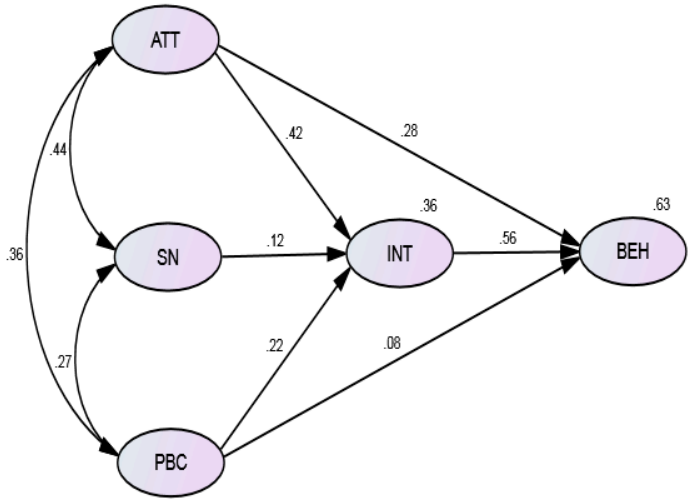
(PBC) perceived behavioural control, (e) measurement error term, (D) disturbance. Notes: The grey background indicates the additional explanatory variable of the extended TPB model. The dashed arrow indicates the direct predictive effect of PBC on behavioural achievement.

Predictive power of the models

The proportion of variance accounted for in the endogenous variables in the final TPB and ETPB structural models is respectively depicted in Figures 4.5 and 4.6.

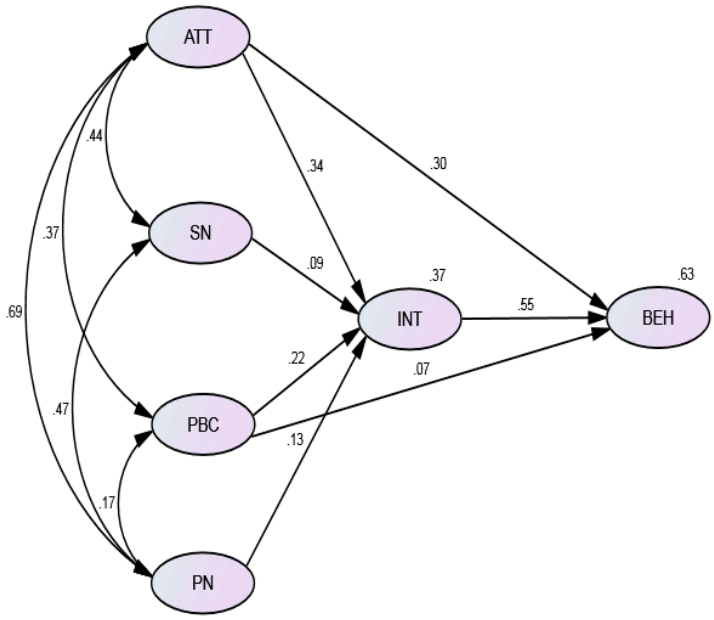
The predictor variables included in the TPB and ETPB models explained, respectively, 36% and 37% of the variance in purchase intention (mediator variable) and both explained 63% of the variance in purchasing behaviour (outcome variable). According to Hair's *et al*. (2010) criteria for R^2 values, both models showed a high predictive power of certified organic food purchasing behaviour.

Figure 4.5 - Estimates for the final TPB structural model



(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour. Notes: For simplicity, measured indicators and their corresponding loadings and error terms are not shown. For all covariances between independent variables and all unstandardized path coefficients, $p < .001$ and bootstrap p=.001, except for SN→ INT ($p < .01$ and bootstrap $p < .01$) and PBC→BEH ($p < .05$ and bootstrap $p < .05$). (N=704)

Figure 4.6 - Estimates for the final ETPB structural model



(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (PN) personal norms, (INT) intention, (BEH) behaviour. Notes: For simplicity, measured indicators and their corresponding loadings and error terms are not shown. For all covariances between independent variables and all unstandardized path coefficients, $p <$ .001 and bootstrap p=.001, except for SN→INT and PN→INT ($p < .05$ and bootstrap $p < .05$), PBC→BEH ($p < .05$ and bootstrap $p > .05$) and $Cov_{(PBC,PN)}$ ($p < .001$ and bootstrap $p < .01$). (N=704)

Research hypotheses testing

The standardized path coefficients of the final TPB structural model estimation are depicted in Table 4.21 and Figure 4.5 above.

H1.1: *Attitude towards purchasing certified organic food is positively related to purchase intention.*

Attitude towards organic food purchasing behaviour was found to have a highly significant and positive influence on purchase intention (β=0.42, $p < .001$), hence supporting H1.1. Furthermore, the relationship between attitude and intention has the highest path coefficient value of all the three exogenous variables in the model.

H1.2: *Subjective norms towards purchasing certified organic food are positively related to purchase intention.*

Subjective norms with regard to organic food purchasing behaviour were found to have a positive and statistically significant relationship with behavioural intention (β=0.12, $p < .01$), confirming hypothesis 1.2. Nonetheless, among the three standard TPB predictors, subjective norms have the smallest effect on purchase intention.

H1.3: *Perceived behavioural control over purchasing certified organic food is positively related to purchase intention.*

In support of hypothesis 1.3, the direct effect of perceived behavioural control (PBC) on behavioural intention showed to be positive, although weak, and highly significant (β=0.22, $p < .001$).

H2.1: *Intention to purchase certified organic food is positively related to purchasing behaviour.*

The path from purchase intention to purchasing behaviour was found to be positive, highly significant and of considerable magnitude (β=0.56, $p < .001$), giving support to hypothesis 2.1.

H2.2: *Perceived behavioural control over purchasing certified organic food products is positively related to purchasing behaviour.*

Perceived behavioural control (PBC) significantly and positively influences purchasing behaviour (β=0.08, $p < .05$), which supports hypothesis 2.2. However, its very small effect is by far surpassed by the direct effect of purchase intention on purchasing behaviour.

H2.3: *Intention to purchase certified organic food fully mediates the effects of attitude and subjective norms on purchasing behaviour and partially mediates the effects of perceived behaviour control.*

Table 4.22 shows the direct and indirect effect estimates to test the mediating effect of behavioural intention on the relationships between attitude, subjective norms and PBC, and behaviour.

Bootstrap analyses reveal that all the indirect effect estimates are significant at the 0.001 level, except for the indirect effect of subjective norms that is significant at the 0.01 level, implying the presence of mediating effects of intention on the three hypothesized relationships. The relationship between subjective norms and behavioural achievement is completely mediated by purchase intention given that a post hoc analysis estimated the direct path between these two variables to be close to zero and not significant as assumed by the TPB[7]. Moreover, the significant direct effect of PBC on purchasing behaviour ($p < .05$) indicates that purchase intention only partially mediates this relationship, although the mediator explained 60% of the total effect of PBC on the outcome variable.

However, fit indices suggested an unforeseen moderate direct effect of attitude on behavioural achievement (β=0.28, $p < .001$), which indicates that attitude is also an important predictor of purchasing behaviour. This finding, besides contradicting the originally expected completely mediated effect through purchase intention, reveals that less than half of the total effect of attitude on purchasing behaviour (45%) was mediated.

Therefore, hypothesis 2.3 is only partially supported.

Table 4.22 - Standardized effect decomposition for the final TPB structural model

	INT			BEH		
Effects	Direct	Indirect	Total	Direct	Indirect	Total
ATT	.418***	-	.418***	.285***	.234***	.519***
SN	.122**	-	.122**	-	.068**	.068**
PBC	.216***	-	.216***	.080*	.121***	.201***
INT	-	-	-	.560***	-	.560***

(ATT) attitude, (SN) subjective norms, (PBC) perceived behavioural control, (INT) intention, (BEH) behaviour, (***) significant at the 0.001 level, (**) significant at the 0.01 level, (*) significant at the 0.05 level. Note: Boostrap analyses based on 2000 bootstrap samples and bias-corrected 95% confidence intervals. (N=704)

Further insight on the main determinants of certified organic food purchasing behaviour is gained on examination of table 4.22, presenting the total effects of each predictor variable, which, based on bootstrapped *p*-values, are all significant at the 0.001 level, except for the total effect of subjective norms that is significant at 0.01 level.

The very weak magnitude of the total effect of subjective norms on purchasing behaviour (c=0.07) is a consequence of its small role in predicting purchase intention. The total effect of PBC on purchasing behaviour is higher than its direct effect but still weak (c=0.20). It is important to note that PBC has a larger influence on behaviour indirectly through purchase intention (ab=0.12) than its

[7] The final structural TPB model was respecified by adding a structural relationship between the constructs subjective norms and purchasing behaviour. The direct effect of the independent variable on the outcome variable was negligible and not significant at the 0.05 level (β=0.01, p=.682), which was confirmed by bootstrapping (bootstrap p=.613), based on 2000 bootstrap samples and bias-corrected 95% confidence intervals.

direct effect (c'=0.08). On the contrary, attitude has a strong total effect on behaviour (c=0.52), which is mostly unmediated, reinforcing its meaningful role in explaining organic food purchasing behaviour. Nevertheless, purchasing behaviour is most strongly influenced by purchase intention, which has a total effect of 0.56 and, as already pointed out, is a fundamental mediator in the relationship between the three exogenous variables and the outcome variable.

H3.1: *An alternative model comprising all the TPB constructs and personal norms can more accurately explain certified organic food purchasing behaviour, compared to the original TPB model.*

Both the final TPB and ETPB structural models converged to admissible solutions, passing the chi-square test, yielding excellent values of approximate fit indices and with all structural paths statistically significant, except for the hypothesized relationship between PBC and behaviour in the ETPB model, which was not supported by a significant bootstrapped *p*-value. To distinguish the relative superiority of one model compared to the other, it was deemed necessary to test the competing theories, by determining which one achieved better model fit and explanatory power.

Table 4.23 shows values of selected fit statistics and the Akaike Information Criterion (AIC) for the two final structural models, required for non-nested models comparative evaluation.

Table 4.23 - Goodness-of-fit indices and coefficients of determination for the final TPB and ETPB structural models

Final Structural Model	TPB	ETPB
No. Items	10	13
χ^2	28.91	63.40
df	26	52
p-value	.315	.133
B-S *p*-value	.369	.260
GFI	.992	.987
CFI	.999	.997
SRMR	0.017	0.021
RMSEA [90% CI]	.013 [.000-.033]	.018 [.000-.031]
p_{close}	1.000	1.000
AIC	86.91	141.40
R^2 (Intention)	.36	.37
R^2 (Behaviour)	.63	.63

(χ^2) chi-square statistic, (*df*) degrees of freedom, (B-S *p*-value) Bollen-Stine bootstrap adjusted *p*-value, (GFI) goodness-of-fit index, (CFI) comparative fit index, (SRMR) standardized root mean square residual, (RMSEA) root mean square error of approximation, (CI) confidence interval, (p_{close}) probability of close fit, (AIC) Akaike information criterion, (R^2) squared multiple correlation. (N=704)

The specification of an alternative model, which establishes an additional structural relationship between personal norms and intention produced a model with increased Akaike Information criterion (AIC=141.4) compared with the TPB model in which AIC=86.9. This is no surprise given that the TPB model is more parsimonious and its overall fit is better, displaying lower χ^2, RMSEA and SRMR and higher GFI and CFI than the ETPB model.

Also, the R^2 value for the newly defined intention construct increased marginally

(R^2=0.36 and R^2=0.37 for the TPB and ETPB models, respectively), accounting for an additional 1% in explanatory power, thus not clearly confirming the role of personal norms as an antecedent of organic food purchase intention. Furthermore, the inclusion of personal norms in the extended TPB model did not increase the ability to explain purchasing behaviour compared to the TPB model (R^2=0.63 in both models).

These results suggest that the personal norms construct should not be retained in the TPB model and therefore, hypothesis 3.1 is not supported.

H3.2: *Personal norms about purchasing certified organic food are positively related to purchase intention.*

Despite rejection of hypothesis 3.1, hypothesis 3.2 was investigated in order to attempt to shed light on the failure of the extended TPB model to reliably increase the amount of explained variance in the dependent variables.

The standardized path coefficients of the final ETPB structural model estimation are depicted in Table 4.21 and Figure 4.6 above.

Given the good model fit of the ETPB model it was not surprising to find that personal norms regarding the purchasing behaviour had a positive and statistically significant relationship with behavioural intention (β=0.13, $p < .05$). However, personal norms revealed only a small effect size on purchase intention and, more importantly, its inclusion in the TPB model altered the individual path estimates and significance levels of the effects of other predictor variables on intention. In fact, attitude remained the strongest predictor of intention, but its effect changed to moderate (β=0.34, $p < .001$), while the direct effect of subjective norms on purchase intention decreased even further (β=0.09) and became significant only at the 0.05 level.

The drop of the standardized path coefficients from attitude and subjective norms to intention after the introduction of personal norms into the model is most likely caused by collinearity due to the correlation of personal norms with the two TPB constructs, which preliminary analyses found to be stronger than the correlation of the predictors with purchase intention. Multicollinearity prevents an accurate estimate of the effects of individual variables (Hair *et al*., 2010) and, therefore, it is not possible to conclude on the independent nature of personal norms as a predictor of organic food purchase intention. Hence, hypothesis 3.2 cannot be reliably tested.

In summary, of eight hypotheses tested, one hypothesis is only partially supported (H2.3) and two hypotheses are not supported (H3.1 and H3.2).

Discussion of findings

The first main conclusion of such quantitative study is that the original TPB model did not adequately explain the covariance data. Constraining the structural model by not allowing attitude to have a direct effect on behaviour, as foreseen by Ajzen's theory (1991), significantly worsen fit when compared to the model with such respecification. Besides, the inclusion of this dependence relationship outside the hypothesized model was also substantive meaningful

and supported in the literature. Given that the primary focus of this study is to identify determinants of certified organic food purchasing, specifying an additional structural path from attitude to behaviour was appropriate as the direction of prediction concurs to the intent of the study.

Unlike the proposed TPB model, in such a respecified model, all parameter estimates are consistent with the hypothesized relationships among the latent variables. Furthermore, the TPB model with an additional structural relationship explained 36 % of the variance in purchase intention and 63 % of the variance in purchasing behaviour. The explained variance in purchasing behaviour is quite substantial, indicating that the independent variables, together with the mediating variable, have a large predictive effect of behavioural achievement. These levels of explanation of the dependent variables are comparable to those reported in previous SEM based studies applying the TPB to predict intention and behaviour in the context of organic food purchasing. The works of Saba and Messina (2003), Tarkiainen and Sundqvist (2005), Thøgersen (2009a), Voon *et al*. (2011), Thøgersen and Zhou (2012) and Zagata (2012) report R^2 values between 35% and 84% for purchase intention and between 12% and 82% for purchasing behaviour.

With regard to the main determinants of certified organic food purchasing, it can be concluded that purchase intention is the most proximal predictor of self-reported purchasing behaviour (β=0.56), exhibiting the greatest total effect on behavioural achievement. Also consistent with the TPB, intention plays a significant role in mediating the effects of the attitude, subjective norms and PBC on purchasing behaviour, contributing to strength the relation between the three predictors and behavioural achievement. These findings indicate that intentions to purchase certified organic food were critically formed from respondents' attitude, subjective norms and perceived control over the behaviour, and that stronger intentions are likely to lead to purchasing organic food.

Interestingly, the likelihood of purchasing certified organic food within the next month showed to be a reliable measure of intention (λ=0.99), whereas the inconsistent performance of the measure concerning willingness to pay for certified organic food (λ=0.53) reinforces what descriptive analysis have already suggested about the existence of a non negligible proportion of likely buyers that disapproves of the principle of paying more for organic food.

Among the three TPB independent variables, attitude towards purchasing organic food products is the most important predictor of purchase intention, and its effect is found to be quite sizeable (β=0.42). This means that intentions to purchase organic food can be best explained with respect to the attitudes of respondents and their evaluation of purchasing organic food. Namely, in descending order of influence, to the perceived benefits (λ=0.81) and positive feelings (λ=0.68) associated with organic food purchasing.

In many studies using the theory of planned behaviour, attitude has consistently produced the strongest effect on behavioural intention (Ajzen, 1991; Ajzen and Cote, 2008), which in this case, indicates that individuals with a more favourable attitude are more likely to form an intention to perform such behaviour. Nevertheless, it worth noting that even if an overwhelming majority of the

respondents (89%) had positive attitudes towards buying certified organic food products, a considerable share of the total had no intention to buy them (26%), which fundamentally is a result of self-selection bias in the online survey. More importantly, this evidences that there was sufficient variance in the attitude to differentiate between different groups of respondents with respect to their purchase intentions.

Perhaps a more surprising finding of this study is the direct effect of attitude on purchasing behaviour, which is statistically significant and of moderate amplitude (β=0.28). This result, although in line with previous research on the purchase of organic food (Squires *et al*., 2001; Thøgersen (2002); Aertsens *et al*., 2011; Saleki *et al*., 2012; Bravo *et al*., 2013), contradicts Ajzen and Fishbein's proposition (1980) that the influence of attitude on behaviour would be completely mediated trough intention. A possible rational for this unmediated relation is that, given the same level of intentions, the additional effort expended to pursue a course of action is likely to increase with more favourable attitudes towards organic food purchasing.

The suggestion of the existence of a direct causal influence of attitude on subsequent behaviour is by no means new (Bentler and Speckart, 1979; Albarracín *et al*., 2001) and it indicates, for this particular context, an extremely strong influence of the attitudinal variable within the overall model. In fact, analysis of the total effects in the model revealed that attitude (*c*=0.52) is almost as strong an influence on purchasing behaviour as intention (*c*=0.56), which is due, to a considerable extent, to its direct effect.

Glasman and Albarracín (2006), in their meta-analytic review shed light on the attitude-behaviour relation, establishing that attitudes strongly predict behaviour when they are easy to recall (accessible) and stable over time. Using moderator and multiple regression analyses, they demonstrated that attitudes are more accessible when based on direct experience, frequently reported in public and when the people who form them are highly motivated to think about the attitude object, whereas stability results from attitudes that are held with confidence, and formed on the basis of information that is relevant to the behaviour and one-sided or homogenous.

These findings are consistent with Ajzen's (2001) assertion that the strength of attitudes towards the behaviour is multidimensional, depending on the vested interest in the topic, accessibility of underlying beliefs, direct experience, certainty in one's position, personal relevance of the issue, knowledge and frequency of thought about the issue. Similarly, in his review, it was further concluded that strong attitudes are expected to be relatively stable over time and to have a greater impact on behaviour.

Such differentiated quality of positive attitudes towards organic food has been also noted by Lockie *et al*. (2002) and can be an important addition to understand the discrepancies between positive attitudes and actual purchasing behaviour mentioned in the literature (e.g., Magnusson *et al*., 2001; Padel and Foster, 2005; Truninger, 2010).

Perceived behavioural control (PBC) was also found to be a significant predictor

of intention, indicating that greater perception of control over certified organic food purchasing tended to lead to greater likelihood of purchase intention. In other words, the effort people have to make in terms of time, money, planning, cooperation of others, etc., is also important in their decision of whether or not to buy organic food. Nevertheless, PBC accounts for much less of respondents' intentions (β=0.22) than favourable attitudes. The fact that attitudes towards buying organic food products is the most dominant predictor of purchase intention, while PBC is relatively less important as already been found in other studies (Chen, 2007; Thøgersen, 2009a; Thøgersen and Zhou, 2012). One possible explanation for this is that a non negligible share of the respondents who purchased organic food, and presumably had a purchase stronger intention, probably did not perceive a great deal of ability for carrying out this behaviour. Their favourable attitudes are dominant in the purchasing decision-making. On the other hand, it is easy to see that non-buyers are not acquainted with the behaviour of purchasing organic food and therefore their perceptions of behavioural control may not be particularly realistic (Carrington *et al*., 2010).

PBC also denoted to have a direct influence on purchasing behaviour as assumed by Ajzen (1991). Nevertheless, compared to intention, it is a very weak predictor of behavioural achievement (β=0.08), suggesting that the behaviour in question is largely under volitional control. In other words, the respondents were more likely to purchase organic food if they were motivated to do so, over and above their sense of control over the behaviour. Furthermore, the vast majority of the respondents perceived a slightly positive or neutral behavioural control, suggesting that the purchase of organic food may become routine as it is repetitively performed and, consequently, the role of PBC on purchasing behaviour becomes less salient and intention becomes a proxy for actual behaviour. Still, the significant direct effect of PBC on behaviour suggests that, at least, some likely buyers foresee a number of situational constraints outside their control that prevent them from engaging in organic food purchasing, but for the sample of respondents, perceptions of behavioural control acted dominantly as important determinants of their purchase intention.

Lastly, it should be referred that the role of perceived self-efficacy related to the ease or difficulty of performing the behaviour (λ=0.75) was relatively equivalent to that of perceived controllability referring to the extent to which performance is up to the respondent (λ=0.72). Furthermore, the mean scores of the self-efficacy measure (relative easiness or difficulty) are neutral, whereas are slightly positive for the controllability item (resources and opportunities to exert control) and therefore the relationship of PBC with intention and behaviour should not be interpreted as absence of inhibiting factors to action for those who already buy organic food, but rather in terms of increased ability to overcome existing constraints and barriers.

On the other hand, subjective norms exert a significant, but small, influence on purchase intention (β=0.12), meaning that respondents perceive relatively low social pressure to purchase organic food. Armitage and Conner (2001), in their meta-analysis on the efficacy of the TPB, found that subjective norms are generally the weakest predictor of intentions but actually empirical studies applying the TPB framework within the organic food domain report

contradicting findings. Zagata (2012) revealed that subjective norms account for most of the explained variance in organic food purchase intention, while Sparks and Shepherd (1992) have demonstrated that subjective norms exhibit the weakest effect when it comes to the prediction of organic vegetables consumption. Also, Thøgersen (2002), Tarkiainen and Sundqvist (2005), Verhoef (2005), Aertsens *et al*. (2011), Thøgersen and Zhou (2012) and Saleki *et al*. (2012) found that subjective norms play no role when applying the TPB to the purchase of organic wine in Denmark, organic bread and flour in Finland, organic meat in the Netherlands, organic vegetables in Belgium and in China, and organic food in general in Iran, respectively.

The work of Arvola *et al*. (2008) and of Ruiz de Maya *et al*. (2011) shed some light on this topic, uncovering discrepancies in the strength of subjective norms within the TPB among consumers of different European countries regarding the purchase of specific organic food products. In the first study, subjective norms were the most significant predictors of purchase intention for Finnish consumers, while they were not significant for Italians, whereas in the second study it is noted that compared to Danish and Swedish consumers, Spanish consumers assign much less relevance to subjective norms. In both studies, these findings were explained in terms of cultural differences, to the extent to which people are affected by what others think. Certainly, these results could have been equally ascribed to diametrically opposed organic markets' size, because as Thøgersen and Zhou (2012) pointed out, in countries with less mature organic markets, organic consumers rather act according to their personal preferences, due to the scarcity of role models and social expectations in this respect.

The relatively low importance of perceived social norms may well reflect the specific context of the Portuguese organic market, leading the respondents to rely more on their personal rather than social considerations when facing decisions regarding organic food purchase. Under these circumstances, it is not surprising to find that descriptive norms representing others' behaviour had the lowest score and failed to load consistently on the original construct. On the other hand, the social pressure to engage in organic food purchasing that respondents eventually perceived derived mainly from friends and close relatives (λ=0.86 and λ=0.90, respectively). These respondents who held positive injunctive norms were more likely to decide to purchase organic food. Lastly, the lack of influence of household members' approval in the choice of organic food[8] is in line with previous research (McCarthy and Murphy, 2013) but in contrast other studies (Naspetti *et al*., 2008; Zagata, 2012). A speculative interpretation is that in Portugal the person in charge of grocery shopping tends to be the dominant decision-maker, determining the kind of foods available at home.

In regard to the additional normative variable, this study could not find evidence

[8] As it was unclear if the item was methodologically sound, a supplemental analysis without data from the people that lived alone was run, but the results were consistent between the two samples (factor loading of *sn5* increased marginally from 0.25 to 0.26).

to support a more complex TPB model for explaining certified organic food purchasing behaviour. The final revised form of the TPB model, where personal norms are omitted, is more parsimonious and provides a better fit to the data than the corresponding extended version of the TPB, while having seemingly similar explanatory power.

Furthermore, although personal norms reveal a significant effect on purchase intention, its magnitude is relatively small (β=0.13) when previously it was noticed that these constructs correlate with each other considerably (*r*=0.51), and personal norms items mean scores denoted general agreement with feelings of moral obligation related to purchasing organic food. This inconsistency is best explained by the presence of collinearity, due to personal norms being highly correlated with attitude and subjective norms (respectively, *r*=0.72 and *r*=0.57). Although preliminary analysis suggested that personal norms were seemingly measuring different things, the fact that the influence of attitude and subjective norms on purchase intention falls when personal norms are included in the TPB model, evidences a substantial overlap of the latter with the other two predictors.

Multicollinearity poses problems for estimating reliable parameters and, consequently, it is not possible to interpret the precise nature of the relationship between personal norms and behavioural intention with a fair degree of confidence. Nevertheless, it is appropriate to speculate about the direction of causality that exists between these variables, on the basis of the correlational evidences and insights provided by existing research. In fact, these results are in line with the conclusions of other studies within the context of organic food purchase, which have focused on the role of personal norms in the TPB model. Thøgersen (2002) and Dean *et al*. (2008) reported a decrease of the effect of attitude and subjective norms on intention when personal norms were included in the equation, while Thøgersen and Ölander (2006) and Arvola *et al*. (2008) have explicitly mentioned the high correlation of personal norms with both attitude and subjective norms. Going beyond correlational analysis, Arvola *et al*. (2008), Dean *et al*. (2008) and Guido (2009) found that moral considerations influenced both purchase intention and attitude towards the behaviour. In turn, Guido *et al*. (2010) have proved the existence of a direct path from subjective to moral norms, while Thøgersen (2009b) has demonstrated that the behavioural influence of subjective norms was not significant, when controlling for personal norms.

In this study, even though its effect decreased, attitude towards purchasing organic food remained the most important predictor of purchase intention of the three constructs, supporting Thøgersen's line of reasoning (2002) that the overall attitude, in addition to evaluations about the consequences of the behaviour, also reflects moral concerns. Similarly, in the environmental domain, Kaiser (2006) argues that moral norms are captured by people's attitude, either as its antecedent or as its component reflecting the evaluative essence of the attitude measure, and in the food choice domain, Raats *et al*. (1995) concluded that attitudes towards milk consumption need to take into account, not only utility motives, but also perceived moral obligation for family's health.

On the other hand, it is theoretically plausible that the effects of subjective norms on purchase intention is, at least partially, mediated through personal norms, as suggested by Guido *et al*. (2010) and also by Bamberg and Möser (2007) on their meta-analytic SEM on pro-environmental behaviour using the TPB as theoretical framework. This is consistent with Schwartz's (1977) norm-activation model, which prescribes that individuals' own values may be inferred from their social context, namely, from important others. In such case, subjective social norms influence personal norms by providing information whether a specific behaviour is morally right or wrong (Bamberg and Möser, 2007; Arvola *et al*., 2008). However, Thøgersen (2009b) argues that there is more to personal norms than internalized social norms. Using regression analysis, this author found that personal norms not only fully mediate the influence of subjective norms, but also of all motivations, in organic food purchasing behaviour, suggesting that personal norms are the result of elaborate reasoning on the arguments for performing the behaviour. This would explain why personal norms are normally found to be better predictors than subjective norms in the organic food buying context, given that the higher the level of internalization of the norm, the stronger it will be its behavioural impact (Thøgersen, 2009b).

The final link of this complex chain of relationships is disclosed by Tarkiainen and Sundqvist (2005) and Aertsens *et al*. (2011), who tested and confirmed a relationship between subjective norms and attitudes, based on the assumption that organic food purchasing is an ethical decision reflecting an environmental benefit for the collective good. Another perspective corroborating the mediating effect of moral norms on the relationship between attitude and subjective norms is given by Gotschi *et al*. (2007), who reported a high correlation between subjective norms and attitude towards organic food amongst Austrian teenagers, and explained it in terms of the influence of norms and values learnt within the family on attitude formation.

Lastly, it is important to mention that positive self-rewarding feelings of doing the morally right thing (λ=0.83) and of contributing to something better (λ=0.85) were more consistent measures of personal norms than negative feelings of guilt (λ=0.63), supporting what descriptive analysis results have already evidenced. This is in accordance with the observations of Arvola *et al*. (2008) and Dean *et al*. (2008), who have drawn the attention that, in the context of organic food purchase, positive personal norms which follow from adhering to one's own moral principles are more useful predictors of purchase intention than negative personal norms or feelings of moral obligation. Results regarding the latter are inconclusive, if not contradicting, because, although the related item was removed to improve the measurement model, descriptive and correlational statistics suggested that it might have an important role in defining personal norms towards organic food purchasing as well.

CHAPTER 5 - QUALITATIVE RESEARCH STUDY

This study uses focus groups for obtaining a more thorough understanding of the factors, which according to the theory of planned behaviour (TPB) and the proposed extended version of the TPB, are expected to influence Portuguese consumers' certified organic food purchasing behaviour. First, an overview of the research objectives, of the expectancy-value model underlying both theories, and questions guiding this research is presented. Second, an exhaustive description of focus groups' conceptual foundations, implementation, data interpretation and findings is then provided.

RESEARCH THEORETICAL FRAMEWORK

This section introduces the scope of a qualitative approach to examine the behaviour under investigation. Afterwards, the theoretical framework employed and the questions driving this qualitative study are outlined.

Purpose and specific objectives

In the present study, the theory of planned behaviour is used to gain a more complete understanding of certified organic food purchasing behaviour of Portuguese consumers, by enlightening the bases for forming its major determinants. In addition, personal norms are used to extend the TPB in order to examine the role of consumers' moral evaluation in organic food purchasing.

The study was conceived as an elicitation study supporting the development of the survey questionnaire and, most importantly, as a follow-up study to deepen and clarify the researcher's understanding of the quantitative findings. To develop a coherent qualitative study that could complement the quantitative study, the research questions were translated into more specific supporting questions driving data collection and analysis of focus group discussions.

A qualitative methodology in the form of focus groups conducted with a sample of individuals representative of the research population is adopted as a tool to identify readily accessible beliefs about purchasing certified organic food and for a more detailed exploration of its determinants. Particularly, content analysis allows to investigate the importance and interplay between the major antecedents of behaviour in the consumer decision process.

Proposed theoretical framework

The theory of planned behaviour postulates that the set of salient beliefs people hold about a certain behaviour ultimately determines their intention to engage in the behaviour (Ajzen, 1991). Applying the expectancy-value model, it is assumed that attitude towards the behaviour, subjective norms and perceived behavioural control (PBC) can be indirectly measured on the basis of corresponding sets of accessible behavioural, normative, and control beliefs. Behavioural beliefs are beliefs about the likely consequences of performing the behaviour weighted by the evaluations of these outcomes, normative beliefs are beliefs about the expectations of important others weighted by the motivation to comply with

these expectations and control beliefs are beliefs about the presence of control factors that may facilitate or inhibit performance of the behaviour weighted by the perceived power of these factors (Ajzen, 1991, 2006a). Similarly, using an expectancy-value formulation, personal norms can be conceptualized as the composite index of positive and negative moral beliefs weighted by their corresponding subjective value.

In turn, behavioural intention is defined as the motivation required to perform a particular behaviour, mediating the effects of the theory's major components on behaviour (Fishbein and Ajzen, 2010). Still, the ability to reach the final step in the behavioural sequence depends on the extent to which a person has control over the behaviour (Ajzen, 1991; Fishbein and Ajzen, 2010). Finally, motivation and ability interact on their effects on behavioural achievement (Ajzen, 1991).

Development of guiding questions

The systematic perspective of the theory of planned behaviour lends itself to be used as a heuristic framework guiding the questions to be raised in such a qualitative study aimed at gaining substantive information about the determinants of certified organic food purchasing. In particular, this research appraises the influence of consumers' attitudes, subjective norms, perceptions of behavioural control and personal norms on purchase intention, and the relationship between consumers' motivation and ability in the determination of purchasing behaviour.

Thus, the following guiding questions are proposed:

Guiding question 1: *What are the salient behavioural, normative and control beliefs with regard to certified organic food that contribute to consumers' purchasing decision?*

Guiding question 2: *What is the relationship between purchase intention and control over the behaviour in determining successful performance of certified organic food purchasing?*

Guiding question 3: *What, if any, are the salient personal normative beliefs about purchasing certified organic food that contribute to consumers' purchasing decision?*

METHODOLOGY

The following section introduces the rationale for choosing focus groups as the method for qualitative data collection, the sample frame and size selected, the recruitment protocol used, the principles guiding interview questions development and the procedures adopted to run the sessions. It ends with a description of the steps of the method applied to analyse focus group data.

Research design

Focus groups rationale

Focus groups are a qualitative research technique that relies on group interaction for collecting data on a specific topic determined by the researcher (Morgan, 1996).

The interaction between participants in the group is an essential feature of the method, providing insights that would be less easily accessible in an individual interview because people are encouraged to talk to one another, asking questions and comment on each other's point of view (Kitzinger, 1995; Morgan, 1996). These group dynamics constitute an important data source, because it allows the participants to respond and build on the reactions of other group members (Liamputtong, 2011). The extent of similarity and diversity among participants, stimulate each participant to think more profoundly about their viewpoints in their effort to understand each other, generating a rich understanding of participants' experiences and thoughts, as well as, of the steps they go through in complex decision-making (Morgan and Krueger, 1993; Morgan, 1997a; Bernard, 2006). This unique advantage makes focus groups especially useful to provide increased completeness to findings attained with quantitative methods as they allow obtaining several perspectives about the same topic while also generating in-depth knowledge about peoples' opinions, experiences, feelings and values (Morgan, 1997a; Liamputtong, 2011).

The role of the moderator in guiding the group interaction is another essential component of this method. The basic goal in conducting focus groups is to listen to the participants' discussion and to learn from it, however, the moderator has a major impact on the quality of the data that focus groups produce (Morgan, 1997a). The moderator has to encourage all participants to actively engage in the discussion, as well as, to ensure that the interaction among the participants follows a predetermined set of discussion topics (Krueger, 1998b; Liamputtong, 2011). Dominant talkers, shy participants and self-appointed experts may pose challenges in focus groups. This means that the moderator has to make sure that each participant has an opportunity to speak and encourage an interactive exchange of opinions. Other downside of group dynamics is the individual voices of dissent (Kitzinger, 1995), which may refrain from giving their opinion. Thus, the moderator needs to help generate a situation that favours respect for diverging views and should explore disagreement within the group by asking directly for different points of view. The moderator may probe further, to request for additional information, when the discussion is not flowing or to clarify on issues raised by the participants (Morgan, 1997a; Liamputtong, 2011).

Finally, focus groups can provide information from a relatively wide range of participants in a relatively short time (Morgan, 1996).

Purposive sampling of participants

This study was designed to obtain detailed in-depth qualitative data from adults who lived in Portugal and were the main responsible or co-responsible for household food purchases with a varying degree of commitment to purchase

certified organic food products.

It was essential that the participants in a group were similar in terms of the key variables to increase the participants' comfort in expressing their opinions, while emphasizing considerable diversity across the full set of groups to allow comparison of potential differences and commonalities between various categories of people (Morgan, 1997a; Morgan, 1997b). Hence, it was established that the participants within a group shared the same level of experience of purchasing certified organic food so that they could feel that the others will understand and respect their views and, at the same time, that separated focus groups consisted of participants with different levels of purchasing experience to provide insight into a wide variety of perspectives. Therefore, the sample included representatives of three relevant types of buyers: regular organic buyers, occasional organic buyers and non-buyers. The level of experience was defined on the basis of the frequency of certified organic food purchase during the previous year, by applying the same categories used in the survey. Regular buyers purchased organic food at least once a week, occasional buyers did it at least once a month and non-buyers have never purchased organic food.

Furthermore, focus groups with the three types of buyers took place in two different geographical locations, Lisbon and Montemor-o-Novo, respectively representing urban and rural areas, for a total of six focus groups. This was done because differences in attitude towards organic food purchasing and household organic shares may exist between rural and urban people (McEachern and Schröder, 2002; Midmore *et al*., 2005; Wier *et al*., 2005; Stobbelaar *et al*., 2007; Aertsens *et al*., 2009; Truninger, 2010). Both locations were chosen for offering a favourable context for organic product purchase. Lisbon is the capital and the largest city of the country, having around 565 000 inhabitants, and Montemor-o-Novo is a small provincial town of Évora district in Southern inland of Portugal with about 18 500 inhabitants. In Lisbon there are a few specialized shops and mid-range supermarkets for organic products, as well as, several organic farmers' markets. In Montemor-o-Novo there are several organic farmers who sell at their farms and at the town market, and there were two specialized shops during the periods of 2003-2005 and 2009-2012. In both locations, generic supermarkets and discounts sell a limited range of non-perishable organic food products that, when in the urban area, is extended to fresh produce.

A seventh group of costumers of a box-scheme, living in the Lisbon metropolitan area was also included, to reflect the most possible different organic marketing channels. In this box-scheme, costumers receive a box of mixed produce on a weekly basis and, thus, these participants were considered regular buyers.

The target population is largely determined by the research main aim and questions to be answered. Besides fulfilling the above-mentioned conditions, it was further necessary to define eligibility criteria to ensure that individuals participating in focus group discussions could actually contribute to the research. The eligibility criteria for the focus group participants besides having the main responsibility or co-responsibility for household food purchases, being at least 18 years old and residing in Lisbon or Montemor-o-Novo, included Portuguese fluency, knowing what certified organic food is and not having

farming or food-related jobs such that the discussion reflected only the consumers' perspective. Furthermore, participants were recruited to represent gender differences in the food purchasing domain (approximately 70% female and 30% male).

Finally, the composition of the groups although homogeneous in what concerns the behaviour of interest, should be sufficiently diverse to maximise exploration of different perspectives and experiences (Kitzinger, 1995). Thus, to ensure that a variety of consumer types were represented, socio-economic and demographic heterogeneity within each group was sought in regard to secondary variables such as age, marital status, household composition and employment situation.

Questioning route

Focus group questions were developed according to guidelines suggested by Krueger (1998a) and drawn from the discussion guide developed for focus groups held within the framework of the EU funded project OMIaRD (Organic Marketing Initiatives and Rural Development, 2001-2004) to explore organic consumers' perceptions, motivations and barriers to purchasing organic food.

The questions were developed in English, revised by two experienced researchers familiarized with the topic and then translated to Portuguese. A professional translator translated them back into English. The two versions were compared and minor wording adjustments made. The original English version is presented in Appendix G.

Questions were open-ended and followed a logical sequence, which included an easy beginning, and progressed from general to specific using the "funnel" approach. All groups discussed similar questions, with slight appropriate rephrasing according to the level of organic food purchase frequency.

The focus groups began with an opening question meant to put the participants at ease and get acquainted with one another. Starting with the moderator, each participant said their first name and what was their favourite dish.

The introductory question started focusing the discussion on the topic under study. Overall, this question was designed to provide a general overview of participants' level of involvement with food and factors influencing the shaping of their food-related lifestyle. Besides, it served to establish the context of the discussion and to encourage participants to reflect on experiences and personal significance of the topic.

A transition question moved the conversation towards the key questions that drive the study, by asking participants to write down individually the three most important search attributes when making food purchasing decisions and then discuss them. This question helped participants to go into more depth about their food involvement through depiction of different stages of usage, while emphasising individual thinking grounded in their experiences, thus setting the stage for productive key questions.

Finally, five key questions focused on eliciting information that directly addressed the research questions. The theory of planned behaviour and its

proposed extended version guided the content of this set of questions, which had the purpose of uncovering the participants' conceptualisation of the four hypothesized antecedents of behavioural intention, which are of central concern in this study.

Participants were asked for their first association with the term "organic food", which allowed identifying their salient beliefs about purchasing organic food. Here, discussion of ideas was not encouraged as that could bring up beliefs not readily accessible, whereas spontaneous replies were considered more significant.

Bearing in mind the principle of compatibility of TPB constructs, the subsequent questions were formulated in terms of purchasing certified organic food for the household. Organic buyers were asked about their reasons for purchasing organic food, whereas non-buyers were requested to reflect on potential reasons, putting in evidence their behavioural beliefs. The following question addressed potential barriers to organic food purchasing, providing an indirect measure of perceived behavioural control by revealing salient control beliefs. Another question was related with accessible subjective normative beliefs, eliciting important referents that have influenced, or, in the case of non-buyers, that would influence, the start of purchasing organic food. A final question was asked to unveil personal normative beliefs in regard to the purchase of organic food.

An alternative set of parallel questions was also prepared to be used by the moderator when participants did not understand the original questions or the moderator suspected that more could be said about the topic (see Appendix G).

Recruitment strategy

A purposive sampling strategy was used to recruit potential participants. These were addressed by the researcher, who explained the purpose of the study and requested completion of a short screening questionnaire to determine eligibility. Individuals that met the eligibility requirements for inclusion in each focus group and expressed an interest in taking part in this study were asked to choose the most preferred schedules from a list of possibilities and to provide their phone numbers.

In order to maximize the breadth of experiences represented in the study, participants were recruited through a number of routes although it varied between the two geographical locations. In Lisbon, recruitment of organic buyers was carried out at the exit of a farm shop in the city centre and of three main specialized organic shops, as well as, in one of the inner-city farmers' market. Only one organic buyer was recruited in a large generic supermarket, as they were more difficult to reach in this context, and two were recruited through word-of-mouth. The farmer responsible for the box-scheme provided the contact details of costumers who were interested in participating in the focus group.

To recruit rural organic buyers, the help of one local organic farmer has proved indispensable and, in some cases, a snowballing technique was used to recruit occasional consumers, by asking regular buyers if they knew of anyone who

would be interested in participating in the study.

Non-buyers were recruited in generic supermarkets and discounts selling organic products, which was quite difficult due to a lack of interest in participating in a focus group about organic food. In Lisbon, recruiting was carried out at a variety of sites, including central and peripheral areas. Referrals from previous focus groups participants were used in three cases and two rural non-buyers were recruited through word-of-mouth.

Focus groups appear to work best when undertaken with strangers as people tend to speak more freely and openly than they would in a pre-existing social group (Morgan, 1997a; Liamputtong, 2011), but in the rural setting it was unavoidable that some organic buyers knew each other, due to their limited number. Nevertheless, conformity pressures did not seem to be present, as there was considerable evidence suggesting that participants genuinely engaged in the discussion. In all cases, the researcher moderator did not know any of the focus group participants.

Data collection implementation process

Overall, 7 focus groups have been conducted from May to July 2013, in Portugal Mainland. Four were undertaken in an urban area (Lisbon), while three took place in a rural setting (Montemor-o-Novo). Each focus group had a range of 6 to 8 participants per focus group, which is considered appropriately sized (Kitzinger, 1995; Morgan, 1997b; Bernard, 2006; Liamputtong, 2011).

The sessions took place at meeting rooms, in the Higher Institute of Agronomy in Lisbon, and in the town office of the organic farmer who decisively collaborated with this research in Montemor-o-Novo. These comfortable and neutral venues allowed at the same time quiet and a professional image in order to conduct a fruitful discussion.

The focus groups were generally held in the evening of weekdays, as this was the most consensual option, and lasted approximately two hours with a 15 minutes break in the middle of each session. Organic refreshments were provided and participants were given a 25€ gift box including organic food products as compensation for their involvement in the study.

The focus group structure was developed according to Krueger's (1998b) suggestions. Upon arrival, participants were asked to sign a letter of informed consent and to fill out a short registration form containing questions about socio-economic and demographic data that could be useful for analysis. Participants were ensured of the anonymity and confidentiality of the information provided.

The study investigator, who had adequate background knowledge about the research topic, moderated the sessions. The moderator started by briefly describing the purpose of the study and the guidelines for the discussion sessions (see Appendix G) and moved directly to the opening question. The moderator then proceeded leading the participants through the structured sequence of questions for the focus group and ensuring that all relevant areas to the research objectives were covered.

During the session, the role of the moderator is critical to make people feel enough comfortable to talk openly, which involves listening actively, showing empathy and remaining neutral and non-judgmental. The facilitator moderates discussion by facilitating group interaction, keeping the discussion on track, encouraging disagreement, curbing dominant group members and bringing shy participants into the discussion (Krueger, 1998b). Although based on the questioning route, the discussion should not be overly controlled as that may prevent generating valuable data. The facilitator should take the opportunity to ask new questions that arise from the discussion, following up participant's contributions and probing for understanding and detail when participants make vague or inconsistent comments (Krueger, 1998b).

At the end of the session, the moderator made closing comments and thanked the participants for their participation.

Sessions were digitally audio-recorded and transcribed verbatim for data analysis by the researcher. Furthermore, immediately after each focus group, a summary of the main points of view and other key themes that have emerged was written, which together with the notes taken throughout the discussion identifying central topics and notable quotes constituted additional data sources for analysis.

Content analysis

Focus group transcripts were analysed using classical content analysis (Bernard, 2006), which is a deductive coding method for describing and analysing data based on theoretical considerations. Content analysis comprises indexing, retrieval and interpretation (Bloor *et al*., 2001).

Indexing

The aim of indexing is to bring together all extracts of data that are pertinent to a particular theme (Bloor *et al*., 2001). To do this, the transcripts were thoroughly read to establish the meanings behind the participants' narratives and coded into key themes directly related to the research theoretical framework, i.e. attitude towards the behaviour, perceived behaviour control, subjective norms and personal norms. In addition to the theoretical constructs, knowledge level, personal values, lifecycle events, food habits and competing products also emerged as recurring themes, which were substantiated by means of focus groups summaries and notes, as well as, the literature contextualising the research questions.

Coding was completed by hand on a line-by-line basis, using mnemonic and edge coding to represent the different analytical categories (Bernard, 2006). Moreover, throughout the coding process, the researcher read the material over several times and became increasingly familiar with the text, being able to retain a sense of continuity and contradiction through each individual's account and increasing intracoder reliability.

Retrieval

The goal of data retrieval is to group together all extracts of text that have been

allocated to the same index (Bloor *et al*., 2001), thus enabling the reduction of data along thematic lines. Under each theme, the sentences were assigned with a number corresponding to the participants' identification codes and the page on which they could be found in the transcript, such that the original context within which coded statements appear could be easily located.

Interpretation

Once retrieval of the data is accomplished, coded sentences within each theme were examined to search for similar or different views of participants and their frequency of occurrence, leading to the emergence of dominant and secondary subthemes. At a later stage in analysis, summary tables were compiled for each individual participant listing the presence and depth of these subthemes supported by text extracts, thus improving understanding of meanings and implications of what was said (Braun and Clarke, 2006).

These allowed comparison across each participant narrative, seeking for patterns in the data in terms of the presence or absence, frequency, relative importance and interrelations of the different subthemes with a view to obtaining a clearer understanding of their communication content. Furthermore, such comprehensive analysis was useful to point out differences and similarities between groups of participants, although interpreting such differences still required a careful examination of group composition and transcript content (Kidd and Parshall, 2000). For example, low frequency of a subtheme was not necessarily indicative of its insignificance as it may rather represent consensus in the group. Finally, the emergence of substantively similar viewpoints and patterns of convergent and discriminant associations within themes, over a series of focus groups, especially when they were geographically dispersed, further supported findings validity (Kidd and Parshall, 2000).

RESULTS

In this section, the composition and findings of the focus groups are presented. By examining participants' narratives it was possible to provide understanding on perceptions of organic food, perspectives about benefits and constraints relating to certified organic food purchasing, as well as, of other factors shaping the development of buying behaviour. Differences between and also within the three types of buyers groups are explored.

Sample composition

Seven focus groups were conducted with a total sample of 47 adults. Purposive sampling resulted in 21 regular buyers of organic food, 7 of whom were subscribers of a box-scheme, 13 occasional organic buyers and 13 non-buyers. Furthermore, in order to compare urban with rural consumers, 28 individuals took part in focus groups held in Lisbon and the remaining participated in sessions organized in Montemor-o-Novo.

Besides, participants were recruited to reflect a range of characteristics (see Appendix H): their age ranged from 21 to 80 years and most of them were female (68%), in full-time employment (85%) and married or with a partner (70%).

Almost half of the participants had at least one child under 15 years old in the household (47%).

Focus group findings report

The results of the focus groups have been combined to reveal insights into participants' organic food purchasing behaviour.

Attitude towards organic food purchasing and perceived behaviour control emerged from participants' narratives as the strongest and most differentiating themes. The relative importance of these two psychological constructs showed to change in accordance to participants' experience level and other recurring themes such as knowledge level, personal values and food habits. Thus, for the purpose of clarity, focus group findings are separately reported according to the presence or absence of organic food purchasing behaviour.

Each report starts by presenting participants' perceptions of organic food attributes, which correspond to elicited salient behavioural and control beliefs and reflect participants' cognitive structure with regard to purchasing organic food. Attributes are shown in bold, underlined or regular text to indicate high, moderate and low mentioning frequency.

Afterwards, the perceived consequences of purchasing foods with those attributes are presented in terms of advantages and disadvantages, which respectively constitute the underlying determinants of participants' attitude and perceived behavioural control. Advantages and disadvantages are shown in bold, underlined or regular text to indicate high, moderate and low importance.

Finally, the influence of those perceived advantages and disadvantages on participants' organic food purchasing behaviour is explored under the form of motivation and ability. More specifically, the confrontation that takes place between these primary determinants in purchase decisions is demonstrated. Participants are grouped according to the different main motivation types. Within these segments, it is evidenced the presence or absence of other motivations and how main barriers differ according to the frequency of purchase, but also, when applicable, to the share of the food budget spent in organic food[9]. Interrelated with these dominant subthemes, other factors identified in participants' narratives, under the same or other analytical categories, that showed to prompt, strengthen, facilitate or inhibit organic food purchase intention or behaviour are also presented. In this section, researcher interpretation is illustrated with relevant quotes from participants, which are translated in English, italicized and assigned with the identification code of the person cited, which can be associated to its socio-demographic characteristics by

[9] Regular organic buyers were further divided into heavy and light buyers. Heavy buyers refer to participants who spend most of their food budget in organic food, whereas light buyers refer to participants who spend most of their food budget in non-organic food.

referring to Appendix H.

In the end, the discussion of focus group findings follows through the participants' purchase decision-making process, comparing the knowledge about product attributes, resulting motivations or barriers and underlying personal values across the three buyer groups. Contrasting cognitive structures reflecting rational and emotional appeals are identified as key antecedents of participants' attitude and perceived behavioural control with regard to organic food purchasing. Subjective and personal norms seem to affect organic food purchase intention mainly through attitude formation and reinforcement. Throughout the discussion, findings are contrasted with those from previous studies on organic consumer behaviour using focus groups (Niva *et al*., 2004; Padel and Foster, 2005; Midmore *et al*., 2005; Naspetti *et al*., 2008; Ayres and Midmore, 2009; Stolz *et al*., 2010).

Organic food buyers

Organic food attributes

Of the five buyers' focus groups, only a few box scheme clients, made spontaneous or implicit associations of organic food with fruit and vegetables. Especially during the later discussion, it was clear that a whole variety of fresh (fruit, leaf and root vegetables, meat and eggs), minimally processed (dairy and vegetable alternatives, olive oil, flour, bread) and pre-packed products (grains, pulses, nuts, seeds, dried herbs) and, to a lesser extent, processed foods (breakfast cereals, jams, dried pasta), and even drinks (wine), appeared to be in the mind of most participants who bought organic food.

For organic buyers, what defines organic food is **the way in which it is produced**. The **absence of chemical fertilizers, pesticides and herbicides** is the most prominent trait of organic production, especially among occasional buyers. Occasionally, its labour-intensive nature and some of its key techniques such as the use of compost, other organic materials and fallow periods to maintain soil fertility and the use of natural enemies, companion planting and natural substances for plant protection were also mentioned in all buyer groups. Some buyers added that the restricted use of chemically synthesized products extends to animal production and food processing. Organic food was also described as **naturally produced**, namely, according to the natural biology of the species, exhibiting slower growth rates than non-organic grown food, to which one urban occasional buyer added the absence of genetically modified organisms (GMO). Organic farming techniques were summarised, more often by regular buyers, as **respectful to nature and preserving natural resources**.

Organic buyers frequently acknowledged the **superior taste** of organic food, particularly of fresh products and dairy. Some described the taste of organic food as better or different but others, more passionately, said it was more intense, more concentrated, more interesting, more authentic, the original, like in the old times or even the true taste. Taste is the most important feature of the perceived **higher quality of organic fresh food products**, which in turn, is directly associated with organic farming practices.

The longer shelf-life is another important quality dimension of organic fresh food products. In fact, urban buyers have repeatedly described organic food as **less perishable**. Inclusively, some urban regular buyers perceived the better taste and longer shelf-life of organic food products as important cues to organic authenticity. Other sensory qualities of organic products were also evaluated positively. A few occasional rural buyers described the colour of organic eggs as livelier or the true colour, and one regular urban buyer mentioned the better consistency of organic fresh food. In contrast, in all groups, sensory experiences with fresh products for sale in big supermarket chains and commercial food outlets, mainly in terms of taste, were seen as increasingly unsatisfactory.

Many regular urban buyers referred that they **expected a less standardized, matte and smaller appearance of organic fruits**, which are sensory attributes perceived, not as poor, but rather as cues for organic authenticity. For fruits with bugs and spot lesions on their skin a more heterogeneous picture emerged, as a few urban and rural buyers tended to accept it as it suggests that pesticides and chemical preservatives have not been used while many others have completely disapproved it as it relates to more expense and wastage. In contrast, in all buyers' groups, non-organic fruit and vegetables were described as large, uniform and also, in the case of fruits, as glossy, which were all considered cues for lower quality.

A few urban buyers and one occasional rural buyer positively emphasised the higher diversity of organic products, which reflected, among other things, the much welcomed resurgence of heirloom crop varieties in organic cultivation and the complexity of this farming system. Jerusalem artichoke, romanesco broccoli cabbage, rhubarb and fennel were mentioned as examples of the latter, and were associated with discovering new products and taste sensations.

A few buyers also made reference to the higher quality of organic processed food. In their view, the most dominant quality cues of those products are linked to healthiness as they relate to limited amount and appropriate nature of the ingredients and additives used in the product recipe, such as the use of wholemeal flours, more natural sweeteners and non-synthetic additives. Because of the abandonment of taste enhancers and sugar, some of these buyers mentioned that appreciating the taste of organic processed food required habituation but also added that this became the positive reference.

Many buyers considered that organic food is **healthier** mainly because it is produced, but also preserved and processed, using more natural methods and generally without chemicals. Consequently, **food safety** has a high standing as an organic food attribute for most of its buyers, but for some regular buyers, another important positive feature of organic food is its higher nutritional value. In other words, the **harmlessness** of organic food is, to a greater extent, the cause of its healthiness, but some participants go even further, perceiving that its richness of biologically active components has beneficial effects on health. In contrast, in every buyer group, food derived from the increasingly industrialized food system was considered harmful to human health, mainly because it is seen as a source of toxicity, and associated with feelings of disquiet and fear and even, more specifically, with higher rates of cancer and other food-related diseases.

One rural occasional buyer also showed concern about the increased exposure to bacterial contamination of conventional meat, probably linked to the routine use of antibiotics.

Only one urban regular buyer made a spontaneous reference to greater care for animal welfare, but during the two discussions of urban regular buyers it became clear that a few other participants shared this association. Instead, some rural buyers spontaneously rejected industrial livestock production, which brought them feelings of dread.

Many rural and urban buyers associated organic food with **locally grown** products as they purchase organic food directly from farmers. Most of these buyers also associated organics with **ethical** food. For them, organically farmed food products' respect for the environment and for all the living beings, including humans, go hand in hand and make up one of its most important features, if not its most paramount value.

Additionally, a few urban and rural buyers also associated organic food production with fairness to workers. These participants perceived that organic farmers guarantee safe and fair working conditions to their personnel.

Occasional buyers, much more often than regular buyers, mentioned the **high price** as a negative attribute of organic food. Participants mostly justified it on the grounds that organic farmers face higher labour and certification costs, lengthy production cycles and lower yields, but other times specifically attributed it to imported and non-fresh foods. In contrast, one occasional urban buyer believed that there is price speculation on the organic market, as organic food is produced without expensive inputs, while a few rural buyers saw the price differential between organic and conventional products being increasingly determined by market development focused on targeting the high-income class segment.

More broadly, in all buyer groups, a negative reference was made to the increasing **conventionalization** of organic food systems, characterised by mass production and intensive production practices, to which rural buyers added the differentiation marketing strategies in terms of superfluous and costly branding and packaging.

Virtually all the urban participants who were regular buyers in organic shops condemned that retailers have, in recent years, increased its supply of **imported fresh products**. More knowledgeable of the EU organic regulations, they have also discussed the authorized use of synthetic chemical substances in plant protection and food processing, and if they did not see any wrongness with regard to the former to the extent that legally allowed thresholds are met, the eventual toxicity of the latter, for instance, of sulphite dioxide (E220), caused disapproval. A few of them, together with some box scheme clients, were also aware that localised environmental pollution hinders organic production.

Many urban regular buyers stated that they do not trust the control system to guarantee the authenticity of organic food. The organic certification process is considered loose and insufficient, and lacking rigour, in-depth and credibility. In

other terms, some rural buyers also criticised organic food certification, which is considered costly, not inclusive, prompting quantity-oriented production and also a subverted principle.

Microbiological contamination of organic food was hardly mentioned, as only one occasional rural buyer evoked the potential *Escherichia coli* contamination due to the use of manure when mentioning the German case in 2011 of the lethal organic cucumbers. Above all, this shows misinformation, as the source of the outbreak was fenugreek seeds from which sprouts were produced, which is unrelated to farming method.

Advantages and disadvantages

Both urban and rural buyers widely recognized the **health benefits** as a major advantage of purchasing organic food. These benefits are linked to a healthier diet, essentially, due to the safety of organic food, although a relatively smaller number of buyers are also convinced of its higher nutritional quality and functional properties. Consequently, organic food is believed to have an important role both in **disease prevention** and **health promotion**, resulting in an increase of their own and their families' **wellbeing**. Two buyers have even witnessed recovery from illness of one of their family members. Some box scheme clients further mentioned the economic benefits of purchasing organic food, associated with reduced medical costs. Due to its greater food safety, female urban regular buyers highlighted that they feel more trust when opting to purchase organic food.

Many buyers also reported **improved sensory experiences** as an advantage associated with purchasing organic food, particularly, unprocessed commodities, which is linked to the production method and, often, to place of origin. Exposure to diverse and unusual products, although less relevant, is another common aspect related to sensory descriptions of organic products. Participants most prominently appreciated the authentic **taste** sensory sensation, and are split between those who value **exceptional food quality** and thus consider organic food as key to their role as responsible for taking care of their families and guests through food and, often, to their enhanced cooking enjoyment, with implicit reference to value states such as responsibility for personal and family's wellbeing and inspiration; and those who emphasise their **pleasure of eating**, that have in common being occasional buyers, childless and more attracted by personal satisfaction.

Many buyers mentioned that an advantage of purchasing organic food is its fundamental contribution in terms of **environmental protection**. According to them, organic production causes less environmental damage to soil and water, due to its environmentally sound farming methods. In all buyer groups, and more markedly among regular buyers, a great concern for **future sustainability** was noticeable, closely linked to the perception that intensive agriculture has serious adverse effects on the environment because of natural resources' pollution and depletion. Relatedly, another advantage is the perceived animal friendliness of the organic production system, which was explicitly mentioned by a few urban buyers who hold a common mental image of "happy" animals grazing freely. For these buyers, inner harmony derived of acting according to

their ethical principles and expectations of higher quality and safe animal food products are closely intertwined consequences.

A minor group of buyers also referred to a social responsibility component of organic farming as an advantage of purchasing organic food. In their view, organic farmers hold values that incorporate concerns beyond organic certification guidelines about securing workers rights.

The majority of the buying participants prefered to purchase **locally produced organic food**, which they did through box schemes and at the farmers' market, a city farm shop, and, more rarely, at the farm. According to them, buying local entails numerous advantages. The direct contact with the producers and visits to their farms increases **trust in the provenance and authenticity of organic food**. Furthermore, it allows to overcome the lack of trust in organic certification and to ensure that self-relevant requirements that the current regulation does not specify are met. On the other hand, it results in **lower transportation**, and therefore, environmental costs. Additionally, it usually means access to **seasonal** produce, which together with the greater **freshness** ensured by a shorter supply chain, enhances the **flavour** of organic food. Lastly, more evidently among rural buyers, another advantage of purchasing locally produced organic food, which is normally the most important one, is supporting local and small organic farmers, who are socially conscious and maintain a healthy environment. Helping to strengthen the local economy, sustaining local community resilience and establishing close relationships with one's food providers are other aspects of fostering, through the act of purchasing, what was called an **economy at human scale**. On a slightly different note, a few urban and rural buyers mentioned the recreational component of purchasing organic food directly to farmers. Besides considered pleasurable and stress-free, it serves as a basis for other social activities and provides services such as sales personnel' advice and friendly interaction. In contrast, a few regular buyers affirmed deliberately avoiding mainstream supermarkets, which were described has unpleasant and enervating.

Occasional buyers, more often, perceived the **greater expense** as a disadvantage of purchasing organic food, mainly in relation to non-fresh produce. In contrast, two regular buyers explicitly mentioned that organic food is worth the added cost. Other few urban regular buyers considered cheap organic food and also food in general, suspicious.

Urban regular buyers believed that **imported organic products have many downsides** and their increasing offer was a considerable disadvantage of purchasing organic food. In their view, imported fresh products are often off-season, lack trust, have a higher cost, and do not have the same freshness, taste and shelf-life neither the same nutritional properties as national products. The distance also increases distrust and the carbon footprint. Because of the latter, a few box scheme clients and some rural buyers also expressed that they never buy imported organic fresh foods. Furthermore, a few urban regular buyers showed concern about food preservation methods during sea-shipment while lower earnings and poor labour conditions of workers disturbed an equal number of rural buyers.

The lack of trust in organic certification and in intensive organic agriculture is also a major disadvantage that the participants normally counteract by purchasing organic food through direct marketing channels and by passing on information about trusted farmers and sales points. Urban regular buyers that do not access direct purchasing stated that they rely on search cues (e.g., appearance) and, when in doubt, ask who is the producer. Despite all precautions, a few of them declared that, sometimes, a disappointing food quality experience could not help them from **feeling deceived**.

A few rural buyers considered that the certification cost hampers increased organic supply, as it is perceived as unaffordable to small-scale farmers and unfair because it places the burden on the non-polluter.

More than a disadvantage, the mention of the use of authorized synthetical chemical substances and eventually deteriorated natural resources in organic production denotes a more in-depth knowledge and reflection of urban regular buyers about the organic farming system. While the first issue was seen more as a trade-off between what is desirable and what is practically possible, box scheme clients overcame the second problem by means of farm selection. Yet, both underline that the greater is the participant purchasing frequency, the greater is the likelihood that organic production rules need further clarification or may even be deemed not going far enough.

In respect to the potential safety risk of organic food, the buyer who mentioned it did not discuss it further, possibly because that threat was perceived as remote.

Behavioural impact of advantages and disadvantages and other influencing factors

Almost half of the buyers, most of them regular urban buyers, reported that knowledge of the advantage of purchasing organic food in terms of having a healthier diet is their main motivation to do so. They all hold a common belief that food greatly affects human health. “We are what we eat” was often quoted.

Healthy food choices generally built on three complementary principles: diet composition, cooking methods and how food was produced. Specifically, most of the diets were predominantly vegetarian or, at least, nutritionally well-balanced, and in either case, with a general preference for using basic ingredients as opposed to processed and frozen foods; food preparing was essentially raw, steamed, sautéed and grilled so as to preserve the nutritional and sensory properties of food; and, finally, organically grown ingredients were favoured, particularly, to avoid the potentially adverse effects on health in the long run of consuming conventionally produced food. Nevertheless, there were also exceptions, as one health-motivated urban heavy buyer reported often eating highly processed, sugary and convenience foods, mainly attaching importance to food safety.

Their interest in healthy eating was founded on, in descending order of frequency, a focus on their own and their family’s wellbeing, a great health concern and the pleasure of being healthy.

"It was an individual decision, thinking about my family health and our wellbeing." (Box-scheme buyer #6)

"I just feel more trust. I'm always afraid of the others [non-organic products]." (Urban regular buyer #8)

"[My motivation is] Health. In the sense that, if someone puts two things in front of me, and tells me that this is more healthy, I will eat it with more pleasure." (Box-scheme buyer #4)

Additionally, events such as the birth of a child, and to a lesser extent, health problems within the family and living abroad also triggered or strengthened an interest in organic food.

"I started for health reasons, in France. Perhaps also with the birth of my first daughter because one really begins to pay closer attention." (Box-scheme buyer #1)

"It's essentially for the health benefits that it brings to my family and me. I have a person [his son] at home, who is very sensitive to food, and so I can easily see. Since we changed the habit, I see changes in his health for the better." (Rural regular buyer #5)

The preference for healthier diets was clearly determined by previous information about the effect of food on health, mainly through books, lectures, word-of-mouth or, more rarely, health experts. In turn, interest in healthy eating also encouraged search for more information about food and nutrition. This positive feedback loop represents the personal journey that many regular buyers referred to, which at some point, made them become aware of organic food products. Knowledge and reflection had a determinant role in the development of health consciousness and organic food consumption.

"It's mainly for health, but also I gained that awareness. In fact, as a macrobiotic for many years, I have been gaining a consciousness that I didn't had, because I had access to other information." (Urban occasional buyer #5)

"My wife studied Chinese medicine and all these nutrition issues. […] The course of my wife inspired in us a greater openness. […] I think that people who change their diet, change everything about themselves. And start thinking in all these things. […] We are now following the Raw Food Family [in Facebook], which is a German family that went to tropical countries because of food. He earns money uploading videos to YouTube about raw food. He speaks about food with such passion… And this enthusiasm inspires, of course." (Box-scheme buyer #4)

"When I was young, I was macrobiotic. Then, I stopped. But I was always aware until, through the influence of some colleagues, I begun to realize the chemical invasion and increasingly saw that the solution was organic food." (Urban regular buyer #5)

The majority of the participants who believed that purchasing organic food is an investment in health were regular and heavy buyers. They were deeply engaged in an upward spiral of health consciousness and, at the same time, very

knowledgeable about organic food, which is determinant of their buying decision and justifies spending time and resources acting upon their beliefs.

"I don't mind buying more expensively, if it's better. It's not comparable. To me, it makes no sense to compare with products that are worse." (Box-scheme buyer #4)

"Little by little, there is that need to look for it [organic food], even if you have to go further." (Urban regular buyer #4)

These heavy buyers, not being particularly affluent, found ways to secure an almost exclusively organic diet, normally through fresh foods choice and careful shopping. One of them, especially price-sensitive, comprehensively described his different strategies:

"The [generic] supermarkets I have near my house are French, and they have many cheap organic products. So, many organic things that I buy, which are not fresh, are from these supermarkets. Still, milk of rice and oat, [national supermarket chain name] has the cheapest. Although now, that we've started exploring raw food, we started to do lots of things at home. We make almond milk, for example, which is always more expensive. […] I also think that we've started to eat fewer amounts, when we started eating vegetarian. […] Then, […] when people start to be more careful about food, they begin to cook more at home." (Box-scheme buyer #4)

The remaining health motivated buyers were buying organic food only occasionally and cost, as well as, inconvenient location and opening hours associated with mobility difficulties were often found to be more central to their buying decision.

"Generally, I try to buy but sometimes it's difficult to go to the [organic farmers'] market. This coming Saturday isn't going to be possible and then, in the middle of the week, I end up needing and I don't always wait for next Saturday." (Urban occasional buyer #5)

Still, at least one occasional buyer was loyal to a particular organic product, which he always bought as organic:

"At home, we eat meat one to two times per week. I think is the only thing I care more about always buying organic, […] related to parasites and meat quality. I also feel that there is a certain dignity in making this choice of only consuming [organic] meat […], because I'm a person who has certain financial limitations." (Rural occasional buyer #1)

Furthermore, occasional buying behaviour was sometimes related to bare cognitive structures of participants and dependent on family's approval.

"It's it's something that I'm doing for my wellbeing and for my health but also for my mother's health, which is important to me. To some extent, it's a gift. I know my mother will be happy." (Urban occasional buyer #1)

Environmental protection was often present as a complementary motivation for buying organic food, especially among heavy buyers, to which a few added the positive social impact and the animal friendliness of organic production.

"[Organic food is] Honest food. To me, a honest food it's a food that… […] Isn't exploiting anyone, neither the land, neither the man…" (Box-scheme buyer #3)

"It's a rational issue. We have to change what we think is wrong. I'm thinking of the planet and I'm also thinking about my body." (Urban regular buyer #8)

The sensory superiority of organic products, although less important and frequently mentioned by health conscious buyers, might constitute an additional reason to purchase them.

"I've entered into purchasing organic through meat because of the fact of having many antibiotics. [Then] One begins to realize that it's good, it's better and keeps trying. First the meat, and then the eggs, the fresh products… Today [organic] is perhaps 80 to 90% of what comes in my home." (Urban regular buyer #1)

Finally, one of these multiple motive buyers further stated that buying organic food is a means to step away from unfair commercial practices associated with the conventional mainstream food-chain.

Organic buyers, seeking to have a healthy diet, frequently told about their broad perspective of healthy eating, which as explained above, also depends on food type selection and preparation methods. Therefore, even the most heavy buyers, could substitute organic food, essentially when buying processed and minimally processed products, when a product is suddenly missing and when dining out, while still reflecting their overarching concern about making healthy food choices. In this situation, they gave priority to information such as ingredients, additives, and nutrition facts.

"I think it's a life balance. If I'm at the cafeteria, it's always whatever is least bad. It's a general concern and the less I eat conventional, the better for me." (Box-scheme buyer #2)

"If I go to a vegetarian restaurant, I eat like if it's organic, with a restful mind." (Urban regular buyer #8)

"There are [organic] things I do not use, for example, more processed things because the difference with the non-organic doesn't seem to be that much… [In terms] of additives and improvements to which the product has been subjected. [And] It costs four times more." (Urban regular buyer #1)

"Sometimes, I need something and I have to make a trade-off between going to the supermarket next door or going to [organic shop name] and spend gas to get there. This is also the question. I'll walk next door... [And] See if there is organic, the E's [food additives]. […] Look for things that are wholesome, unrefined, if possible with less gluten." (Box-scheme buyer #1)

Moreover, feeling part of a marginal minority within their closer social group, even regular organic buyers, wanted to avoid to be categorised as odd and clearly tolerated different choices.

"I'm not fundamentalist. It's impossible to consume only organic products nowadays, if you have a social life." (Urban regular buyer #2)

Another major group of participants, comprising the remaining regular buyers and a few occasional buyers revealed that what leads them to purchase organic food is perceiving all the advantages as interdependent, namely produced with proper care for people, animal and nature. The ecological soundness of organic farming is thought to provide more than "pure food" as it protects natural resources, which are essential to long-term human wellbeing. Moreover, the geographical closeness of trusted organic farmers was considered ideal not only because of the positive impact on the surrounding ecosystem but also because relations of trust and community networks are praised. Additional benefits that were also explicitly valued by some of these participants are animals' more natural rearing conditions and fairness to workers on organic farms.

All these organic buyers adopted a holistic standpoint seeing themselves as part of a whole made up of interrelated elements to form an equilibrium and, therefore, consider that individual actions are globally related. Interconnectedness is key to their view of the world and the primary basis for developing a responsible purchasing behaviour, particularly, in relation to food as it is fundamental to human life.

"The final product is good but there is also a relationship with nature, with the planet, with people, I mean, I think all this is connected to that product that arrives at my table. For me, food is the prime of the human being, that is, I think that's when we establish bridges with everything else." (Rural occasional buyer #5)

"When I started planning to have a child, I stopped smoking and started caring about food. Then, I realized that was not the child, it's really what are we doing here? I believe that everything we do... it's a cause of another effect, so we have to do it the best possible." (Rural regular buyer #2)

These buyers were mostly driven by a deep ecological consciousness, which many extended to the domain of social welfare and community cohesion that, in turn, was paramount for a few of them.

"As we are always consuming something that is not organic, we are constantly polluting the planet, we pollute the watercourses, we pollute the fish later. Therefore, it's a self-destruction, it's a lack of sense of community." (Urban occasional buyer #4)

"For me it makes sense. I feel that when I'm buying, it's like casting a vote. I want more of this or want more of that... I want things to go well closer to me." (Rural regular buyer #3)

"For me it has to do with sustainability, either of the people who work there, either of the land use… There are principles that cause things to be more well done in every way. And, it's not just about what I eat... it's about those who produce and who work there, the families who are provided jobs, if a community is formed here or another one is formed elsewhere." (Rural occasional buyer #6)

In their view, the individual act of purchasing organic food by contributing to the sustainability of the planetary ecosystem and preserving local agriculture safeguards the interests of mankind and also of their community. However, their

sense of responsibility for the collective wellbeing was inextricably linked to the defence of their own interests suggesting a form of enlightened self-interest rather than purely idealistic motivations.

"[In organic farming] There is more respect for the environment and, therefore, for the human being." (Urban regular buyer #3)

"Such a division between being worried about my health or concerned about nature's health - I think it doesn't exist. I think that what harms me, is harmful for others." (Rural regular buyer #4)

In either way, their personal reward for acting on their values comes from the opportunity to live a life of meaning and consequent self-realization. Still, latter in the discussion they all evidenced that their relationship with organic food, although seen as one that fulfils their core values, was not fundamentalist.

"For me are the ethical principles. It's those things that make part, to my life and what I'm doing here have some sense."(Rural regular buyer #3)

"I feel like it's taking a step in a sense of a truthful living. It's something that seems correct." (Rural regular buyer #4)

"I think I just feel like I'm being me... in a bit more philosophical way." (Urban occasional buyer #4)

The social context and life path of these ethical buyers, most of whom live in the rural area, was often determinant to make them aware, on the one hand, of organic farming and, on the other hand, of the social and environmental impact of modern food production and distribution.

"It has a lot to do with what you do and where you are. I've also worked and lived in Lisbon and didn't have this awareness." (Rural occasional buyer #6)

"Really seriously realizing all environmental implications of organic, I think it was here… especially with the people I met in Montemor." (Rural regular buyer #2)

Formal education was another noteworthy background factor among a younger buyer:

"When I was in secondary school… We had a work on globalization, and then […] I found the transgenics and made a series of works that made me alert." (Urban occasional buyer #4)

These buyers, although in different degrees, hold self-transcendent values of universalism (unity with nature, protecting the environment, inner harmony) and benevolence (spiritual life, helpful, meaning in life). Some of them are regular and heavy buyers and buying locally sourced organic food is of primary importance to them, although rural buyers have to go to Lisbon periodically for specific organic non-fresh foods. These buyers usually did not emphasize the higher price of organic food, except for one of them who complained about the expensiveness of non-fresh products because they were generally imported. Some of them also considered the ethical impact of other food choices and therefore, opted for a reduced consumption of meat and soy. One urban regular

buyer further extended these concerns to sustainably caught fish purchasing:

"It's something that gives me great pleasure, it isn't just knowing that things are organic, have quality but also the issue of being local. Like the fish, I know that what I'm buying comes from Sesimbra [40 km far]. […] Which provide employment in traditional boats, which make a more careful fishing. I think it's important we know where things come from." (Urban regular buyer #7)

The remaining rural regular buyers were, in reality, light buyers, and together with the rural occasional buyers in this group, seemed to be mainly deterred by cost, limited availability and range of organic non-fresh food products, which in their setting show up as interrelated shortcomings. Also as a consequence, one of them mentioned the inconvenience of shopping in different outlets to satisfy all of the food needs. Additionally, the fact that many of these products are imported from central European countries or may contribute to people exploitation in developing countries conflicted with their values. In turn, the buying behaviour of the urban occasional buyer of this group, was mainly limited by a low budget, preventing him from buying products with higher premium:

"I think the price is very deterrent, yes. Much as sometimes we would want, we must also establish priorities. For example, we don't buy organic meat." (Urban occasional buyer #4)

Furthermore, many ethical organic buyers underlined that food shopping, in general, was reduced to essentials.

"I'm increasingly refining what I need. And despite the crisis and the importance of price, there are things that I prefer to not buy than to poorly buy." (Rural regular buyer #2)

"An attempt to be rational with what is to be bought… to not buy things to left over…" (Urban occasional buyer #4)

Although less often mentioned, some ethical buyers clearly appreciated the superior quality of organic food in terms of its authenticity, which was often connected to childhood memories when the participant came from a rural background.

"I born in a village and I had fruit picked directly from the tree. [Organic food] It takes me back to my origins, in the sense of flavour, quality." (Urban regular buyer #3)

Organic food quality, just like its healthiness, was inherently linked to judicious farming practices used by farmers whose values they shared. In more metaphysical terms, one participant made reference to the vital quality of organic food; a biodynamic concept that purports food is more than just physical and chemical characteristics (e.g., structural energy, binding form, entropy).

"I believe [organic foods] they have a very different energy capacity than others. I mean, I believe it, and that's also why I choose them. The final product has a capacity to give to my body a lot of things that others don't." (Rural occasional buyer #5)

A third group in terms of dimension, which was mainly made of occasional buyers, was more inclined to purchase organic food because of product quality. Their choices were strongly oriented by knowing the superior sensory properties of organic food, where taste was the most valued quality dimension. This group of organic buyers was the most heterogeneous, as most of them were interested in food of good quality, usually as a means to improve their own and their family's quality of life, while a few others, who were all urban occasional buyers, were essentially driven by hedonism.

Most of the quality-oriented buyers displayed a general high level of involvement in food quality, preferring products that were locally grown, fresh, and seasonal, which seemed associated to a common rural background.

"Organic is in my DNA. I grew up on a farm, we slaughtered pigs, we had olive oil and wine… For some years, we are distracted with other things. Then, after a certain age we get back to be a bit more concerned about ourselves. There are things that I no longer felt the flavour. It's very hard to find good tomatoes and garlic. All these so simple things that were fundamental and simple in my life." (Urban regular buyer #6)

This subgroup could also be said to be as knowledgeable as many of the health and ethical driven buyers. Consequently, even if they were mostly occasional buyers, they all bought several product categories.

"We get used to eating a food with such an intensity, which is that characteristic so specific of that food… that when we try another it seems that something is missing, everything is missing, it's all wrong. Most of all, that's what takes me to eat well. Also I know a little about the food industry, which nowadays is getting closely related to the pharmaceutical industry. […] I manage to spend hardly any money, eating from [my] the vegetable garden. I don't buy much organic food but I buy things that are necessary… I can diversify it well but I have to articulate with agriculture." (Rural occasional buyer #3)

"There are several reasons, but I also agree with the one of taste… the products, especially the fresh ones, in the supermarket, are not attractive to me. I rarely buy fruit and vegetables in the supermarket. Meat, for example, in the supermarket doesn't taste well. […] And it's a different mentality, it's another way of looking at things and is exactly the reverse of what has been done so far… This large scale and mass production suddenly begins to be unsustainable…" (Urban occasional buyer #2)

These occasional buyers, mainly hampered by high prices, may substitute organic by local food from trusted farmers, not necessarily organic, or genuinely be bewildered when it comes to choose between organic and national products, as conflicts of values may arise.

"I would say that I have such organisation: starting with organic and I don't care if it's certified because I know they [farmers] do things very well, then I buy, before the organic from the supermarket, I buy from market sellers. These are things that can't be considered organic, [but] I know that I buy things that are good, they are from the next-door vegetable garden. Then, it will be the things that appear in the

supermarket in organic [version] that are affordable." (Rural occasional buyer #2)

"Sometimes it depends because for example… we have a national flour and we buy [organic] flour that comes from Italy, it costs twice and moreover is unsustainable for the environment. On the other hand, it's better for the environment that it doesn't use chemicals, and for health. So, we always feel guilty." (Rural occasional buyer #3)

Instead, the sole regular buyer of this group has exceptionally high levels of organic food purchasing for his household, and his attitude towards life and food reflected competence and sophistication, verging on values of achievement. Still, like many other heavy buyers, he showed tolerance to eventual purchasing constraints.

"I cook and I buy organic, but I buy everything! Dishwasher detergent and laundry detergent, it's not only food. But, I'm not too radical, I go to many restaurants… but I don't go to anything. […] If it's from time to time, there's no problem. Also, if the [organic] shop is closed…" (Urban regular buyer #6)

In turn, two box scheme clients who preferred organic food because of the wellbeing derived from consuming foods with superior sensory quality came closer to the three hedonistic occasional buyers in the sense that they only bought a single product category (i.e. fruit and vegetables) and bought a considerable share of food from mainstream supermarkets. They were recent buyers and their exposure to relevant data and subsequent integration in their decision-making was also smaller when compared to their focus group members.

"Why organic? For the quality, which is much better and lasts much longer. But also because I like, I like the idea. There are lots of things that I stopped purchasing in supermarkets. But, in fact, I make a mix. For example, strawberries out of [organic farm name] were impossible this year. They went straight to the rubbish bin. Cherries, I have found some, even though they were not organic, quite good. So, I try to balance in this way." (Box-scheme buyer #7)

Hedonistic buyers mainly attached importance to the better taste of organic food, valuing it as part of their enjoyment of life, even self-indulgence. However, they largely viewed organic food as a delicacy to be savoured on special occasions.

"It has to do with satisfaction and pleasure of eating. I'm tired of eating the apple that there's in the supermarkets, that tastes all the same, like water, like nothing in practice, and if I buy an organic apple, the taste is different. […] And then, it also has to do with phases, there are times that I feel like spending more money and there are others that I don't feel like it." (Urban occasional buyer #7)

"I can't buy [organic] potatoes of 6€ per kilo just to make soup, it doesn't worth it, but I buy them to bake, to feel the potato taste." (Urban occasional buyer #3)

For these urban occasional buyers, the higher prices, the lack of knowledge about what organic production truly stands for and what benefits they can expect from an organic product, coupled with access to home grown production and inconvenient sales point location were their main barriers for buying more

organic products.

"I consider organic in two ways: When I buy certified organic at the supermarket, and then I think expensive. Or else, I have the home grown organic… […] It may not be purely organic… […] Which ends up being free. […] I don't bother to go to the market to buy organic products. […] And because there are also products that are not organic and are equally good, no one will die from cancer because they ate those [non-organic] apples." (Urban occasional buyer #7)

"But isn't it strange? Because if they [organic farmers] didn't spend money on chemicals... Sorry folks, but I think that there's some speculation of increased demand for organic. If I had 200 cabbages and wanted to sell them, I wouldn't put an exorbitant price and then took them home." (Urban occasional buyer #3)

"In the end, the price is an impediment. [But] It also has to do with the reality with which we are familiar – If we just know the supermarket!" (Urban occasional buyer #6)

Nevertheless, both the box scheme clients and the urban occasional buyers also pointed out that they were starting to build the habit of purchasing organic food, which may justify their lower cognitive accessibility of other motives apart the ones related with food sensory properties and, consequently, their weaker loyalty towards organic products.

"I think it's impossible that we change 100%, to move from a conventional model… we start introducing [organic] vegetables and fruits… I think that it's an evolution process. It never crossed my mind ordering [organic] groceries. I mean, I see organic in the supermarket, yet, I'm a little doubtful, and free-range chickens, what does that mean? I think that in regard to [organic] fish and meat, there's not so much offer, maybe it's my ignorance." (Box-scheme buyer #5)

"It must perhaps exist from my side more will to consume organic products more exclusively. But I also think that this is something that is built. To start, I'm buying some organic products… […] I've enjoyed more and more the products that I've been buying. […] And I intend to go back to Campo Pequeno [organic market] this Saturday." (Urban occasional buyer #6)

Evidently, the superior quality and, more crucially, the taste of organic food becomes a purchase motivation, only after eating organic food. Most of these buyers recognized the influence of important others in their decision to start purchasing organic food, such as friends, foreign spouses and organic farmers, who conveyed information about the existence and eventually about the benefits of organic food, but growing their own organic vegetables has played an equally important role for three of them. Another participant reported that he has first tried organic food with relatives, which had a prompting effect on his decision to look for this kind of products. Thus, experimentation is the basis of quality and taste-oriented organic food buying behaviour, having a similar triggering role to that of information, as sensory knowledge about organic food.

Among the three types of organic buyers, a few, mostly heavy buyers, mentioned a complementary advantage of purchasing organic food, related with the hedonic

value of the enjoyment of the shopping experience itself, that is clearly an affective component of the positive attitude towards organic food purchasing, encompassing both emotional and relational aspects.

"And then, all this is placed in a way of life. Not taking that weekend program of spending hours inside the supermarket… In ten minutes you have done with shopping. [And] You have a coffee with the friend who also went to the market…" (Urban regular buyer #1)

In turn, the place of origin of food was found to be extremely important for the overwhelming majority of the organic buyers who participated in the focus groups, most of all because of its influence on food sensory attributes and enhanced trust. This was very noticeable among the seven buyers that grew their own organic vegetables at home, to which some of the rural gardeners further added exchanges of food with other hobby farmers or animal rearing. Also for this reason, some participants, particularly, regular light and occasional buyers, that had access to home grown food through friends and relatives, considered it, although clearly distinct from organic food, definitely better than the one sold at the supermarket since it derived from small-scale and less intensive farming, therefore competing in availability and price with organic food. This positive evaluation of a direct connection to food also caused many urban regular buyers to criticize the gradual increase of imported organic fresh foods that could be grown in Portugal in organic specialized shops. In their view, the guarantee of organic quality is compromised and retailers are losing credibility for applying the same commercial practices of large-scale distribution. Because of proximity relationships, many rural buyers bought organic food directly from both non-certified and certified farmers. This behaviour was on the basis of the critique that emerged among some of them about mandatory organic certification. They looked at the certification cost as an impediment to small-scale farmers to convert to organic agriculture and supported them, relying on the producer's personal guarantee, but in either case, such direct certification by consumers, formally named participatory guarantee system, was considered ideal.

Relatedly, many urban regular buyers highlighted their lack of trust in the organic certification process and demanded more reassurance about truly organic quality, suggesting the implementation of stricter controls, with more frequent and unannounced inspections of farms and analyses of organic products. However, in both focus groups there were also some opposing participants, for whom the information conveyed on the organic label is trustworthy.

Conversely, distrust of organic food in supermarkets was consensual among most urban regular buyers, as their profit-oriented attitude seemed incompatible with sourcing genuine organic food. Rural buyers, in turn, considered the level of prices charged by supermarkets for organic food "obscene", to which they also linked excessive branding and packaging. They considered that the entry of large retailers into the organic sector, made the target-market segment move to class differentiation products. For this reason, they opted for simpler foods, such as fresh products and other bulk goods and, particularly, for buying directly from producers.

"[Supermarkets] put higher margins in organic than in other products. And that is a shame. This is only for rich people. It's the message that the supermarket gives." (Rural regular buyer #1)

"Any packing that's all fancy makes me think that I'm paying, either to have a cute green sticker [organic logo] or not." (Rural occasional buyer #1)

"Nowadays, the organic brand is being associated with a very high class consumption. There are products that are completely overpriced, which leads me to say no, this, I would rather not consume or prefer consuming in another way, another kind of identical food." (Rural occasional buyer #3)

Finally, organic buyers pointed out that relational and emotional aspects of food occasionally prompt them to intentionally buy non-organic food. For instance, some regular buyers mentioned resistance from the husband and children, who may not be so convinced of the benefits of eating healthily:

"I'm like this, but my husband is much less, he will drink Coca-Cola and other things as [for him] the most important thing is the taste." (Box-scheme buyer #1)

"At home, I have the feedback of my daughter: Mother, these organic cereals again!... On the basis of a compromise, from time to time, [I give her] one Chocapic or so." (Rural regular buyer #2)

In turn, desires for certain foods that have undesirable properties was evidenced in all buyer groups, translating most of all sensory enjoyment, familiarity and mainstream food marketing influence.

"We can't just buy what is organic because we also have other appetites. Of all these people, I'm the one with more appetites. Being the youngest, I'm the one who consumes more silly things." (Rural occasional buyer #3)

A few urban regular buyers also mentioned obstacles to buy organic food that were product-specific, such as when organic products simply do not exist or have inferior sensory quality than their conventional counterparts, which was particularly linked to country of origin and specific brands, and when the organic version shows poorer culinary utility (e.g., bread yeast).

Non-buyers

Organic food attributes

The vast majority of the non-buyers participants mainly associated organic food with vegetables and fruits, although some rural participants also had meat in mind when talking about it. Urban and rural participants consistently defined organic food as produced **without chemicals**, mainly fertilizers and pesticides. In close relation to this, naturalness was also mentioned within the rural focus group, encompassing also the idea of respect for seasonal and natural growth cycles of plants and animals.

Among the urban non-buyers, organic fruits and vegetables were considered **less shiny, small in size and less appealing**, which was largely seen as a positive cue for sensory quality. In fact, organic fruit and vegetables were

believed to have a **better taste** and, to a smaller extent, described as looking very appetizing. Despite this general favourable belief, later on, one participant added that a defective appearance would deter the purchase of organic fresh produce due to lack of aesthetic appeal.

Reflecting the wide array of their local agricultural supply, rural participants often made spontaneous reference to the **certification process** that organic produce undergoes before being marketed. In fact, this group has debated at length about the characteristics of pure certified organic, chemically intensive and all the other production systems that fall between these two extremes. For many of them, the excessive use of pesticides and distrust in compliance with withdrawal periods was clearly perceived as a threat. Additionally, in both groups, fruits and vegetables bought at the supermarket were perceived to have a poorer taste than the ones that are home grown or locally produced by small-scale farmers, while meat was described has having a less firm consistency. A few non-buyers also mentioned distrust and lack of information about modern food supply chains and control authorities naming cases such as the horse meat scandal of 2013 and the avian flue of 2006.

In both groups, the **high price** of organic food is its most evident negative attribute, which is especially so, in the mainstream supermarkets where they see them for sale. Later in the discussion, organic products in the supermarkets were also described as not easily accessible whether because they are in specific sections whether because they are not clearly distinguishable. A few urban non-buyers added that fresh produce was not attractive due to restricted variety and lack of freshness, while a few rural participants considered the prevalence of foreign brands an obstacle.

A concern for the authenticity of certified organic food products was the only other common salient negative belief, although this spontaneous association arose only among a minority.

Advantages and disadvantages

Urban and rural participants almost unanimously cited **eating healthier food** as being the major advantage of purchasing organic food, mainly because it is produced without chemicals although one of the rural dwellers also mentioned the GMO free assurance. In their view, more than health benefits, fundamental to the purchase of organic food is **avoiding potential health risks** as it was clear that, despite agreeing that the absence of chemicals in food production is desirable, they did not feel able to evaluate its potential benefit to human health and further considered that the amount of chemical residues present in conventional food is minimal and tolerable by the human body.

Rural participants also recurrently described **eating higher quality food** as a benefit of purchasing organic food, on which a good taste is the most prominent quality dimension. According to one of them, enhancement of quality of life underlies this choice's motivation.

Only one non-buyer from the rural area assumed that people would buy organic food because of its environmental benefits, namely soil and biodiversity

conservation, and related it to the pursuit of a sustainable lifestyle.

In both focus groups, many members felt that the **expense** involved in purchasing organic food is its most important disadvantage, only within the reach of an **economic elite** or, at most, of those living alone. Another disadvantage, although a minor one, is the potential feeling of being deceived, as it is nearly impossible to verify that a good has been organically grown at any stage of purchase. Going even further, a rural participant believed that organic food is just a marketing hype and its purchase is motivated by the status it conveys.

Behavioural impact of advantages and disadvantages and other influencing factors

Knowledge of the advantages of purchasing organic food in terms of consuming higher quality food has indeed motivated two rural non-buyers to buy organic food sporadically for special occasions or as a self-indulgence. Still, both of them highlighted that they cannot afford buying organic food on a regular basis.

"Except for a certain social stratum, [organic food] it's not used everyday. It's more used in festive meals or even, sometimes, when one wishes to offer a gift." (Rural non-buyer #1)

On the contrary, the potential health advantage of purchasing organic food did not trigger a buying behaviour.

The elderly women mostly feel discouraged by the economic barrier:

"If I could, I would only eat those [organic foods]. But when we compare the prices and look at our pocket..." (Rural non-buyer #5)

"I think hardly anyone would refuse that kind of food [organic]. I refuse because my wallet is all mine!" (Urban non-buyer #6)

In turn, the overwhelming majority of non-buying participants mentioned two conditions for the stated health advantage to become self-evident. Firstly, individuals should be health concerned, and more importantly, individuals should be well informed. Health concern was sometimes further detailed as motivated by health consciousness, dietary restrictions, birth of a child or illness, while information assets mainly dealt with awareness of the potential harmfulness of chemicals and other technologies used in intensive agriculture. In addition, an increased purchasing power to pay a premium for organic products was widely acknowledged as another necessary requirement, although later in the discussion, some mothers saw the household size as another related variable.

"There are people who are very conscious of the damage that chemicals can cause. But it's also necessary, in addition to information, that the person has some economic availability. […] If it's a large family, it's a burden." (Urban non-buyer #3)

"I think that, essentially, [organic buyers] are perhaps more informed people, also with greater financial capacity… and then, do have health concerns." (Rural non-buyer #2)

Additionally, the unwillingness to pay more for food is heightened by the

disadvantage of viewing organic food as untrustworthy as a consequence of lack of information about the functioning of labelling, control and certification.

"I would like to believe that they were really organic. We see the [organic] label but we aren't sure if it worth buying it... with such price difference… Is that really organic? We don't know." (Rural non-buyer #5)

In addition, as another focus group member explained, when the media report fraud cases within the organic sector, non-buyers perceive the satisfaction of not having been misled. The most sceptical participants further disdained the nationally adopted term "biological agriculture", given that, in their view, all forms of agriculture are inherently biology-based.

The level of product awareness of organic food seemed relatively high among non-buyers, which might be partially a result of self-selection bias, but their generally low product knowledge suggests that whatever were their sources, they were not really informative or they have not received proper attention. Especially, among rural participants, some mentions were made to television programmes with famous chefs, where organic products are placed side by side with local and gourmet foods.

Even if not buying organic food, most participants showed concern in making healthy choices drawn from the traditional Portuguese food culture, thinking of their own and their family's health and well being.

"In the evening, at dinner, as I have 3 children, I always have soup, the main course, [of] meat or fish. Salads in the summer but only for the older ones... they eat a lot of vegetables in the soup. And fruit. […] Packaged juices and soft drinks they only drink in the weekend" (Urban non-buyer #2)

"I try to have a balanced diet, I don't always succeed, but I try. I avoid frieds. I eat more fish than meat…" (Rural non-buyer #3)

"I'm forced to eat lots of vegetables and fruit. I eliminated potatoes. Vegetables, I cook without salt. It's not a problem, if I add pepper and garlic. Looking at [what is written in] the packaging, it just started because I wanted my wellbeing. I really like to take care of me and have pleasure eating." (Urban non-buyer #4)

Consequently, quality is their primary food selection criteria, generally determined by its taste, which in turn is generally inferred from previous own experience using cues such as brand names and product varieties, while for fresh products they also rely on appearance and origin. This almost appears at odds with their demand for low cost food and attraction to promotions and store brands, although in fact they mostly search for food with a high quality-price ratio. Nevertheless, there was an overall lack of stated concern for ethical issues linked to food purchase and even the participant that acknowledged a positive environmental impact of organic production stated:

"In terms of ethical issues and concern for the planet or even concern with social issues that may be inherent to it, I don't feel that weight when I opt for a non-organic product"(Rural non-buyer #2)

In the rural setting, the easier access to home grown food and local lower input farming systems, which was declaredly almost always not organic but also perceived of higher sensory quality because of its freshness and seasonality, as well as, more trustworthy, obviously negatively impacts the translation of a positive attitude towards organic food into a buying intention. More undesirably, some of them mentioned the inappropriate use of the term organic.

"Sometimes, to draw the line between organic and non-organic is somewhat lacking. Because it's currently so fashionable, everybody says this is organic. […] Anyone who is selling you something in a bucket tells you that it's organic" (Rural non-buyer #1)

It was also within this particular context that a negative attitude towards purchasing certified organic food arose from other rural participant who confounded organic with products that came from small producers.

"There are two very different things; which are, let's say, the normal organic and the certified organic. If you buy organic products at the supermarket, prices are sharply higher and it's a marketing strategy like any other. Everyone does their part, it is up to us as consumers to decide." (Rural non-buyer #7)

Access or at least acquaintance with home grown food was also a characteristic of most urban non-buyers, but its implications were mixed. If for some, it set the standard for desirable food characteristics such as a stronger taste and "more natural" appearance, for others is the cause of doubting the possibility of producing food without pesticides based on the misconception that organic farming involves doing nothing. Additionally, one participant, who denoted lack of familiarity with organic products, clearly assigned home production characteristics to organic food.

Finally, it worth mentioning the presence of a food-careless participant. As a person living alone, food in general was not given a lot of thought and its quality was mainly inferred from experience characteristics such as taste.

"I don't have that concern, of whether it's organic or not. Really, it's completely indifferent to me. And then, there's something else, I'm never worried about the opinions of others. I mean, I cook for myself. Later, I can be disappointed. The fruits weren't good or I bought meat that I didn't like. It can happen and it has already happened to me. [But] I don't have that concern and I don't think about it." (Rural non-buyer #4)

Added to this, this participant declared lack of knowledge about organic food production and labelling, albeit he might not have been alone as at the end of the focus group discussion with urban non-buyers, one participant asked:

"To finish, I would like to ask you just one thing. What does identify organic products?" (Urban non-buyer #1)

Discussion of findings

Such a qualitative study provided important insights into the way Portuguese consumers perceive organic food, their motivations and the underlying values of their purchase decisions, as well as, other major influencing factors of purchasing behaviour such as barriers, knowledge and level of past experience, while it demonstrated that the impact of subjective and personal norms is essentially indirect, mediated by attitude.

The results show that organic buyers' attitudes towards organic food purchasing were essentially favourable and depended primarily on positive beliefs about organic food's attributes and consequent benefits, which are mostly linked with organic production techniques. As found in previous studies (Ayres and Midmore, 2009), attitude formation was comparative in nature, in that negative beliefs about the conventional agri-food system also seemed to play an important role.

Essentially due to lower levels of chemical residues and respect of natural plant and animal growth, organic food was perceived to have higher sensory, health, and ethical quality, the latter referring to environmental protection and, albeit to a lesser extent, animal welfare, which are all product attributes already known from the literature. Additional worth was perceived due to its social justice attribute, in this case, related with beliefs about organic farmers' values, which have been described elsewhere (Torjusen *et al*., 2001; Padel, 2008). Organic food purchasing was also seen as a way to avoid the flaws and risks of the growing industrialisation of agriculture and agri-food industry driven by corporate greed. Instead, high prices, intensive organic agriculture, excess of imported produce and organic certification frailties were the most relevant negative aspects of organic food. These may be seen as interrelated aspects of the increasing conventionalisation of the sector, as a consequence of the progressive institutionalisation of organic production and distribution systems reported in the literature (Lyons, 2001; Michelsen, 2001), although the premiums were mainly considered a result of higher production costs.

As noted in previous research (Padel *et al*., 2007), the negative beliefs about the purchase of organic food were mostly eliminated through favouring direct marketing channels. Trust in organic food is an overarching driver of purchase, which critically depends on its traceability. This fundamental requirement was also identified in other studies (Niva *et al*., 2004; Padel and Foster, 2005; Ayres and Midmore, 2009) and determines the degree to which perceived benefits may be anticipated. Besides, the localness of organic production strengthened its positive beliefs, as it is linked to a higher sensory quality of food, because it is picked at peak ripeness, sold short time after harvest and often in-season, as well as, to reduced food miles. Far-reaching benefits that were also formerly identified (Seyfang, 2003; Padel *et al*., 2010), such as building social capital, support of local farming and, thus, promotion of rural sustainability, also played a role in ethical-oriented buyers' decision. An additional advantage of direct food buying consists of the stated enjoyment of the shopping experience itself, due to both emotional and relational dimensions of purchase.

On the contrary, to some organic buyers, even regular ones, food processing

seemed to reduce the positive beliefs about organic food purchasing and amplified the negative ones, to which it added their usually imported origin. Therefore, organic buyers' attitudes towards purchasing organic processed products (in the strict sense of the term) were generally understated, whether because, many of them prefer eating whole foods and cooking meals from scratch, which is in line with previous research (Stolz *et al*., 2010), or as it was also evident, whether because many others substitute them with their so-called conventional-plus alternatives (e.g., without artificial additives).

Consistent with the literature (e.g., Zanoli and Naspetti, 2002; Niva *et al*., 2004; Padel and Foster, 2005; Naspetti *et al*., 2008; Ayres and Midmore, 2009), the vast majority of the study participants associated organic food with a healthy diet and a concern for personal and family health and wellbeing was the most common driving force behind organic food purchase behaviour. Food safety, i.e. free from pesticides, veterinary drugs and artificial additives residues, is far and away the most important expected health benefit of consuming organic food, seen from a preventive perspective, and tied up with feelings of trust when compared to conventional produce. Although less mentioned, serving as a functional food with health-promoting effects due to its richness in bioactive substances was also important. Most of them were regular and heavy buyers, which is associated with the high personal relevance of this motivation. The health motivation generally pertained to a more broad sense of health consciousness and a dominant trend towards vegetarianism, as previously identified by prior research (Gil *et al*., 2000; Cicia *et al*., 2002; Geen and Firth, 2006; Onyango *et al*., 2007; Dias, 2008; Torjusen *et al*., 2008; Ayres and Midmore, 2009), was emblematic of such personal responsibility for health. Besides an egoistic benefit, health had an increased emotional content as it was habitually linked to care for the family, respectively associated with values of security and benevolence. Just like in other countries, where health-motivated regular buyers also seemed to value the environmental sustainability of organic farming (Padel and Foster, 2005; Naspetti *et al*., 2008; Ayres and Midmore, 2009), universalism value-based reasons, such as environmental protection and, to a lesser extent, respect for all forms of life, reinforced the buying decision mainly of heavy buyers.

The higher sensory quality of organic fresh food and dairy products, although not as often as health, was widely indicated as an important purchase motive, which is a finding supported by previous studies (Zanoli and Naspetti, 2002; Naspetti *et al*., 2008; Ayres and Midmore, 2009). More specifically, the superior taste of organic food was the main reason why approximately one-fourth of the participants bought organic food, although a longer shelf-life and the higher diversity of products and varieties also appeared to be important quality parameters. Consistent with the findings of Zanoli and Naspetti (2002) and Naspetti *et al*. (2008), most of the participants primarily seeking for sensory fulfilment were occasional buyers. Furthermore, as these authors concluded, some of them were actually driven by hedonic pleasure and, although rarely, achievement, but the majority of these quality-oriented buyers focused on feelings of personal and family's wellbeing and cooking enjoyment respectively associated with values of benevolence and stimulation, as well as, practical reasons such as value for money. Appreciation of organic produce quality was

often linked with current living or childhood memories in the countryside.

The remainder participants were ethically motivated buyers governed by pro-social and environmental concerns, possibly overrepresented in this sample due to the specific characteristics of the rural town residents selected for this study. Still, more than exclusively altruistic motivations, these participants expressed an enlightened self-interest, seeing themselves as an extension of nature and of the community in which they live, whereby purchasing organic food is seen as an act of cooperation, beneficial for the wellbeing of the whole, on the present and long-term. This holistic philosophical attitude towards life has already been identified among many other organic consumers (Niva *et al*., 2004; Midmore *et al*., 2005), fitting well to the concept of citizen-consumer (Soper 2004; Gabriel and Lang, 2006; Jubas, 2007), which offers a point of convergence for a conscious concern with communal wellbeing and individual self-interest. Most of them were regular buyers and unlike the others' discourses that were more product focused, theirs mainly featured a strong endorsement of self-transcendent values of universalism and benevolence, significantly influenced by affective meanings. Ayres and Midmore (2009) also found that the responsible practices for people, animals and planet were the core motivations of many regular and occasional organic consumers. Natural resources conservation, species-appropriate husbandry, community building, solidarity, food localism and wholesome food were all, in varying degree, key concepts of their discourse as organic buyers, paralleling the social ecology theory founded by Bookchin (1989). Such approach requires and finds its response in the core values of organic agriculture and localness of food consumption, as it was noted by Padel *et al*. (2007).

In turn, non-buyers mostly expressed ambivalent attitudes towards organic food purchasing, particularly fresh products. They hold positive beliefs related to organic food attributes such as superior taste and healthiness, in turn linked to more natural and chemical-free production techniques. Negative beliefs about the sensory properties of and lack of reassurance about fresh produce sold at the supermarket and presumed similarity with home grown and traditionally farmed food served as a cue for organic food attributes. At the same time, this group of participants showed markedly limited experience with organic food and uncertainty regarding the possible health risks associated with chemical residues in food within the maximum allowed levels. Consequently, the perceived benefits of quality eating and avoiding health risks were generally not grounded on experience or information, leading to barely founded favourable attitudes. In turn, organic food price was consensually perceived as its most negative attribute, acting as a powerful psychological barrier to buying organic food. Secondary negative beliefs that were also found in previous studies (Naspetti *et al*., 2008), related with lack of trust in the organic claim, were caused by lack of knowledge about organic food production, labelling, legal standards and control system. Nonetheless, criticisms other than cost were relatively scarce, evidencing, above all, that most non-buyers have given very little thought on organic food and farming. Still, due to greater affinity with food production issues, rural non-buyers seemed to be generally more knowledgeable about organic farming than urban non-buyers, but greater ease of access to home grown or local production fully satisfied their food requisites. Although a tiny minority was careless about food, non-buyers' food choices normally shared the

values of caring for theirs and their family's health and wellbeing. So, as noticed in other countries (Ayres and Midmore, 2009), non-buyers who were highly involved in food, also sought to prepare well-balanced meals with quality products, where taste was the more relevant dimension, although seemingly seeking to spend less on food. In stark contrast with most organic buyers, there was little or no stated concern for the ethical impacts of food production.

The extensiveness of the cognitive structures about purchasing organic food did not show to be so distinctive between regular and occasional organic buyers. That is, heavy buyers did have the most extensive cognitive structures, showing a network of links composed of a diverse set of instrumental and affective beliefs about organic food attributes, consequent benefits and ultimate goals related to self-relevant values, but some light buyers, whether occasional or regular, too.

In contrast, non-buyers' cognitive structure had fewer elements and absence of associations to more abstract goals, only showing links between perceived benefits and costs and their respective beliefs, developed upon reduced levels of information about organic farming and product experience. In this respect, the cognitive structure of some light organic buyers was more close to the one of non-buyers, mostly due to the irregularity or recentness of their experience of performing the behaviour, as they were typically occasional and relatively new box-scheme buyers. Like non-buyers, they did not associate the purchase of organic food with environmental or other ethical issues and many of them have censured organic food premium prices.

In fact, a committed decision to purchase organic food appeared essentially as a consequence of awareness about its consequences gained trough elaborate reflection on previously acquired information, resulting in a strong attitude-behaviour correspondence. Such positive relation between well-deliberated knowledge and organic food purchasing habits was also found by Naspetti *et al*., (2008) and Ayres and Midmore (2009).

A relevant amount of product knowledge about organic food concrete attributes appeared key to purchasing, namely knowledge about organic farming, processing, certification, labelling and specialized sales points. Learning about modern food production, processing and distribution system was another key component of information acquisition, which enables assessing potential benefits of choosing organic food. Knowing about food and nutrition and their effects on human health was another common denominator. Growing their own organic vegetables also contributed to the understanding of production methods and characteristics of organic foods of a few buyers.

Some regular buyers intentionally sought for such information, but most organic buyers have acquired it through social comparison (Jager, 2006) or close contact with organic farming. Nevertheless, because, just like Thøgersen (2009b) described, there was an indispensable process of internalization of the social norm, whereby information was integrated into the individual's cognitive structure through reflection, many buyers perceived start purchasing organic food as an individual independent decision, not influenced by significant others. After starting buying, normally modestly and occasionally, organic buyers gained more information, whether actively seeking for it in books and in the internet, or

gathering it from trusted informants within their food choices-related social context, and also with direct experience with organic food purchasing and consumption, which further reinforced new purchases as they increasingly perceived organic food as fulfilling more of their personal values. Thus, with repeated experience, the utilitarian and affective judgments underlying their attitudes become associated with higher certainty. In support of Gardner's (2004) theory concerning changes of mind, Naspetti *et al*. (2008) and Ayres and Midmore (2009) have also noted that the change of habits towards organic food purchasing takes place gradually over a period of time, supported by a personal development process of raising consciousness and a growing stock of arguments in favour of organic food choice.

Also in line with these studies (Naspetti *et al*., 2008; Ayres and Midmore, 2009), lifecycle events were also found to contribute to change or, more often, to reaffirm organic buyers' mindset, by inducing higher involvement towards food, renewed interest in health and increased access to information, namely the birth of a child and, to a much lesser extent, family health problems. On the other hand, changing residence to a foreign country or to the rural area has had a positive influence in attitude formation or consolidation through social comparison. The wider social context, although not always admitted by the participants, had a very significant influence in different points in time of their gradual change of mind, not only by providing information through word-of-mouth and advice but also, as noticed by Ayres and Midmore (2009), inspiration through personal examples. Interestingly, and contrarily to the findings of Naspetti *et al*. (2008), external agents, such as nutritionists, teachers/speakers, organic farmers, shopkeepers, other organic buyers and cyber strangers showed to have an equally important role as relatives and friends, probably due to their higher expertise or well-regarded lifestyle.

As Andrews (1988) asserted, the amount of reflection initiated by information access showed to depend on the self-relevance of its content and the availability of cognitive skills, time and effort to gather and process information. In turn, the personal relevance of the message is inextricably linked to recognition of the worth of its object as a means to attain values that are closely related to the individual's self-identity, whether as health conscious person, family care-taker or citizen-consumer. Furthermore, these values, even if pre-existing, establish feedback loops that iterate over time with raised awareness, they too becoming more salient and integrated into the individual's cognitive structure as this becomes more extensive, which is in line with the findings of Thøgersen (2009b).

At the first sight, a healthy life and quality food, which prominently features a superior taste, are the principal arguments for purchasing organic food, usually linked to values of security and hedonism, confirming the dominant viewpoint that egoistic motives explain organic buying behaviour (e.g., Tregear *et al*., 1994; McEachern and McClean, 2002; Zanoli and Naspetti, 2002; Fotopoulos et al., 2003; Lockie *et al*., 2004; Chryssohoidis and Krystallis, 2005; Wier *et al*., 2008; Chen, 2009; Yin *et al*., 2010; Vega *et al*., 2013). However, organic buyers with children associated both motives to responsibility for the welfare of the family, also mirroring benevolence values. In contrast, apparently altruistic motives with a distinctly ecological and communitarian focus seemed to be closely

related with the pursuit of one's long-term self-interest, partly adhering to an egoistic value orientation. Nevertheless, more than supporting the dichotomy established by Magnusson *et al*. (2003), it was evident that the strongest and most stable attitudes were based on rational and emotional positive evaluations of organic food various attributes built upon increased knowledge and experience, that result in interdependent selfish and unselfish higher-order motivations to purchase organic food, fulfilling salient role identities and aiming at upholding values that are central to individuals' life.

Thus, as noticed by Ayres and Midmore (2009), a committed decision to buy organic food was a logical consequence of well-grounded favourable attitudes, where the attitude object was perceived as satisfying a complex set of self-relevant requirements. Moreover, the more the participants had an extensive cognitive structure, i.e. their choices tended to be more value laden, the more prone they were to act in accordance with their attitudes and offset eventual barriers such as price premium and inconvenience of purchase, thus becoming heavy buyers, which is in line with other studies (Zanoli and Naspetti, 2002). However, many participants that had only partial organic diets were equally well informed and had put a high amount of though on the issue. In these cases, buying behaviour was truly restrained by a low budget or specialist sales points access difficulties, although, among rural buyers, poor product range or unavailability regarding products other than fresh food was also an inhibiting factor, which is in line with previous research denoting lower household organic shares in rural areas (Midmore *et al*., 2005; Wier *et al*., 2005; Truninger, 2010).

Unlike in other studies (Zanoli and Naspetti, 2002; Padel and Foster, 2005; Naspetti *et al*., 2008), the price of organic products was not normally negatively rated by better informed buyers. However, most of them appear to be price-sensitive and, as found in other empirical studies (Lockie et al., 2002; Padel and Foster, 2005; Ayres and Midmore, 2009), had coping strategies to minimise the costs of buying organic food, which arise from their higher involvement in food choice and preparation and, sometimes, also from sustainability concerns that, as noticed by Holt (1993) and Seyfang (2003), favour a scaling down of high energy and material consumption. For example, they rejected processed food, preferring fresh ingredients, opted for reduced meat intake and frugality of meals, spent less money in out-of-home consumption and chose to buy directly from producers, in-season and bulk goods.

At the same time, it is within the more knowledgeable buyers that critics to conventionalization of organic agriculture in terms of agronomic and marketing practices arose. Moreover, negative aspects such as distrust of certification, limitations of the regulation and defective appearance of fresh products were more relevant and frequently mentioned by core buyers of organic food, particularly the urban ones, contradicting previous findings (Padel and Foster; 2005; Naspetti *et al*., 2008; Ayres and Midmore, 2009). This puts in evidence that the further ahead participants are in their "career" as organic buyers, the more demanding and selective they are likely to be, and this is especially so the longer is the distance perceived between consumers and producers.

On the other hand, several occasional buyers and box scheme clients who were

regular light buyers were still on the early phases of the continuous learning process and, in most cases, bought only one product category to which they accord priority. Hence, their level of information about organic food and farming is lower, even denoting lack of awareness of certain product categories and uncertainty about some claims made for organic food. This seems mostly due to a reduced effect of time and experience on knowledge building. As a result, their purchasing behaviour is driven just by personal benefits of food safety or better taste, rather than by an overall commitment to buying organic. Likewise, the two rural non-buyers that have bought organic food on occasions because of its good quality also fall under this description. Approaching the cognitive structure of non-buyers, occasional buyers, the majority within this group of less convinced buyers, negatively evaluated the price of organic products and gave it the most importance, to which they had secondary critics such as the lack of availability in their usual food shopping venue, organic sales points' far from home location and, even, profiteering marketing practices. Their negative beliefs clearly overshadowed the positive ones, and thus, such as British sceptical occasional buyers (Padel and Foster, 2005; Ayres and Midmore, 2009), they often find it difficult to justify that organic products worth the extra time and money needed to purchase it. For them, buying organic food is an extravagancy and, as anticipated by Luomala *et al*. (2004), they expressed expecting appreciation of their generosity. Overall, these findings support the usual classification of sporadic organic buyers as non-buyers.

Their evolution to a more regular or heavier purchasing behaviour seems to depend on gaining more information about organic production to understand the reasons for the premium and to be made aware of more product attributes and potential benefits, as well as, about conventional farming techniques. If they are not information seekers, with time, that information may be obtained passively through increased exposure to the organic social context, by getting in contact with other organic buyers, farmers or shopkeepers, that add elements to the consumers' cognitive structure and clarify confusing issues, further strengthening their attitude towards buying organic food.

In what regard non-buyers, the anticipated greater expense is straightaway and virtually unanimously considered an extremely deterring disadvantage of purchasing organic food. Additionally, in face of their poorer experience, knowledge and level of thought about organic food, positive beliefs about its purchase seem not to be held with confidence. The same applies to the sole non-buyer holding a totally unfavourable attitude, who developed prejudices to support his resistance to change. Consequently, it appears that they absolutely lack incentives to see beyond the premium and break with habitual behaviour, making a restricted use of information during the process of decision-making.

Food is inherently emotional and organic food choice although also grounded in rational thinking is a deepening in this respect, as committed buyers are fundamentally acting on their personal values when purchasing organic food. However, even among heavy organic buyers, the raised awareness and perceived qualities that drive participants' buying behaviour, may sometimes act against organic food purchasing, which was also referred by Naspetti *et al*. (2008) and Ayres and Midmore (2009). This may happen when it comes to opt between

distantly produced and trusted local or national products, or it leads to similar substitutive behaviours, such as other healthy or higher quality food choices, when control factors speak louder. Furthermore, as noticed by Stolz *et al*. (2010) and Truninger (2010), due to the sociability and affective sphere surrounding food, those considerations were sometimes suspended in the frequently non-organic context that people live in and even inside their household.

For these reasons, buyer participants generally dismissed dualistic feelings of guilt or self-satisfaction. In their view, food is one of their many different priorities, which they try to fulfil the best possible according to what they believe deemed desirable. Lockie *et al*. (2002), on their study on motivations for organic consumption, also made reference to competing imperatives and needs that revolve around food decision-making. Indeed, as Luomala *et al*. (2004) thoroughly described, there are many complex and eventually contradicting expectations regarding food itself, which, among this study participants, were fulfilled sometimes by organic and sometimes by other foods, whether local, home made, protected designations of origin, trusted brands and other specific products such as delicacies, exoticisms or treats, as openness of mind and moderation are seen as indispensable for a balanced life. Furthermore, as they readily act upon their beliefs, because it is the coherent decision, when they are not able to overcome the external obstacles to that decision or they deliberately act against that mindset, they could still be choosing foods that respect their (maybe alternative) self-relevant values.

One important category of competing products is food from small-scale, less intensive farming systems, to which many consumers, even city dwellers, have access, due to the country's recent rural background, to which they are still linked to. This was the case of many participants, particularly non-buyers and light buyers. Although this may hamper increased organic food purchasing behaviour in the short-term, traditionally farmed food showed to play an important and positive role that was also noted previously (Naspetti *et al*., 2008; Stolz *et al*., 2010; Truniger, 2010), as it served to create a sensory-quality standard of today's organic buyers. In face of the stated deterioration of food quality and consumer trust over time, it may as well be opening the floor for a greater demand of higher quality food, particularly in the cities, where increasingly more people have fewer options out of the mainstream food supply chain as their rural relatives age.

A final word about indirect distribution channels is needed. Both buyers and non-buyers thought that supermarkets were generally doing a great disservice to organic food, displaying exclusive-looking products with prices above the market rate, tying it to a high-class consumption. In turn, as found in previous research (Padel and Foster, 2005; Ayres and Midmore, 2009), urban heavy buyers tended to be suspicious of supermarkets, essentially due to their mass-marketing approach. In contrast, specialist organic shops, although comparatively negligible in terms of number, offer a wide variety and assortment of products and have a name and a face, of the shopkeepers and constant sales personnel, with whom costumers tend to establish a relationship of trust that reinforces their confidence in organic products and self-relevance of the behaviour.

CHAPTER 6 - CONCLUSIONS

This final chapter reviews the results of the present study and addresses how these results relate to previous literature. Implications of the preceding analyses for future demand of certified organic food in Portugal are also discussed. Finally, it presents the study strengths and limitations, as well as, suggestions for future research.

Summary of research findings

This study applies the theory of planned behaviour (TPB) and an extended version of the TPB, which includes personal norms as a predictor of intention, to understand certified organic food purchasing behaviour.

Structural equation modeling (SEM) results based on survey data from 704 Portuguese adults responsible for household food purchases consisting of equal numbers of regular, occasional and non organic buyers, showed that attitude, perceived behavioural control (PBC) and subjective norms were differentially related to certified organic food purchase intention and self-reported purchasing behaviour. Particularly, attitude is the most important predictor of purchase intention, followed far behind by PBC, while subjective norms have only a minor role in shaping intention, confirming earlier findings (Tarkiainen and Sundqvist, 2005; Chen, 2007; Aertsens *et al*., 2011; Thøgersen and Zhou, 2012). With regard to purchasing behaviour, purchase intention has the largest effect while PBC accounts for only a small proportion of its variance, as it was also found by Thøgersen (2009a) and Zagata (2012), but there was an expected direct effect of attitude on purchasing behaviour, over and above the influence of intention.

Although the original TPB does not hypothesize a direct relationship between attitude and behaviour, such a less constrained model showed to be more adequate to represent the observed data and demonstrated strong explanatory power. Still, this respecified TPB model by no means intends to supersede the TPB, but rather should be seen as a generalization of Ajzen's theory (1985, 1991), given that, apart from the path that was originally predicted to be zero, its resulting findings are consistent with the proposed theoretical model, providing further support for its efficacy to explain organic food buying behaviour.

Data from focus group discussions conducted with 47 adult food shoppers, representatives of the three buyer groups included in the survey and living in urban and rural areas in Portugal were particularly useful for furthering the understanding of the factors that underlie organic food purchasing decisions.

Content analysis of participants' narratives also suggests that attitude towards purchasing organic food is the most important motivational factor shaping purchase intention and provides support for the substantive meaningfulness of an unmediated positive impact of attitude on self-reported purchasing behaviour, given that how individuals evaluate purchasing of certified organic food and, more essentially, the extensiveness of the cognitive structure underlying that evaluation, played a central role in explaining purchasing behaviour in the Portuguese context.

Participants' cognitive structures reflected the amount of perceived differences between purchasing organic and conventional products and the self-relevance of those perceptions, which are determined by, on the one hand, knowledge acquisition and critical reflection, and on the other hand, product experience and time. It was also evident that the interest in organic food, and in food in general, is a necessary precondition for people to be motivated to form an attitude in the first place. The works of Ajzen (2001) and of Glasman and Albarracín (2006) provide support to these findings, concluding that attitudes strongly predict behaviour when based on prior experience, knowledge, greater levels of thought and vested interest. The effect of time has also been noticed in similar studies (Naspetti *et al*., 2008; Ayres and Midmore, 2009), taking account of the fact that organic food purchasing behaviour evolves gradually rather than abruptly.

Favourable attitudes towards purchasing certified organic food, particularly non-processed products, were primarily based on beliefs about its healthiness, superior sensory properties and ecological soundness, this latter often connected to societal and relational considerations, conforming with the literature reviewing organic consumer research (Schmid *et al*., 2004; Torjusen *et al*., 2004; Hughner *et al*., 2007; Aertsens *et al*., 2009; Pearson *et al*., 2011).

Most organic buyers were mainly driven by personal and family health reasons that can be largely traced back to reduced dietary exposure to chemical residues. The high personal relevance and emotional resonance of this motivation causes that, besides being widely shared among organic buyers, most of those who are health-motivated were heavy buyers. Another largely mentioned and the main reason for one quarter of the participants to buy organic food was its superior sensory attributes, among which taste is the most prominent. Demand for such attributes was often related to current or past access to small-scale, traditionally farmed food, which set the standard for sensory quality. A third and equally large group of buyers essentially considered the positive impact of purchasing organic food on the individual as part of nature and society as its main motivation, providing them additional worth beyond food intrinsic characteristics. In sum, although it can be said that egoistic motives determine organic food purchasing, which corroborates the perspective of Magnusson *et al*. (2003), a closer examination reveals that most highly involved organic buyers stated both selfish and unselfish motivations to purchase organic food, in what Ayres and Midmore (2009) termed to be a process of re-description, where various beliefs fulfil and reinforce more personal values, making it a more self-relevant behaviour.

The higher quality of organic food is the common meeting ground of its distinct attributes that affect buying behaviour, reflecting the view held in previous review studies (Brunsø *et al*., 2002; Schmid *et al*., 2004; Torjusen *et al*., 2004; Hughner *et al*., 2007). Much of buyers' interest in organic quality resulted from a negative evaluation of the industrialized agri-food system, in sharp contrast with organic production, which is believed to respect natural growth cycles and avoid synthetic chemicals, and especially when this involves short supply chains, enclosing added-value features such as freshness, seasonality, traceability, direct relationships with farmers, reduced food miles and rural sustainability.

In the light of the focus groups results, the less important role of perceived behavioural control as determinant of purchase intention can be attributed to its lower variability across respondents with different purchase intentions and behaviours. In fact, inhibiting control factors seem to be perceived to the same extent by organic and non-buyers, even if their nature may differ. For example, non-buyers' and many organic buyers' behavioural intention was hampered, even if to different degrees, by the belief that they were less able to afford time and money to purchase organic food, whereas the firmer commitment of some participants, anchored on a varied set of arguments in favour of purchasing organic food led to favourable changes in the perceived power of such control factors to hinder behaviour, in agreement with the findings of Voon *et al*. (2011), who noted that a strong positive attitude increases perception of affordability in terms of cost and convenience. Instead, these latter buyers were likely to be more demanding and concerned about the conventionalisation of organic agriculture perceiving distrust of certification, suspicion of mass production, distant origin and a defective appearance as barriers to increased purchase. Elicited barriers were in line with review studies (Schmid *et al*., 2004; Torjusen *et al*., 2004; Hughner *et al*., 2007; Aertsens *et al*., 2009; Pearson *et al*., 2011), although merely a few stressed the importance of consumer expectations regarding mainstream trends in the organic food industry, probably because its relevance is restricted to better informed and experienced organic buyers.

Additionally, in support of the very small impact of PBC on purchasing behaviour indicated by SEM results, it was noted that organic buyers perceive the transition from purchase intention to actual behaviour largely under volitional control by developing a number of implementation plans that enable overcoming existing barriers, such as cost-minimizing strategies (e.g., eating less meat and processed food) and favouring direct marketing channels, whereas, in exceptional occasions, such as when the shop is closed or a specific product is suddenly missing, heavy buyers could actually be prevented from acting on their strong intentions. It was also clear that non-buying behaviour was entirely determined by the fact that they do not have intention to engage in its performance, as nobody is willing to pay a premium for a product that one does not really know and therefore cannot recognise any effective benefit of purchasing it. Lastly, the frequency and expenditure of purchasing organic food was inextricably linked to habit length, further supporting the weak direct effect of PBC on behaviour as this becomes routine and less likely to be interfered by unexpected situations.

The weak, although significant, influence of subjective norms on individuals' purchase intention was interpreted as probably related to the scarcity of role models and of social expectations in this respect, because the market it is still too small. Qualitative research supports this analysis, as organic food purchasing is a largely marginal and private act, especially in the urban setting, with participants often declaring that they relied on their own reflection when facing organic food purchase decisions.

Moreover, as remarked by Armitage and Conner (2001), there is strong evidence that operationalization of this construct as a global measure of perceived social pressure from significant others following Ajzen's (1991, 2006a) guidelines was not completely adequate for this context. In fact, the referents' influence was

valued in terms of providing verbal information and inspiration by personal examples, rather than approval or disapproval of their purchasing behaviour, and the referents were not only important others but also a diverse range of unfamiliar people, considered experts or with whom participants' identified themselves, that eventually have crossed their lives. From this angle, it should also be noted that the effect of participants' social background is mostly negative given the pervasiveness of advertising for non-organic products and that the vast majority of their friends, relatives and acquaintances did not buy organic food, being more likely to act as counterpersuaders (Naspetti *et al*., 2008).

Ajzen and colleagues (Ajzen and Cote, 2008; Fishbein and Ajzen, 2010) have mentioned the role of information sourced by the broad social context in shaping beliefs about a given behaviour and social psychologists have long noted that social influences on individuals' decision-making take informative and normative routes (Deutsch and Gerard, 1955; Cohen and Golden, 1972; Cialdini *et al*., 1990; Jager *et al*., 2000; Bamberg *et al*., 2007). Similarly, qualitative data show that the informative influence of subjective norms usually underwent an internalization process, also noticed by Sparks and Shepherd (1992) and Thøgersen (2009b), whereby information was integrated into the individual's cognitive structure, thus impacting behaviour through attitude formation and reinforcement. Hence, it is found that subjective norms also exert an indirect impact on organic food purchase intention mediated by attitude, which is in line with previous research (Tarkiainen and Sundqvist, 2005; Aertsens *et al*., 2011) and finds support in the up-dated review on the TPB of Fishbein and Ajzen (2010).

With regard to the role of moral considerations in organic food purchasing, SEM results show that the inclusion of personal norms in the TPB model did not markedly increased its predictive power over and above the standard TPB predictors, whereas penalized it for complexity, which is most probably due to a lack of discriminant validity between personal norms and attitude and, to a lesser extent, between personal and subjective norms. This could be seen as corroborating the assumption originally anticipated by Ajzen and Fishbein (1980) that the two TPB predictors account for moral normative influences but it also gives credit to the on-going discussion on the direction of causality between these variables. As a matter of fact, although it was out of the scope of this research to analyse the relation of personal norms with attitude and subjective norms, SEM results, interpreted in the light of previous research, suggest that personal norms about organic food purchasing are largely represented by attitudes, at the same time that, also capture the influence of subjective norms.

The qualitative study provides support for the importance of considering moral concerns to understand organic food purchasing behaviour as it revealed that the more extensive cognitive structures underlying the most strong and stable favourable attitudes showed positive instrumental and affective beliefs about organic food linked to attainment of personal values, and more empathically of values beyond participants' immediate own interests, that is, moral, self-transcendent or altruistic values such as family's wellbeing, ecological sustainability, social responsibility and animal welfare. Thus, to the extent that personal norms are behavioural expectations generated from one's own internalized values (Schwartz, 1977; Schwartz and Howard, 1984), it can be

concluded that personal norms were undeniably important in the formation of strong organic food purchase intentions, but their influence seemed mediated through attitudes, as it has been previously tested and proven by numerous studies in the context of organic food (Grunert and Juhl, 1995; Dreezens *et al.*; 2005; Lea and Worsley, 2005; Honkanen *et al.*, 2006; Arvola *et al.*, 2008; Dean *et al.*, 2008; Guido, 2009; Thøgersen, 2009a; Bravo *et al.*, 2013). Furthermore, as Thøgersen (2002) pointed out, the fact that a direct measure of attitude integrates value-based reasons for purchasing organic food is consistent with its purpose of representing an overall evaluation of the behaviour.

Closing the gap between the apparent effect of subjective norms on attitude, there is also support for a mediating role of personal norms as suggested by Schwartz (1977), since it was noticed that as awareness of the consequences of purchasing organic food raised over time, there was a concomitant rise of linkages between perceived consequences and personal values, these too becoming more salient and integrated into the individuals' cognitive structure, through what Naspetti *et al.* (2008) termed as an inner development process. Hence, the informative influence of subjective norms can occur to the point where they become extensively integrated personal norms, which is especially so, when there is strong identification with the referent others (Terry and Hogg, 1996; Fishbein and Ajzen, 2010), which in this case meant those who shared their values.

Marketing implications

This study provides a basis for a theoretically informed and evidence-based communication strategy to promote demand for certified organic food products from the importance of the TPB constructs in the determination of purchase intention and behaviour.

From a practical point of view, results indicate that the purchasing behaviour of the Portuguese is mainly driven by their attitudes towards purchasing organic food and, more specifically, by the strength and stability of those attitudes. In fact, within the Portuguese context, the gap between individuals' favourable attitudes and their purchasing behaviour extensively identified in the literature, seemed a consequence of their levels of product knowledge and experience which result in different levels of commitment to act upon their favourable attitudes. The same applies to ambivalent and negative attitudes, which were normally rooted in lack of information and unfamiliarity.

The few marketing interventions that existed in the past have focused on persuading individuals about the benefits of consuming organic food, using simple and short messages about its healthiness, better taste and environmental friendliness. Although based on accurate behavioural beliefs, these interventions are not deemed to be effective to increase organic food consumption as they fail to make the concept relevant to the general public, in face of the higher price tag and credence attributes attached to such products and bearing in mind consumers' habitual buying behaviour backed up by powerful marketing techniques. Salient beliefs about the advantages and disadvantages of purchasing organic food will only be altered by raising consumers' interest, awareness and

thought about the topic.

Focus group findings further indicate that perceived health benefits mainly related to food safety were the most consensual and often the most important motivation underlying organic food purchase decisions. Nevertheless, most non-buyers claimed that health was an important component of their food choices and recognized that avoiding potential health risks was an advantage of purchasing organic food. For them, healthy eating was more about food habits in general while concern for chemical residues was seen as an over-zealous attitude in this respect. On the other hand, ethical concerns for the impact of food production did not appear to be on the mind of most non-buyers. These results again emphasize the fallacy of appealing to behavioural beliefs based on organic product attributes. Instead, the basic characteristics of organic products making a difference when compared to their conventional counterparts in what regards those attributes should be openly stated.

From this it follows that marketing communication should aim at changing consumers' cognitive structures based on information and experiencing, which will eventually lead to an enduring impact on consumers' attitudes towards purchasing organic food, and thus enhance purchase intentions and behaviour. A successful strategy should thus consider consumer education, designed in a way that it can be understood and assimilated at a population level. More information on the following topics would benefit both buyers and non-buyers:

Organic production and processing techniques

Organic agriculture is often simply described as a production system that does not use synthetic fertilizers and pesticides. This negative definition conveys a message of "do-nothing farming" which creates scepticism about the possibility of growing food in this way and conveys a wrong message about its real production costs. The concept has greater depth, as organic production methods rely on living soils, biodiversity, incorporation of compost and green manure, crop rotations, polycropping, self-regulation in nature, local breeds and varieties, natural growth cycles, labour-intensive cultural practices, etc.

Focus group participants' limited comments about organic processed food seemed to be due to unfamiliarity with or lack of interest in this type of products. However, besides offering convenience and ease of preparation, organic processed food is suitable for a healthy diet, with at least 95% of its ingredients of agricultural origin being organic, restricted use of food additives and low processing methods that maintain the organic integrity and vital qualities of the product.

Food safety characteristics

Organic food is likely to contain lower residues of agricultural chemicals than its non-organic counterpart. Support for this claim is provided by Smith-Spangler *et al*. (2012), who, in their meta-analysis of 240 primary studies, concluded that the "consumption of organic foods may reduce exposure to pesticide residues and antibiotic-resistant bacteria". In fact, all herbicides are prohibited and a few pesticides, such as copper and sulphur, are allowed under restricted use. The use

of veterinary drugs in organic agriculture is also severely limited. The use of antibiotics for preventive treatment and hormones to promote growth or control reproduction is prohibited. However, when sick animals have to be treated with chemically synthesised allopathic products the withdrawal periods are of at least double the statutory withdrawal period required. Furthermore, another important feature that very few participants seemed to be aware is that the use of genetically modified organisms (GMO) and ionising radiation is prohibited.

Conventional production and processing techniques

Bringing consumers closer to understanding the differences between organically and conventionally produced food also involves providing factual information about the substances and practices used in conventional food production and processing. Modern food production, though well regulated by food policy and food laws, includes chemically fertilized and pesticide-treated monocultures using GMO crops, factory farming with prophylactic use of veterinary drugs and other growth promoters, and uses more than 380 artificial colourings, flavourings and preservatives, irradiation and long ingredient lists in food processing.

Regulation, certification and accountability

The use of the label organic is protected by Regulation (EC) No. 834/2007, which means that a product or its ingredients were submitted to a control system carried out by an independent certification body in order to ensure compliance with legal standards. Furthermore, news on organic frauds should be followed up by updates on the measures taken to protect consumers such as food recalls, organic certificate suspension or revocation and other sanctions imposed.

Shopping places and product identification

Practical knowledge on the location, opening hours and product range of specialized sales point for organic food should also be made available. Finally, people must know how organic food products can be distinguished, which requires knowing the EU-logo for organically produced food and the terms used in labelling.

Qualitative research findings also indicate that health conscious consumers who have a healthy diet are more likely to develop a positive attitude and intention towards purchasing organic food. This is because people concerned about eating healthy food for healthy life actively seek for information about food, nutrition and their effect in health and therefore are more likely to reflect on the information mentioned above due to the self-relevance of its message and enhanced ability to process it. Hence, under constrained budgets, consumer education will result more effective if focused on specific target groups such as pregnant women, vegetarians, macrobiotics, and followers of other healthful diets such as raw food and palaeolithic diets.

Persuasion through factual information would be even more effective if complemented with affective-based interventions that involve creating positive experiences with organic foods. In fact, food is one of the most fundamental sources of hedonic experiences in human life (Luomala *et al*., 2004). Further, the

superior sensory properties of organic produce besides widely acknowledged by organic buyers as an important purchase motivation, was a gateway for participants who had a strong involvement in food enjoyment, food preparation and showing care for the closest ones through the food they provide. Hence, these type of consumers should be targeted by sensory marketing, combining free tastings, namely of in-season raw fruit and vegetables, with communication on the key characteristics of organic farming and processing systems responsible for the perceived sensory sensations.

Another major finding of this study is that becoming a regular organic buyer is a gradual process, with heavy buyers taking on board a greater number of issues. Therefore, differentiated marketing strategies should also be tailored to sustain or increase purchase among existing organic consumers, in order to reinforce their positive attitudes over time, by adding new elements to their cognitive structures and clarifying confusing issues. However, a distinction must be made between strongly and less committed organic consumers as attitudes supporting their commitment reflect different levels of knowledge and thus their perception of the relevance of additional information.

To increase the percentage of committed buyers, information should emphasise the association of organic food with altruistic arguments, such that ethical considerations become more salient in the buying situation. Research has evidenced that only highly committed buyers mentioned value-based reasons for organic food choice and that these played an important role in reinforcing the self-relevance of purchasing organic food. Thus, communication campaigns should appeal to organic consumers' universalism values and social responsibility by emphasizing the environmental benefits of organic farming and animal welfare of organic animals.

In turn, more knowledgeable and experienced buyers demand for more specific information:

Regulation limitations

Distrust issues were greater as the distance to centres of organic production increased, due to the limitations of the regulation, which allows for the use of certain pesticides and chemical preservatives, and only makes provision for minimizing the risk of environmental contamination of organic food products, as well as, to the lack of assurance about truly organic quality by current certification procedures in place.

This suggests that more committed buyers need more widely available information on regulatory details and eventual improvements, at the same time that the gap between producers and consumers should be closed through more direct contact to producers by limiting the number of intermediaries, providing information on the producers of the foods for sale, presenting profiles and testimonials of particular organic farmers, organizing visits to the supplying farms and maintaining skilled sales staff who act as trust builders through additional product information and concerned relations with costumers.

These latter measures aiming at bringing consumers into the validation process

further help to address the limited scope of the regulation concerning social and economic justice aspects of the organic supply chain which are much valued by these buyers.

Short supply chains

More committed buyers also revealed a strong inclination to seek organic food consumption based on local provisioning. This is attributed to the trust relationship with suppliers, perceived higher sensory quality of food and environmental and social benefits of local production, although the added-value of the relational and pleasure dimensions of the shopping experience also seemed of significance.

This supports continued market growth through creation and enhanced visibility of direct marketing initiatives such as organic box schemes, farm gate shops, organic farmers markets and community supported agriculture (CSA), which is "a partnership between farmers and consumers where the responsibilities and rewards of farming are shared" (Soil Association, 2001).

To satisfy the expectations of these buyers, specialized organic retailers should also restrict the offer of imported fresh produce, which can be grown in Portugal, giving the right signals to the supply chain to expand domestic production of organic foods in shortage.

Processors in the national organic sector also have an important role to play in this connection, developing products that reflect organic consumer expectations regarding high sensory quality, domestic origin and limited packaging.

Organic consumers' family members

Focus group results also revealed that there is a negative relationship between the approval of household members and buying behaviour of organic consumers, possibly explaining the failure of statistical analysis to demonstrate their subjective normative influence. It seemed that as long as the household organic share is reduced family expectations were met, while more frequent buyers reported conflicts and pressure to buy certain non-organic food products for their household. This indicates that to maintain or increase the amount of organic food bought by already regular buyers, their family members should be specifically targeted by the information entailed in the general consumer education programme.

Despite their lower relative weights in the prediction of intention and behaviour, marketing recommendations that can succeed in raising the level of perceived behavioural control and subjective norms among consumers are also provided as they could have an important impact on buying decisions.

Qualitative research revealed that the higher prices of organic food were a major barrier to purchase organic food for many buyers and non-buyers. Thøgersen (2009a) has advocated economies of scale to reduce the premium price charged for organic products, but these are unlikely to retain the characteristics valued by the most committed buyers on which the market depends. Instead, findings show the importance of providing information on the various strategies

implemented by organic consumers to minimise the costs of buying organic food (see Chapter 5, p. 131).

Availability also seemed to impact purchase intention of organic buyers, namely in the urban setting. Although more committed buyers preferred specialized retail outlets, mainstream supermarkets chains have a very important role to play in the distribution of organic food products for more convenience-oriented consumers, due to their widespread geographical coverage. However, in order to supermarket sales become more expressive they should increase organic products assortment and visibility, position organic and non-organic brands side by side on the shelf and, most important, charge fair prices.

Some core organic buyers due to higher premiums paid were also unwilling to accept a defective appearance of fresh organic products. Product appearance is one of the major dimensions of food quality for consumers (Brunsø *et al*., 2002) and therefore, to deliver top-quality products, disease and pest control and post harvest handling must improve significantly.

Furthermore, both quantitative and qualitative findings revealed that the majority of the participants held low perceptions of subjective norms about purchasing organic food, showing that there is room for improvement in this variable. Focus group results further evidenced that the influence of others was mainly through information and personal example. This shows that existing organic buyers have a valuable role to play through word-of-mouth, which besides aiding to increase the general level of product knowledge of those around them, would crucially contribute to the "social normalisation" of the behaviour, i.e. strengthening the belief that it is, in fact, a normal and everyday behaviour (Rettie *et al*., 2011).

Finally, there are many possibilities for the government to promote organic food products as part of a sustainable development strategy. One of the most important is to fulfil its obligation of providing thorough supervision of certification bodies to guarantee organic integrity. Other worthwhile initiatives would be to develop a public procurement policy for organic food adapted to the farmers' reality, support information campaigns for the general public and in schools, and finally setting up a national action plan for the organic sector. Local administrations could promote allotments for organic vegetable growing and support certification costs of small-scale farmers benefiting from the system of group certification defined in the proposal for a new organic regulation (European Commission, 2014b).

Research strengths and limitations

This study uses quantitative and qualitative research methods to apply the theory of planned behaviour (TPB) to examine the influence of attitude, perceptions of behavioural control and subjective norms towards the purchase of certified organic food of the Portuguese, on their purchase intentions and behaviour. The theoretical concepts of the TPB were useful to obtain valuable insights into consumer decision-making process with regard to these food products, sustaining the generalizability of the model to investigate complex social behaviour. Furthermore, results are used to provide guidelines to design a

marketing intervention campaign from a social psychological perspective that has a high likelihood of success, which is of great relevance for all the stakeholders within the agri-food system interested in the development of organic agriculture in Portugal.

Structural equation modeling (SEM) was employed as it allows for model fit assessment and model comparison and to estimate structural relationships among latent constructs that are free of measurement errors, as these were validly and reliably measured by multiple indicators. A bootstrap procedure was conducted once it was determined that the multivariate normal distribution of the data could not be assumed, which supports the robustness of model fit assessment and parameter estimation. The high statistical power conveyed by the large sample size further enhances the trustworthiness of SEM results.

Focus group helped to gain additional in-depth knowledge that could not be conveyed quantitatively. Within this research approach, qualitative results allowed to explore not only the most important behavioural determinants, their development over time and interactive effect on performance of behaviour, but also the underlying perceptions of organic food attributes and consequences of purchasing food with those attributes across different types of buyers. Importantly, content analysis of focus group data shed light on the origin and development of the beliefs that, according to the theory, ultimately guide performance of the behaviour.

Transferability of qualitative research findings was established through a well-planned purposive sampling strategy, interpreting findings with consideration of contextual factors, directly quoting participants to substantiate analysis and comparing results from prior research. Whereas the overall consistency of the results between alternate methods and with those of previous research strengthens the validity of the qualitative analysis, any inconsistent results were also identified and thorough justification given.

The limitations of the present study should be mentioned as well. Both quantitative and qualitative studies suffer the disadvantage of using a self-selected sample. This means that data reflects only the perspectives of those who were, due to personal reasons, highly motivated and able to take part in research. For instance, research participants tended to be better educated and it is likely that people who were not interested in or had never thought about the research topic elected not to participate. The use of a web-based survey, despite allowing a wide geographic scope, further limited the access to certain socio-demographic groups. Although careful consideration has been given to sampling design, non-probability sampling has introduced bias into the research findings, which thus may not be generalizable to a broader population.

The limitation that derives from the use of self-reported behaviour measures instead of observing actual purchase behaviour should also acknowledged. Although research participants were assured of anonymity and confidentiality, self-reported behaviour is susceptible of being inflated as a result of, for instance, socially desirability bias. Hence, the relationships between behavioural determinants and actual purchase of organic food are probably less strong than what has been found in relation to self-reported purchase.

Finally, in extending the TPB model, it was not possible to clarify the role of moral normative influences as an independent determinant of organic food purchase intention, which was attributed to the sizeable overlap, on the one hand, between personal norms and attitude, and on the other hand, between the two norm constructs. Yet, according to previous research, it seems that the additional measure of personal norms may act as an independent predictor of intention and, at the same time, influence attitude and be influenced by subjective norms. Such a triple function found support in qualitative research results.

Nevertheless, although the quantitative study revealed that feelings of self-satisfaction of adhering to one's own moral principles are the most consistent measures of personal norms, qualitative analysis showed that neither positive nor negative moral emotions were associated with organic food purchase decisions. In fact, organic buyers mostly felt they were meaningfully acting, rather than obliged to act, on their reflective information and personal values, and showed to be aware of the complexity of decision-making when it comes to food choice, which may not always lead to opt for organic products albeit probably still reflecting their (maybe alternative) personal values.

The notion that food choice is inherently complex has two readings. On the one hand, emphasizes the need for a systems rather than a dichotomous thinking approach to understand individual morality. On the other hand, the pursuit of, even conflicting, personal values within the broad food choice context is more consistent with different forms of self-expression than with perceived moral obligation. In other words, personal norms would have been more appropriately operationalized as self-identity (Stryker, 1980), in this specific case, taking account of the attainment of values that underlie organic food choice on fulfilling salient role identities such as health conscious person, family care-taker or citizen-consumer, as this extension to the TPB has been recently proposed and successfully applied to explain both attitude an intention towards organic food purchasing (Michaelidou and Hassan, 2008; Guido, 2009; Pino *et al.*, 2012).

Recommendations for future research

An extremely interesting question remains on how do personal norms exactly relate to behavioural intention, subjective norms and attitudes within the organic food domain, underlining the importance of continuing to investigate the role of consumers' personal norms regarding the purchase of organic food within the TPB model in future studies.

Prior to this, it has to be established how to appropriately operationalize the measure of personal norms within this context, an issue that this study could not clarify completely, although there is some support for considering the expression of personal values through forms of self-identity rather than positive moral feelings and much less negative ones.

Finally, future research on the underlying variables that drive people to purchase organic food would benefit from the use of a random sample of participants, representative of the Portuguese adult population.

REFERENCES

Aertsens, J., Verbeke, W., Mondelaers, K. and Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: a review. *British Food Journal*, 111(10): 1140-1167.

Aertsens, J., Mondelaers, K., Verbeke, W., Buysse, J. and Van Huylenbroeck, G. (2011). The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. *British Food Journal*, 113(11): 1353-1378.

AGROBIO (2015). *Guia do consumidor [Consumer guide]*. <http://www.agrobio.pt/pt/>

Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: Kuhl, J. and Beckmann, J. (Eds.) *Action-control: from cognition to behavior*. Springer, Heidelberg, pp. 11-39.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2): 179-211.

Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology*, 52(1): 27-58.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4): 665-683.

Ajzen, I. (2006a). *Constructing a TPB questionnaire: conceptual and methodological considerations*. <http://www.unibielefeld.de/ikg/zick/ajzen%20construction%20a%20tpb%20questionnaire.pdf>

Ajzen, I. (2006b). *Behavioral interventions based on the theory of planned behavior*. <https://people.umass.edu/aizen/pdf/tpb.intervention.pdf>

Ajzen, I. (2015). The theory of planned behavior: a bibliography. <http://people.umass.edu/aizen/tpbrefs.html>

Ajzen, I. and Cote, N.G. (2008). Attitudes and the prediction of behavior. In: Crano, W.D. and Prislin, R. (Eds.) *Attitudes and attitude change*. Psychology Press, New York, pp. 289-311.

Ajzen, I. and Driver, B.L. (1992). Contingent value measurement: on the nature and meaning of willingness to pay. *Journal of Consumer Psychology*, 1(4): 297-316.

Ajzen, I. and Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice-Hall, Englewood Cliffs.

Ajzen, I. and Fishbein, M. (2005). The influence of attitudes on behaviour. In: Albarracín, D., Johnson, B.T. and Zanna, M.P. (Eds.) *The handbook of attitudes*. Erlbaum, Mahwah, pp. 173-221.

Alam, S.S. and Sayuti, N.M. (2011). Applying the theory of planned behavior (TPB) in halal food purchasing. *International Journal of Commerce and Management*, 21(1): 8-20.

Albarracín, D., Johnson, B.T., Fishbein, M. and Muellerleile, P.A. (2001). Theories of reasoned action and planned behavior as models of condom use: a meta-analysis. *Psychological Bulletin*, 127(1): 142-161.

Albers, S. (2010). PLS and success factor studies in marketing. In: Esposito Vinzi, V., Wang, H., Henseler, J. and Chin, W. (Eds.) *Handbook of partial least squares: concepts, methods and applications in marketing and related fields*. Springer, Heidelberg, pp. 409-425.

Altieri, M.A. (1995). *Agro-ecology: the science of sustainable agriculture*. Westiew Press, Boulder.

Altieri, M.A. and Rosset, P.M. (1995). Agroecology and the conversion of large-scale conventional systems to sustainable management. *International Journal of Environmental Studies*, 50(3/4): 165-185.

Anderson, J.C. and Gerbing, D.W. (1988). Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin*, 103(3): 411-423.

Andrews, J.C. (1988). Motivation, ability, and opportunity to process information: conceptual and experimental manipulation issues. *Advances in Consumer Research*, 15(1): 219-225.

ARBIO (2015). *Associação de retalhistas de produtos biológicos [Organic produce retailers association].*
<http://www.arbio.pt>

Armitage, C.J. and Conner, M. (2001). Efficacy of the theory of planned behaviour: a meta-analytic review. *British Journal of Social Psychology*, 40(4): 471-499.

Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lähteenmäki, L. and Shepherd, R. (2008). Predicting intentions to purchase organic food: the role of affective and moral attitudes in the theory of planned behaviour. *Appetite*, 50(2): 443-454.

Aschemann, U., Hamm, U., Naspetti, S. and Zanoli, R. (2007). The organic market. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 123-151.

Australian Organic (2015). Organics at all-time high in Australia. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 254-258.

Ayres, N. and Midmore, P. (2009). *Consumption of organic foods from a life history perspective: an exploratory study of British consumers*. School of Management and Business, Aberystwyth University, Aberystwyth.

Baker, S., Thompson, K.E. and Engelken, J. (2004). Mapping the values driving organic food choice. *European Journal of Marketing*, 38(8): 995-1012.

Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? A new answer to an old question. *Journal of Environmental Psychology*, 23(1): 21-32.

Bamberg, S., Hunecke, M. and Blöbaum, A. (2007). Social context, personal norms and the use of public transportation: two field studies. *Journal of Environmental Psychology*, 27(3): 190-203.

Bamberg, S. and Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: a new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1): 14-25.

Barrett, P. (2007). Structural equation modelling: adjudging model fit. *Personality and*

Individual Differences, 42(5): 815-824.

Bazoche, P., Combris, P., Giraud-Héraud, E., Pinto, A.S., Bunte, F. and Tsakiridou, E. (2014). Willingness to pay for pesticide reduction in the EU: nothing but organic? *European Review of Agricultural Economics*, 41(1): 87-109.

Beck, L. and Ajzen, I. (1991). Predicting dishonest action using the theory of planned behaviour. *Journal of Research in Personality*, 25(3): 285-301.

Bentler, P.M. and Speckart, G. (1979). Models of attitude-behavior relations. *Psychological Review*, 86(5): 452-464.

Bernard, H.R. (2006). *Research methods in anthropology: qualitative and quantitative approaches*. AltaMira Press, Oxford.

Bernath, K. and Roschewitz, A. (2008). Recreational benefits of urban forests: explaining visitors' willingness to pay in the context of the theory of planned behavior. *Journal of Environmental Management*, 89(3): 155-166.

Bethlehem, J. (2010). Selection bias in web surveys. *International Statistical Review*, 78(2): 161-188.

Biel, A. and Thøgersen, J. (2007). Activation of social norms in social dilemmas: a review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology*, 28(1): 93-112.

Blanchard, C.M., Fisher, J., Sparling, P.B., Shanks, T.H., Nehl, E., Rhodes, R.E., Courneya, K.S. and Baker, F. (2009). Understanding adherence to 5 servings of fruits and vegetables per day: a theory of planned behavior perspective. *Journal of Nutrition Education and Behavior*, 41(1): 3-10.

Bloor, M., Frankland, J., Robson, K. and Thomas, M. (2001). *Focus groups in social research*. Sage, London.

Bogers, R.P., Brug, J., van Assema, P. and Dagnelie, P.C. (2004). Explaining fruit and vegetable consumption: the theory of planned behaviour and misconception of personal intake levels. *Appetite*, 42(2): 157-166.

Bollen, K.A. and Stine, R.A. (1992). Bootstrapping goodness-of-fit measures in structural equation models. *Sociological Methods and Research*, 21(2): 205-229.

Bonne, K., Vermeir, I., Bergeaud-Blackler, F. and Verbeke, W. (2007). Determinants of halal meat consumption in France. *British Food Journal*, 109(5): 367-386.

Bookchin M. (1989). *Remaking society*. Black Rose Books, Montreal.

Boyle, G.J. (1991). Does item homogeneity indicate internal consistency or item redundancy in psychometric scales? *Personality and Individual Differences*, 12(3): 291-294.

Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2): 77-101.

Bravo, C.P., Cordts, A., Schulze, B. and Spiller, A. (2013). Assessing determinants of organic food consumption using data from the German National Nutrition Survey II. *Food Quality and Preference*, 28(1): 60-70.

Brinkmann, J. (2004). Looking at consumer behavior in a moral perspective. *Journal of*

Business Ethics, 51(2): 129-141.

Brown, T.A. (2006). *Confirmatory factor analysis for applied research*. Guilford Publications, New York.

Browne, M.W. and Cudeck, R. (1993). Alternative ways of assessing model fit. In: Bollen, K.A. and Long, J.S. (Eds.) *Testing structural equation models*. Sage, Newbury Park, pp. 136-162.

Brug, J., de Vet, E., de Nooijer, J. and Verplanken, B. (2006). Predicting fruit consumption: cognitions, intention, and habits. *Journal of Nutrition Education and Behavior*, 38(2): 73-81.

Brunori, G., Rossi, A. and Malandrin, V. (2011). Co-producing transition: innovation processes in farms adhering to solidarity-based purchase groups (GAS) in Tuscany, Italy. *International Journal of Sociology of Agriculture and Food*, 18(1): 28-53.

Brunsø, K., Fjord, T.A. and Grunert, K.G. (2002). *Consumers' food choice and quality perception*. MAPP, Aarhus School of Business, Aarhus.

Buck, D., Getz, C. and Guthman, J. (1997). 'Archaic' relations of production in modern agricultural systems: the organic vegetable commodity chain of Northern California. *Sociologia Ruralis*, 37(1): 3-19.

Byrne, B.M. (2010). *Structural equation modeling with AMOS: basic concepts, applications and programming*. Routledge, New York.

Byrne, P.J., Toensmeyer, U.C., German, C.L. and Muller, H.R. (1991). Analysis of consumer attitudes toward organic produce and purchase likelihood. *Journal of Food Distribution Research*, 22(2): 49-62.

Çabuk, S., Tanrikulu, C. and Gelibolu, L. (2014). Understanding organic food consumption: attitude as a mediator. *International Journal of Consumer Studies*, 38(4): 337-345.

Campbell, J.M. (2013). Muy local: differentiating Hispanic and Caucasian shoppers of locally produced foods in US grocery. *Journal of Retailing and Consumer Services*, 20(3): 325-333.

Carrington, M.J., Neville, B.A. and Whitwell, G.J. (2010). Why ethical consumers don't walk their talk: towards a framework for understanding the gap between the ethical purchase intentions and actual buying behaviour of ethically minded consumers. *Journal of Business Ethics*, 97(1): 139-158.

Chen, M.F. (2007). Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: moderating effects of food-related personality traits. *Food Quality and Preference*, 18(7): 1008-1021.

Chen, M.F. (2009). Attitude toward organic foods among Taiwanese as related to health consciousness, environmental attitudes, and the mediating effects of a healthy lifestyle. *British Food Journal*, 111(2): 165-178.

Chryssohoidis, G.M. and Krystallis, A. (2005). Organic consumers' personal values research: testing and validating the list of values (LOV) scale and implementing a value-based segmentation task. *Food Quality and Preference*, 16(7): 585-599.

Cialdini, R.B., Reno, R.R. and Kallgren, C.A. (1990). A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. *Journal of Personality*

and Social Psychology, 58(6): 1015-1026.

Cicia, G., Del Giudice, T. and Scarpa, R. (2002). Consumers' perception of quality in organic food: a random utility model under preference heterogeneity and choice correlation from rank-orderings. *British Food Journal*, 104(3/4/5): 200-213.

Claude, A.B. and Holtmann, G. (2006). Achievements made and challenges ahead. In: Willer, H. and Yussefi, M. (Eds.) *The world of organic agriculture: statistics and emerging trends 2006*. IFOAM and FiBL, Bonn and Frick, pp. 205-208.

Codex Alimentarius Commission (2013). *Guidelines for the production, processing, labelling and marketing of organically produced foods*. Joint FAO/WHO Food Standards Programme, Rome.

Cohen, J.B. and Golden, E. (1972). Informational social influence and product evaluation. *Journal of Applied Psychology*, 56(1): 54-59.

Conner, M. and Armitage, C.J. (1998). Extending the theory of planned behavior: a review and avenues for further research. *Journal of Applied Social Psychology*, 28(15): 1429-1464.

Cook, A.J., Kerr, G.N. and Moore, K. (2002). Attitudes and intentions towards purchasing GM food. *Journal of Economic Psychology*, 23(5): 557-572.

Conford, P. and Holden, P. (2007). The Soil Association. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 187-200.

Conner, M. and Armitage, C.J. (2006). Social psychological models of food choice. In: Shepherd, R. and Raats, M. (Eds.) *The psychology of food choice*. CABI Publishing, Wallingford, pp. 41-58.

Constance, D.H., Choi, J.Y. and Lara, D. (2013). Social dimensions of organic production and systems research. *Crop Management*, 12(1).

Crisóstomo, C. (2011). *Organic farming policy network in Portugal*. Istituto Agronomico Mediterraneo di Bari, Valenzano. MSc. Thesis.

Cruz, M. (2010). *Comportamento e perfil do consumidor de alimentos biológicos em Portugal [Organic food consumer behaviour and profile in Portugal]*. Instituto Superior de Agronomia, Lisboa. MSc. Thesis.

Davies, A., Titterington, A.J. and Cochrane, C. (1995). Who buys organic food? A profile of the purchasers of organic food in Northern Ireland. *British Food Journal*, 97(10): 17-23.

Dean, M., Raats, M.M. and Shepherd, R. (2008). Moral concerns and consumer choice of fresh and processed organic foods. *Journal of Applied Social Psychology*, 38(8): 2088-2107.

Dean, M., Raats, M.M. and Shepherd, R. (2012). The role of self-identity, past behavior, and their interaction in predicting intention to purchase fresh and processed organic food. *Journal of Applied Social Psychology*, 42(3): 669-688.

Deutsch, M. and Gerard, H.B. (1955). A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology*, 51(3): 629-636.

DGADR (2015). *Certified registered organic operators*. <http://www.dgadr.mamaot.pt/images/docs/val/mpb/2015/Dados_Estatisticos_Portu

gal_Ilhas.pdf>

Diário de Notícias (2013). *Cresce procura pelos produtos biológicos [Growing demand for organic food]*.
<http://www.dnoticias.pt/actualidade/pais/416815-cresce-procura-pelos-produtos-biologicos>

Dias, R.R. (2008). *Producción y mercado de leche ecológica en Portugal: estrategias y tendencias [Organic milk production and market in Portugal: strategies and trends*. Editorial Novembro, Porto.

Duram, L.A. (2005). *Good growing: why organic farming works*. University of Nebraska Press, Lincoln.

Durham, C.A. and Andrade, D. (2005). Health vs. environmental motivation in organic preferences and purchases. In: *American Agricultural Economics Association Annual Meeting, Providence, Rhode Island, July 24-27, 2005*.
<http://ageconsearch.umn.edu/bitstream/19221/1/sp05du04.pdf>

Dreezens, E., Martijn, C., Tenbült, P., Kok, G. and De Vries, N.K. (2005). Food and values: an examination of values underlying attitudes toward genetically modified- and organically grown food products. *Appetite*, 44(1): 115-122.

Dunn, K.I., Mohr, P., Wilson, C.J. and Wittert, G.A. (2011). Determinants of fast-food consumption: an application of the theory of planned behaviour. *Appetite*, 57(2): 349-357.

Efron, B. and Tibshirani, R.J. (1993). *An introduction to the bootstrap*. Chapman and Hall, New York.

Emanuel, A.S., McCully, S.N., Gallagher, K.M. and Updegraff, J.A. (2012). Theory of planned behavior explains gender difference in fruit and vegetable consumption. *Appetite*, 59(3): 693-697.

European Commission (2014a). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Action plan for the future of organic production in the European Union, COM(2014) 179 final*. European Commission, Brussels.

European Commission (2014b). *Proposal for a regulation of the European Parliament and of the Council on organic production and labelling of organic products, amending Regulation (EU) No XXX/XXX of the European Parliament and of the Council [Official controls Regulation] and repealing Council Regulation (EC) No. 834/2007, COM(2014) 180 final*. European Commission, Brussels.

European Commission (2014c). *Special Eurobarometer 410: Europeans, agriculture and the Common Agricultural Policy (CAP)*. European Commission, Brussels.

European Union Council (2007). Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91. *Official Journal of the European Union*, L189 of 20/07/2007: 1-23.

Eurostat (2015). *Internet use statistics - individuals*.
<http://ec.europa.eu/eurostat/statistics-explained/index.php/Internet_use_statistics_-_individuals>

Evans, J.R. and Mathur, A. (2005). The value of online surveys. *Internet Research*, 15(2): 195-219.

Finney, S.J. and DiStefano, C. (2013). Nonnormal and categorical data in structural equation models. In: Hancock, R. and Mueller, R.O. (Eds.) *A second course in structural equation modeling*. Information Age, Charlotte, pp. 439-492.

Fishbein, M. and Ajzen, I. (1975). *Belief, attitude, intention, and behavior: an introduction to theory and research*. Addison-Wesley, Reading.

Fishbein, M. and Ajzen, I. (2010). *Predicting and changing behavior: the reasoned action approach*. Psychology Press, New York.

Flores, P. (2015). Organic agriculture in Latin America and the Caribbean. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 226-232.

Fornell, C. and Larcker, D.F. (1981). Evaluating SEM with unobserved variables and measurement error. *Journal of Marketing Research*, 18: 39-50.

Fotopoulos, C., Krystallis, A. and Ness, M. (2003). Wine produced by organics grapes in Greece: using means-ends chains analysis to reveal organic buyers' purchasing motives in comparison to non-buyers. *Food Quality and Preference*, 14(7): 549-566.

Francis, J.J., Eccles, M.P., Johnston, M., Walker, A., Grimshaw, J., Foy, R., Kaner, E.F.S., Smith, L. and Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behaviour: a manual for health services researchers*. Centre for Health Services Research, University of Newcastle upon Tyne, Newcastle upon Tyne.

Freyer, B. and Haberkorn, A. (2008). Influence of young children (3-6 years) on organic food consumption in their families. In: *Cultivating the future based on science, 16th IFOAM Organic World Congress, Italy, Modena, June 16-20, 2008*. <http://orgprints.org/12130/2/Freyer_12130_ed.doc>

Fukuoka, M. (1978). *The one-straw revolution*. Rodale, Emmaus.

Gabriel, Y. and Lang, T. (2006). *The unmanageable consumer*. Sage, London.

Gardner, H. (2004). *Changing minds: the art and science of changing our own and other people's minds*. Harvard Business School Press, Cambridge.

Gaspar de Carvalho, R., Palma-Oliveira, J.M. and Corral-Verdugo, V. (2010). Why do people fail to act? Situational barriers and constraints on ecological behavior. In: Corral-Verdugo, V., García-Cadena, C.H. and Frías-Armenta, M. (Eds.) *Psychological approaches to sustainability: current trends in research, theory and practice*. Nova Science Publishers: New York, pp. 269-294.

Geen, N. and Firth, C. (2006). The committed organic consumer. In: *Joint Organic Congress, Denmark, Odense, May 30-31, 2006*. <http://orgprints.org/7125/1/7125.pdf>

Geier, B. (2007). IFOAM and the history of the international organic movement. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 175-186.

Gil, J.M., Gracia, A. and Sanchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *International Food and Agribusiness Management Review*, 3(2): 207-226.

Gil, J.M. and Soler, F. (2006). Knowledge and willingness to pay for organic food in Spain: evidence from experimental auctions. *Acta Agriculturae Scand Section C*, 3(3/4): 109-124.

Giovannucci, D. (2005). *Organic agriculture and poverty reduction in Asia*. IFAD, Rome.

Glasman, L.R. and Albarracín, D. (2006). Forming attitudes that predict future behavior: a meta-analysis of the attitude-behavior relation. *Psychological Bulletin*, 132(5): 778-822.

Goodman, D. and Goodman, M. (2007). Localism, livelihoods, and the 'post-organic': changing perspectives on alternative food networks in the United States. In: Maye, D., Holloway, L. and Kneafsey, M. (Eds.) *Alternative food geographies: representation and practice*. Elsevier, Oxford, pp. 23-38.

Gotschi, E., Vogel, S. and Lindenthal, T. (2007). *High school students' attitudes and behaviour towards organic products: survey results from Vienna*. Institute for Sustainable Economic Development, University of Natural Resources and Applied Life Sciences, Vienna.

Govindasamy, R. and Italia, J. (1997). *Consumer response to integrated pest management and organic agriculture: an econometric analysis*. Rutgers University, New Jersey.

Gracia, A. and de Magistris, T. (2008). The demand for organic foods in the South of Italy: a discrete choice model. *Food Policy*, 33(5): 386-396.

Grunert, S.C. and Juhl, H.J. (1995). Values, environmental attitudes, and buying of organic foods. *Journal of Economic Psychology*, 16(1): 39-62.

Grunert, K.G. and Kristensen, K. (1991). On some factors influencing consumers' demand for organically grown foods. *Enhancing Consumer Choice, American Council on Consumer Interests, Columbia, MI*: 37-48.

Guido, G. (2009). *Behind ethical consumption: purchasing motives and marketing strategies for organic food products, non-GMOs, bio-fuels*. Peter Lang, Bern.

Guido, G., Prete, M.I., Peluso, A.M., Maloumby-Baka, R.C. and Buffa, C. (2010). The role of ethics and product personality in the intention to purchase organic food products: a structural equation modeling approach. *International Review of Economics*, 57(1): 79-102.

Guthman, J. (2004). *Agrarian dreams: the paradox of organic farming in California*. University of California Press, Berkeley.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). *Multivariate data analysis*. Prentice Hall, Englewood Cliffs.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011). PLS-SEM: indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2): 139-151.

Hamzaoui-Essoussi, L. and Zahaf, M. (2012). Canadian organic food consumers' profile and their willingness to pay premium prices. *Journal of International Food & Agribusiness Marketing*, 24(1): 1-21.

Harland, P., Staats, H.J. and Wilke, H.A.M. (1999). Explaining pro-environmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology*, 29(12): 2505-2528.

Hoefkens, C., Verbeke, W., Aertsens, J., Mondelaers, K. and Van Camp, J. (2009). The nutritional and toxicological value of organic vegetables: consumer perception versus scientific evidence. *British Food Journal*, 111(10): 1062-1077.

Holt, G.C. (1993). *Ecological eating, food ideology and food choice: an analysis of the changing British diet with reference to the consumption of meat and organically produced food*. Department of Biomedical Sciences, University of Bradford, Bradford. PhD. Thesis.

Honkanen, P., Verplanken, B. and Olsen, S.O. (2006). Ethical values and motives driving organic food choice. *Journal of Consumer Behaviour*, 5(5): 420-430.

Hu, L. and Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1): 1-55.

Huang, C.L. (1996). Consumer preferences and attitudes towards organically grown produce. *European Review of Agricultural Economics*, 23(3): 331-342.

Huber, B., Schmid, O. and Mannigel, C. (2015). Standards and regulations. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 125-133.

Hughner, R.S., McDonagh, P., Prothero, A., Shultz, C.J. and Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, 6(2/3): 1-17.

IFOAM (2015a). *Definition of organic agriculture*.
<http://www.ifoam.bio/en/organic-landmarks/definition-organic-agriculture>

IFOAM (2015b). *Principles of organic agriculture*.
<http://www.ifoam.bio/en/organic-landmarks/principles-organic-agriculture>

INE (2012a). *Censos 2011: resultados definitivos - Portugal. [Census 2011: final results - Portugal]*. Instituto Nacional de Estatística, Lisboa.

INE (2012b). *Inquérito às despesas das famílias 2010/2011 [Household budget survey 2010/2011]*. Instituto Nacional de Estatística, Lisboa.

INTERBIO (2011). *Política nacional para a agricultura biológica [National policy for organic agriculture]*. INTERBIO, Lisboa.

Internet World Stats (2015). *Internet stats and Facebook usage in Europe 2014 mid-year statistics*.
<http://www.internetworldstats.com/stats4.htm#europe>

Jackson, W. (1992). Foreward. In: Soule, J. and Piper, J. (Eds.) *Farming in nature's image: an ecological approach to agriculture*. Island Press, Washington, pp. xi-xiv.

Jackson, W. (2002). Farming in nature's image: natural systems agriculture. In: Kimbrell, A. (Ed.) *The fatal harvest reader: the tragedy of industrial agriculture*. Island Press, Washington, pp. 65-75.

Jager, W. (2006). Simulating consumer behaviour: a perspective. In: Faber, A., Frenken, K. and Idenburg, A.M. (Eds.) *Environmental policy and modeling in evolutionary economics*. Netherlands Environmental Assessment Agency, Groningen, pp. 1-27.

Jager, W., Janssen, M.A., De Vries, H.J.M., De Greef, J. and Vlek, C.A.J. (2000). Behaviour in commons dilemmas: Homo economicus and Homo psychologicus in an ecological-economic model. *Ecological Economics*, 35(3): 357-379.

Jolly, D.A. (1991). Differences between buyers and nonbuyers of organic produce and

willingness to pay organic price premiums. *Journal of Agribusiness*, 9(1): 97-111.

Jubas, K. (2007). Conceptual con/fusion in democratic societies understandings and limitations of consumer-citizenship. *Journal of Consumer Culture*, 7(2): 231-254.

Kaiser, F.G. (2006). A moral extension of the theory of planned behavior: norms and anticipated feelings of regret in conservationism. *Personality and Individual Differences*, 41(1): 71-81.

Kalafatis, S.P., Pollard, M., East, R. and Tsogas, M.H. (1999). Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of Consumer Marketing*, 16(5): 441-460

Kidd, P.S. and Parshall, M.B. (2000). Getting the focus and the group: enhancing analytical rigor in focus group research. *Qualitative Health Research*, 10(3): 293-308.

Kihlberg, I. and Risvik, E. (2007). Consumers of organic foods-value segments and liking of bread. *Food Quality and Preference*, 18(3): 471-481.

Kilcher, L., Huber, B. and Schmid, O. (2006). Standards and regulations In: Willer, H. and Yussefi, M. (Eds.) *The world of organic agriculture: statistics and emerging trends 2006*. IFOAM and FiBL, Bonn and Frick, pp. 74-83.

Kimbrell, A. (2002). Introduction. In: Kimbrell, A. (Ed.). *The fatal harvest reader: the tragedy of industrial agriculture*. Island Press, Washington, pp. xi-xiv.

Kitzinger, J. (1995). Qualitative research: introducing focus groups. *BMJ: British Medical Journal*, 311: 299-302.

Kline, R.B. (2011). *Principles and practice of structural equation modeling*. The Guilford Press, New York.

Klöckner, C.A. and Ohms, S. (2009). The importance of personal norms for purchasing organic milk. *British Food Journal*, 111(11): 1173-1187.

Kortbech-Olesen R. (2003). Market. In: Yuseffi M. and Willer, H. (Eds.) *The world of organic agriculture: statistics and future prospects 2003*. IFOAM, Tholey-Theley, pp. 21-25.

Krystallis, A. and Chryssohoidis, G. (2005). Consumers' willingness to pay for organic food: factors that affect it and variation per organic product type. *British Food Journal*, 107(5): 320-343.

Krystallis, A., Vassallo, M., Chryssohoidis, G. and Perrea, T. (2008). Societal and individualistic drivers as predictors of organic purchasing revealed through a portrait value questionnaire (PVQ)-based inventory. *Journal of Consumer Behaviour*, 7(2): 164-187.

Kristiansen, P. and Merfield, C. (2006). Overview of organic agriculture. In: Kristiansen, P., Taji, A. and Reganold, J. (Eds.) *Organic agriculture: a global perspective*. CSIRO Publishing, Collingwood, pp. 1-23.

Krueger, R.A. (1998a). *Developing questions for focus groups. Focus group kit, Vol. 3*. Sage, Thousand Oaks.

Krueger, R.A. (1998b). *Moderating focus groups. Focus group kit, Vol. 4*. Sage, Thousand Oaks.

Krueger, R.A. (1998c). *Analyzing and reporting focus group results. Focus group kit, Vol. 6*. Sage, Thousand Oaks.

Lea, E. and Worsley, T. (2005). Australians' organic food beliefs, demographics and values. *British Food Journal*, 107(11): 855-869.

Lee, K. (2008). Opportunities for green marketing: young consumers. *Marketing Intelligence and Planning*, 26(6): 573-586.

Lernoud, J. and Willer, H. (2015). Organic agriculture worldwide: current statistics. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn: 31-118.

Lernoud, J., Willer, H. and Schlatter, B. (2015). Latin America and the Caribbean: current statistics. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 233-238.

Liamputtong, P. (2011). *Focus group methodology: principle and practice*. Sage, London.

Liang, A.R.D. and Lim, W.M. (2011). Exploring the online buying behavior of specialty food shoppers. *International Journal of Hospitality Management*, 30(4): 855-865.

Lima, L.F.F. (2013). *Estudo exploratório sobre o perfil do consumidor de alimentos de agricultura biológica [Exploratory study on the consumer of organically farmed food]*. Instituto Politécnico de Viana do Castelo, Ponte de Lima. MSc. Thesis.

Lind, L.W. (2007). Consumer involvement and perceived differentiation of different kinds of pork: a means-end chain analysis. *Food Quality and Preference*, 18(4): 690-700.

Lodorfos, G.N. and Dennis, J. (2008). Consumers' intent: in the organic food market. *Journal of Food Products Marketing*, 14(2): 17-38.

Lohr, S.L. (2008). Coverage and sampling. In: de Leeuw, E.D. Hox, J.J. and Dillman, D.A. (Eds.) *International handbook of survey methodology.* Routledge, New York, pp. 97-112.

Lockeretz, W. (2007). What explains the rise of organic farming? In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 1-8.

Lockie, S., Lyons, K., Lawrence, G. and Grice, J. (2004). Choosing organics: a path analysis of factors underlying the selection of organic food among Australian consumers. *Appetite*, 43(2): 135-146.

Lockie, S., Lyons, K., Lawrence, G. and Mummery, K. (2002). Eating 'green' motivations behind organic food consumption in Australia. *Sociologia Ruralis*, 42(1): 23-40.

Loureiro, M.L., McCluskey, J.J. and Mittelhammer, R.C. (2001). Assessing consumer's preferences for organic, eco-labeled, and regular apples. *Journal of Agricultural and Resource Economics*, 26(2): 404-416.

Lucas, M.R.V., Röhrich, K., Marreiros, C., Fragoso, R., Kabbert, R., Clara, A.M., Martins, I. and Böhm, S. (2008). *Quality, safety and consumer behaviour towards organic food in Germany and Portugal*. CEFAGE-UE, Universidade de Évora, Évora.

Luomala, H.T., Laaksonen, P. and Leipämaa, H. (2004). How do consumers solve value conflicts in food choices? An empirical description and points for theory-building. *Advances in Consumer Research*, 31: 564-570.

Lyons, K. (2001). From sandals to suits: green consumers and the institutionalisation of

organic agriculture. In: Lockie, S. and Pritchard, B. (Eds.) *Consuming foods, sustaining environments*. Australian Academic Press, Brisbane, pp. 82-93.

MacKinnon, D.P., Lockwood, C.M., Hoffman, J.M., West, S.G. and Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7(1): 83-104.

MacKinnon, D.P., Lockwood, C.M. and Williams, J. (2004). Confidence limits for the indirect effect: distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1): 99-128.

MacKinnon, D.P., Warsi, G. and Dwyer, J.H. (1995). A simulation study of mediated effect measures. *Multivariate Behavioral Research*, 30(1): 41-62.

Makatouni, A. (2002). What motivates consumers to buy organic food in the UK? Results from a qualitative study. *British Food Journal*, 104(3/4/5): 345-352.

Manstead, A.S.R. (2000). The role of moral norm in the attitude-behavior relation. In: Terry, D.J. and Hogg, M.A. (Eds.) *Attitudes, behavior, and social context: the role of norms and group membership*. Erlbaum, Mahwah, pp. 11-30.

Magnusson, M.K., Arvola, A., Koivisto Hursti, U., Aberg, L. and Sjödén, P.O. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103(3): 209-227.

Magnusson, M.K., Arvola, A., Koivisto Hursti, U., Aberg, L. and Sjödén, P.O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behaviour. *Appetite*, 40(2): 109-117.

Marôco, J. (2014). *Análise de equações estruturais: fundamentos teóricos, software & aplicações [Structural equation analysis: theoretical foundations, software & applications]*. Report Number, Pêro Pinheiro.

Marreiros, C., Lucas , M.R. and Rohrich, K. (2010). *Explaining organic food choice on the basis of socio-demographics: a study in Portugal and Germany*. CEFAGE-UE, Universidade de Évora, Évora.

McCarthy, B. and Murphy, L. (2013). Who's buying organic food and why? Political consumerism, demographic characteristics and motivations of consumers in North Queensland. *Tourism & Management Studies*, 9(1): 72-79.

McEachan, R.R.C., Conner, M., Taylor, N.J. and Lawton, R.J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: a meta-analysis. *Health Psychology Review*, 5(2): 97-144.

McEachern, M.G. and McClean, P. (2002). Organic purchasing motivations and attitudes: are they ethical? *International Journal of Consumer Studies*, 26(2): 85-92.

McEachern, M.G. and Schröder, M.J. (2002). The role of livestock production ethics in consumer values towards meat. *Journal of Agricultural and Environmental Ethics*, 15(2): 221-237.

McEachern, M.G. and Willock, J. (2004). Producers and consumers of organic meat: a focus on attitudes and motivations. *British Food Journal*, 106(7): 534-552.

Menozzi, D. and Mora, C. (2012). Fruit consumption determinants among young adults in Italy: A case study. *LWT-Food Science and Technology*, 49(2): 298-304.

Michaelidou, N. and Hassan, L.M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies*, 32(2): 163-170.

Michelsen, J., Lynggard, K., Padel, S. and Foster, C. (2001). *Organic farming development and agricultural institutions in Europe: a study of six countries*. University of Hohenheim, Hohenheim.

Midmore, P., Naspetti, S., Sherwood, A.M., Vairo, D., Wier, M. and Zanoli, R. (2005). *Consumer attitudes to quality and safety of organic and low input foods; a review.* University of Wales, Aberystwyth.

Mondelaers, K., Verbeke, W. and Van Huylenbroeck, G. (2009). Importance of health and environment as quality traits in the buying decision of organic products. *British Food Journal*, 111(10): 1121-1140.

Morgan, D.L. (1996). Focus groups. *Annual Review of Sociology*, 22: 129-152.

Morgan, D.L. (1997a). *The focus group guidebook*. *Focus group kit, Vol. 1*. Sage, Thousand Oaks.

Morgan, D.L. (1997b). *Planning focus groups*. *Focus group kit, Vol. 2*. Sage, Thousand Oaks.

Morgan D.L. and Kreuger R.A. (1993). When to use focus groups and why. In: Morgan D.L. (Ed.) *Successful focus groups: advancing the state of the art*. Sage, London, pp. 3-19.

Naspetti S., Bracchi L. and Zanoli R. (2008). *Consumption of organic foods from a life history perspective: an explorative study among Italian consumers*. Polytechnic University of Marche, Ancona.

Nelson, P. (1970). Information and consumer behavior. *Journal of Political Economy*, 78(2): 311-329.

Ness, M.R., Ness, M., Brennan, M., Oughton, E., Ritson, C. and Ruto, E. (2010). Modelling consumer behavioural intentions towards food with implications for marketing quality low-input and organic food. *Food Quality and Preference*, 21(1): 100-111.

Niggli, U. (2007). The evolution of organic practice. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 73-92.

Niva, M., Mäkelä, J. and Kujala, J. (2004). *Trust weakens as distance grows: Finnish results of the OMIaRD consumer focus group study on organic foods*. National Consumer Research Centre, Helsinki.

Nunnaly, J.C. (1978). *Psychometric theory*. McGraw-Hill, New York.

O'Fallon, M.J., Gursoy, D. and Swanger, N. (2007). To buy or not to buy: impact of labeling on purchasing intentions of genetically modified foods. *International Journal of Hospitality Management*, 26(1): 117-130.

Olsen, N.V., Sijtsema, S.J. and Hall, G. (2010). Predicting consumers' intention to consume ready-to-eat meals: the role of moral attitude. *Appetite*, 55(3): 534-539.

Onyango, B.M., Hallman, W.K. and Bellows, A.C. (2007). Purchasing organic food in US food systems: a study of attitudes and practice. *British Food Journal*, 109(4/5): 399-411.

Othman, C. and Rahman, M.S. (2014). Investigation of the relationship of brand

personality, subjective norm and perceived control on consumers' purchase intention of organic fast food. *Modern Applied Science*, 8(3): 92-106.

Ozcaglar-Toulouse, N., Shiu, E. and Shaw, D. (2006). In search of fair trade: ethical consumer decision making in France. *International Journal of Consumer Studies*, 30(5): 502-514.

Padel, S. (2008). Values of organic producers converting at different times: results of a focus group study in five European countries. *International Journal of Agricultural Resources, Governance and Ecology*, 7(1/2): 63-77.

Padel, S. and Foster, C. (2005). Exploring the gap between attitudes and behaviour: understanding why consumers buy or do not buy organic food. *British Food Journal*, 107(8): 606-625.

Padel, S. and Lampkin, N. (2007). The development of governmental support for organic farming in Europe. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 93-122.

Padel, S., Roecklingsberg, H., Verhoog, H., Alroe, H., De Wit, J., Kjeldsen, C. and Schmid, O. (2007). *Balancing and integrating basic values in the development of organic regulations and standards: proposal for a procedure using case studies of conflicting areas*. University of Wales, Aberystwyth.

Padel, S., Zander, K. and Gössinger, K. (2010). 'Regional production' and 'Fairness' in organic farming: evidence from a CORE Organic project. In: *WS4.3 – Fair and regional: new trends of organic and sustainable food systems. 9th European IFSA Symposium, Austria, Vienna, July 4-7, 2010*.
<http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2010/2010_WS4.3_Padel.pdf>

Padgett, B.C., Kim, H., Goh, B.K. and Huffman, L. (2013). The usefulness of the theory of planned behavior: understanding US fast food consumption of generation Y Chinese consumers. *Journal of Foodservice Business Research*, 16(5): 486-505.

Paull, J. (2006). The farm as organism: the foundational idea of organic agriculture. *Journal of Bio-Dynamics Tasmania*, 80: 14-18.

Paull, J. (2011). Attending the first organic agriculture course: Rudolf Steiner's agriculture course at Koberwitz, 1924. *European Journal of Social Sciences*, 21(1): 64-70.

Pearson, D., Henryks, J. and Jones, H. (2011). Organic food: what we know (and do not know) about consumers. *Renewable Agriculture and Food Systems*, 26(2): 171-177.

Peter, J.P., Olson, J.C. and Grunert, K.G. (1999). *Consumer behaviour and marketing strategy: European edition*. McGraw-Hill, London.

Pino, G., Peluso, A.M. and Guido, G. (2012). Determinants of regular and occasional consumers' intentions to buy organic food. *Journal of Consumer Affairs*, 46(1): 157-169.

Pomsanam, P., Napompech, K. and Suwanmaneepong, S. (2014). Factors driving Thai consumers' intention to purchase organic foods. *Asian Journal of Scientific Research*, 7(4): 434-446.

Pouta, E. and Rekola, M. (2001). The theory of planned behavior in predicting willingness to pay for abatement of forest regeneration. *Society & Natural Resources*, 14(2): 93-106.

Prati, G., Pietrantoni, L. and Zani, B. (2012). The prediction of intention to consume genetically modified food: test of an integrated psychosocial model. *Food Quality and Preference*, 25(2): 163-170.

Raats, M.M., Shepherd, R. and Sparks, P. (1995). Including moral dimensions of choice within the structure of the theory of planned behavior. *Journal of Applied Social Psychology*, 25(6): 484-494.

Rainbolt, G.N., Onozaka, Y. and McFadden, D.T. (2012). Consumer motivations and buying behavior: the case of the local food system movement. *Journal of Food Products Marketing*, 18(5): 385-396.

Rettie, R., Barnham, C. and Burchell, K. (2011). *Social normalisation and consumer behaviour: using marketing to make green normal*. Kingston Business School, Kingston University, Kingston Hill.

Riefer, A. and Hamm, U. (2008). Changes in families' organic food consumption. In: *12th Congress of the European Association of Agricultural Economists - EAAE, 2008*. <http://core.ac.uk/download/files/153/6449407.pdf>

Riley, L. and Hovorka, A. (2015). Gendering urban food strategies across multiple scales. In: de Zeeuw, H. and Drechsel, P. (Eds.). *Cities and agriculture: developing resilient urban food systems*. Routledge, London, pp. 336-357.

Rivis, A. and Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: a meta-analysis. *Current Psychology*, 22(3): 218-233.

Robinson, R. and Smith, C. (2002). Psychosocial and demographic variables associated with consumer intention to purchase sustainably produced foods as defined by the Midwest Food Alliance. *Journal of Nutrition Education and Behavior*, 34(6): 316-325.

Roddy, G., Cowan, C.A. and Hutchinson, G. (1996). Consumer attitudes and behaviour to organic foods in Ireland. *Journal of International Consumer Marketing*, 9(2): 41-63.

Rosa, R., Samir, M. and Briz, J. (2009). Consumer and supply chain dynamics in the Portuguese organic milk market. In: *3rd International European Forum on System Dynamics and Innovation in Food Networks, Austria, Innsbruck-Igls, February 15-20, 2009.* <http://ageconsearch.umn.edu/bitstream/59208/2/Mili.pdf>

Ruiz de Maya, S., López-López, I. and Munuera, J.L. (2011). Organic food consumption in Europe: international segmentation based on value system differences. *Ecological Economics*, 70(10): 1767-1775.

Saba, A. and Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Quality and Preference*, 14(8): 637-645.

Sahota, A. (2015). The global market for organic food & drink. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 119-123.

Saleki, Z.S., Seyedsaleki, S.M. and Rahimi, M.R. (2012). Organic food purchasing behavior in Iran. *International Journal of Business and Social Science*, 3(13): 278-285.

Schaack, D., Lernoud, J., Padel, S. and Willer, H. (2012). The organic market in Europe. In: Willer, H. and Kilcher, L. (Eds.) *The world of organic agriculture: statistics and emerging trends 2012*. FiBL and IFOAM, Frick and Bonn, pp. 206-211.

Schifferstein, H.N.J. and Ophuis, P.A.M.O. (1998). Health-related determinants of organic food consumption in The Netherlands. *Food Quality and Preference*, 9(3): 119-133.

Schmid, O. (2007). Development of standards for organic farming. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 152-174.

Schmid, O., Beck, A. and Kretzschmar, U. (2004). *Underlying principles in organic and "low-input food" processing: literature survey*. FiBL, Frick.

Schumacker, R.E. and Lomax, R.G. (2010). *A beginner's guide to structural equation modeling*. Routledge, New York.

Schwartz, S.H. (1977). Normative influences on altruism. In: Berkowitz, L. (Ed.) *Advances in experimental social psychology*. Academic Press, New York.

Schwartz, S.H. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, 25(1): 1-65.

Schwartz, S.H. and Howard, J.A. (1984). Internalized values as motivators of altruism. In: Staub, E., Bar-Tal, D., Karylowski, J. and Reykowski J. (Eds.) *The development and maintenance of prosocial behavior: international perspectives on positive development*. Plenum Publications, New York, pp. 229-255.

Scialabba, N. (2015). *Training manual for organic agriculture*. FAO, Rome.

Scialabba, N.E. and Hattam, C. (2002). *Organic agriculture, environment and food security*. FAO, Rome.

Seyfang, G. (2003). *From Frankenstein foods to veggie box schemes: sustainable consumption in cultural perspective*. CSERGE, University of East Anglia, Norwich.

Shafie, F.A. and Rennie, D. (2012). Consumer perceptions towards organic food. *Procedia-Social and Behavioral Sciences*, 49: 360-367.

Shaw, D. and Shiu, E. (2002). An assessment of ethical obligation and self-identity in ethical consumer decision-making: a structural equation modelling approach. *International Journal of Consumer Studies*, 26(4): 286-293.

Shepherd, R. (1999). Social determinants of food choice. *Proceedings of the Nutrition Society*, 58(4): 807-812.

Shepherd, R., Sparks, P. and Guthrie, C.A. (1995). The application of the theory of planned behaviour to consumer food choice. *European Advances in Consumer Research*, 2: 360-365.

Sideridis, G.D., Kaissidis, A. and Padeliadu, S. (1998). Comparison of the theories of reasoned action and planned behavior. *British Journal of Educational Psychology*, 68(4): 563-580.

Sligh, M. and Cierpka, T. (2007). Organic values. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 30-39.

Small, M.L. (2011). How to conduct a mixed methods study: recent trends in a rapidly growing literature. *Annual Review of Sociology*, 37(1): 57-86.

Smith, S.M. and Albaum, G.S. (2005). *Fundamentals of marketing research*. Sage, London.

Smith, S. and Paladino, A. (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Marketing Journal*, 18(2): 93-104.

Smith-Spangler, C., Brandeau, M.L., Hunter, G.E., Bavinger, J.C., Pearson, M., Eschbach, P. J., Sundaram, V., Liu, H., Schirmer, P., Stave, C. and Olkin, I. (2012). Are organic foods safer or healthier than conventional alternatives? A systematic review. *Annals of Internal Medicine*, 157(5): 348-366.

Soil Association (2001). *A share in the harvest: a feasibility study for community supported agriculture*. Soil Association, Bristol.

Soper, K. (2004). Rethinking the "good life": the consumer as citizen. *Capitalism Nature Socialism*, 15(3): 111-116.

Soule, J. and Piper, J. (1992). *Farming in nature's image: an ecological approach to agriculture*. Island Press, Washington.

Sparks, P. and Shepherd, R. (1992). Self-identity and the theory of planned behavior: assesing the role of identification with "green consumerism". *Social Psychology Quarterly*, 55(4): 388-399.

Sparks, P. and Shepherd, R. (2002). The role of moral judgments within expectancy-value-based attitude-behavior models. *Ethics & Behavior*, 12(4): 299-321.

Squires, L., Juric, B. and Cornwell, B.T. (2001). Level of market development and intensity of organic food consumption: cross-cultural study of Danish and New Zealand consumers. *Journal of Consumer Marketing*, 18(5): 392-409.

Staats, H. (2003). Understanding pro-environmental attitudes and behavior: an analysis and review of research based on the theory of planned behavior. In: Bonnes, M., Lee, T. and Bonaiuto, M. (Eds.) *Psychological theories for environmental issues*. Ashgate, Aldershot, pp. 171-201.

Steg, L. and Vlek, C. (2009). Encouraging pro-environmental behaviour: an integrative review and research agenda. *Journal of Environmental Psychology*, 29(3): 309-317.

Stinner, D.H. (2007). The science of organic farming. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 40-72.

Stobbelaar, D.J., Casimir, G., Borghuis, J., Marks, I., Meijer, L. and Zebeda, S. (2007). Adolescents' attitudes towards organic food: a survey of 15- to 16-year old school children. *International Journal of Consumer Studies*, 31(4): 349-356.

Stolz, H., Jahrl, I., Baumgart, L. and Schneider, F. (2010). *Sensory experiences and expectations of organic food: results of focus group discussions.* FiBL, Frick.

Stolze, M. and Lampkin, N. (2009). Policy for organic farming: rationale and concepts. *Food Policy*, 34(3): 237-244.

Stryker, S. (1980). *Symbolic interactionism: a social structural version*. Benjamin-Cummings Publishing Company, Palo Alto.

Sue, V.M. and Ritter, L.A. (2007). *Conducting online surveys*. Sage, Thousand Oaks.

Tarkiainen, A. and Sundqvist, S. (2005). Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *British Food Journal*, 107(11): 808-822.

Terry, D.J. and Hogg, M.A. (1996). Group norms and the attitude-behavior relationship: a role for group identification. *Personality and Social Psychology Bulletin*, 22(8): 776-793.

Thøgersen, J. (1996). Recycling and morality: a critical review of the literature. *Environment and Behavior*, 28(4): 536-558.

Thøgersen, J. (1999). The ethical consumer: moral norms and packaging choice. *Journal of Consumer Policy*, 22(4): 439-460.

Thøgersen, J. (2002). Direct experience and the strength of the personal norm-behavior relationship. *Psychology & Marketing*, 19(10): 881-893.

Thøgersen, J. (2009a). Consumer decision making with regard to organic food products. In: Vaz, T.N., Nijkamp, P. and Rastoin, J.L. (Eds.) *Traditional food production facing sustainability: a European challenge*. Ashgate, Farnham, pp. 173-192.

Thøgersen, J. (2009b). The motivational roots of norms for environmentally responsible behavior. *Basic and Applied Social Psychology*, 31(4): 348-362.

Thøgersen, J. and Ölander, F. (2006). The dynamic interaction of personal norms and environment-friendly buying behavior: a panel study. *Journal of Applied Social Psychology*, 36(7): 1758-1780.

Thøgersen, J. and Zhou, Y. (2012). Chinese consumers' adoption of a 'green' innovation: the case of organic food. *Journal of Marketing Management*, 28(3/4): 313-333.

Torjusen, H., Lieblein, G. and Vittersø, G. (2008). Learning, communicating and eating in local food-systems: the case of organic box schemes in Denmark and Norway. *Local Environment*, 13(3): 219-234.

Torjusen, H., Lieblein, G., Wandel, M. and Francis, C.A. (2001). Food system orientation and quality perception among consumers and producers of organic food in Hedmark County, Norway. *Food Quality and Preference*, 12(3): 207-216.

Torjusen, H., Sangstad, L., O'Doherty Jensen, K. and Kjaernes, U. (2004). *European consumers' conceptions of organic food: a review of available research*. National Institute for Consumer Research, Oslo.

Tranter, R.B., Bennett, R.M., Costa, L., Cowan, C., Holt, G.C., Jones, P.J., Miele, M., Sottomayor, M. and Vestergaard, J. (2009). Consumers' willingness-to-pay for organic conversion-grade food: evidence from five EU countries. *Food Policy*, 34(3): 287-294.

Tregear, A., Dent, J.B. and McGregor, M.J. (1994). The demand for organically grown produce. *British Food Journal*, 96(4): 21-25.

Truninger, M. (2010). *O campo vem à cidade: agricultura biológica, mercado e consumo sustentável [The countryside comes to the city: organic agriculture, market and sustainable consumption]*. Imprensa de Ciências Sociais, Lisboa.

Tsakiridou, E., Konstantinos, M. and Tzimitra-Kalogianni, I. (2006). The influence of consumer characteristics and attitudes on the demand for organic olive oil. *Journal of International Food & Agribusiness Marketing*, 18(3/4): 23-31.

Tyldum, G. (2012). Ethics or access? Balancing informed consent against the application of institutional, economic or emotional pressures in recruiting respondents for research.

International Journal of Social Research Methodology, 15(3): 199-210.

Urban, J., Zvěřinová, I. and Ščasný, M. (2012). What motivates Czech consumers to buy organic food? *Sociologický Časopis/Czech Sociological Review*, 48(3): 509-536.

Vega-Zamora, M., Parras-Rosa, M., Murgado-Armenteros, E.M. and Torres-Ruiz, F.J. (2013). The Influence of the term 'organic' on organic food purchasing behavior. *Procedia-Social and Behavioral Sciences*, 81: 660-671.

Verhoef, P.C. (2005). Explaining purchases of organic meat by Dutch consumers. *European Review of Agricultural Economics*, 32(2): 245-267.

Vermeir, I. and Verbeke, W. (2006). Sustainable food consumption: exploring the consumer 'attitude-behavioural intention' gap. *Journal of Agricultural and Environmental Ethics*, 19(2): 169-194.

Vogt, G. (2007). The origins of organic farming. In: Lockeretz, W. (Ed.) *Organic farming: an international history*. CABI, Oxfordshire, pp. 9-29.

Voon, J.P., Ngui, K.S. and Agrawal, A. (2011). Determinants of willingness to purchase organic food: an exploratory study using structural equation modeling. *International Food and Agribusiness Management Review*, 14(2): 103-120.

Warner, R.M. (2013). *Applied statistics: from bivariate through multivariate techniques*. Sage, Thousand Oaks.

Wier, M., Andersen, L.M., Millock, K., O'Doherty Jensen, K. and Rosenkvist, L. (2005). Perceptions, values and behaviour: the case of organic foods. *Agriculture and Human Values [Unpublished]*.
<http://orgprints.org/5004/1/5004.pdf>

Wier, M., O'Doherty Jensen, K., Andersen, L.M. and Millock, K. (2008). The character of demand in mature organic food markets: Great Britain and Denmark compared. *Food Policy*, 33(5): 406-421.

Willer, H. and Lernoud, J. (2015). The world of organic agriculture 2015: summary. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 24-30.

Willer, H. and Schaack, D. (2015). Organic farming and market development in Europe. In: Willer, H. and Lernoud, J. (Eds.) *The world of organic agriculture: statistics and emerging trends 2015*. FiBL and IFOAM, Frick and Bonn, pp. 181-208.

Williams, P.R.D. and Hammit, J.K. (2001). Perceived risks of conventional and organic produce: pesticides, pathogens, and natural toxins. *Risk Analysis*, 21(2): 319-330.

Wright, K.B. (2005). Researching Internet-based populations: advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication*, 10(3), article 11.

Yin, S., Wu, L., Du, L. and Chen, M. (2010). Consumers' purchase intention of organic food in China. *Journal of the Science of Food and Agriculture*, 90(8): 1361-1367.

Yue, C., Grebitus, C., Bruhn, M. and Jensen, H.H. (2008). Potato marketing: factors affecting organic and conventional potato consumption patterns. In: *12th Congress of the European Association of Agricultural Economists - EAAE, 2008*.
< http://ageconsearch.umn.edu/bitstream/43948/2/149.pdf >

Yussef, G. (2006). Organic farming worldwide 2006: overview & main statistics. In: Willer, H. and Yussefi, M. (Eds.) *The world of organic agriculture: statistics and emerging trends 2006*. IFOAM and FiBL, Bonn and Frick, pp. 23-37.

Zagata, L. (2012). Consumers' beliefs and behavioural intentions towards organic food: evidence from the Czech Republic. *Appetite*, *59*(1): 81-89.

Zanoli, R. and Naspetti, S. (2002). Consumer motivations in the purchase of organic food: a means-end approach. *British Food Journal*, *104*(8): 643-653.

APPENDIXES

APPENDIX A - SURVEY QUESTIONNAIRE

INTRODUCTORY NOTE

Thank you very much for your participation!

You are taking part in a national survey on organic food as part of an investigation carried out in the framework of the PhD in Agricultural Ecology at the University of Milan in Italy.

You do not have to be an expert to fill this questionnaire because there are no right or wrong answers, but please make sure responses reflect your own opinions.

Your participation is entirely voluntary and there are no foreseeable risks associated with this study. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point.

The information provided will be kept strictly confidential and will be reported only in the aggregate, ensuring anonymity.

Still, if you have any questions or concerns about this survey, do not hesitate to ask by sending an e-mail to alimentosbio@gmail.com.

I PART

1.1.1 Are you of the age of majority?

○ Yes ○ No

1.1.2 Do you reside in Portugal?

○ Yes ○ No

1.1.3 Are you the primarily responsible for purchasing food for your household?

○ Yes ○ Yes, with another person ○ No, it's another person

1.2 Have you heard about certified products from organic farming?

○ Yes ○ No

II PART

2.1 Please indicate how you view purchasing certified organic food for your household, using the following scales.

○	○	○	○	○	○	○
Very unpleasant	Quite unpleasant	Slightly unpleasant	Neither unpleasant nor pleasant	Slightly pleasant	Quite pleasant	Very pleasant
○	○	○	○	○	○	○
Very harmful	Quite harmful	Slightly harmful	Neither harmful nor beneficial	Slightly beneficial	Quite beneficial	Very beneficial
○	○	○	○	○	○	○
Very negative	Quite negative	Slightly negative	Neither negative nor positive	Slightly positive	Quite positive	Very positive

2.2 Please indicate to which extent do you agree or disagree with each of the following statements.

Most people who are important to me purchase certified organic food for their household.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

My doctor or nutritionist thinks I should purchase certified organic food for my household.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

Most of my close relatives would approve my choice to purchase certified organic food for my household.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

Most of my friends would approve my choice to purchase certified organic food for my household.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

The approval of my household members is important to me when purchasing certified organic food for the household.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

2.3.1 If you wanted to purchase certified organic food for your household, how difficult or easy would you find it?

○	○	○	○	○	○	○
Very difficult	Quite difficult	Slightly difficult	Neither difficult nor easy	Slightly easy	Quite easy	Very easy

2.3.2 How much control do you believe you have over whether or not you purchase certified organic food for your household?

○	○	○	○	○	○	○
No control	Very little control	Little control	Neither little nor great control	Great control	Very great control	Complete control

2.3.3 To which extent do you agree or disagree that you can purchase certified organic food for your household whenever you want or need it?

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

2.4 Please indicate to which extent do you agree or disagree with each of the following statements.

I feel I should purchase certified organic food for my household instead of conventional one.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

I would feel guilty if I purchased conventional food for my household instead of certified organic one.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

Purchasing certified organic food for my household instead of conventional one would feel like the morally right thing.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

Purchasing certified organic food for my household instead of conventional one would make me feel like a better person.

○	○	○	○	○	○	○
Completely disagree	Quite disagree	Slightly disagree	Neither disagree nor agree	Slightly agree	Quite agree	Completely agree

2.5.1 Please indicate how willing or unwilling are you to pay more for certified organic food products for your household.

○	○	○	○	○	○	○
Very unwilling	Quite unwilling	Slightly unwilling	Neither unwilling nor willing	Slightly willing	Quite willing	Very willing

2.5.2 Please indicate how likely or unlikely are you to purchase certified organic food for your household next month.

○	○	○	○	○	○	○
Very unlikely	Quite unlikely	Slightly unlikely	Neither unlikely nor likely	Slightly likely	Quite likely	Very likely

2.6.1 In the past year, how often did you purchase certified organic food products for your household?

○	○	○	○
Never	Less than once a month	At least once a month	At least once a week

2.6.2 In the past year, how much was the average weekly expenditure on certified organic food for your household? *Please enter a whole number up to 3 digits in the box.*

III PART

3.1 Gender

○	○
Female	Male

3.2 Age

3.3 Nationality

○	○
Portuguese	Other nationality

3.4 Marital status

Single
Married
Non-marital partner
Cohabitation
Separated
Divorced
Widowed

3.5 Highest education level

None
Primary
Lower secondary (2nd cycle)
Lower secondary (3rd cycle)
Upper secondary
Post-secondary
Tertiary (BSc. - 3 years)
Tertiary (BSc. - 5 years)
Tertiary (MSc.)
Tertiary (PhD.)

3.6 Region of residence

Aveiro
Beja
Braga
Bragança
Castelo Branco
Coimbra
Évora
Faro
Guarda
Leiria
Lisboa
Portalegre
Porto
Santarém
Setúbal
Viana do Castelo
Vila Real
Viseu
Açores
Madeira

3.7 How would you describe the area in which you live?

○ Urban ○ Rural

3.8 Employment situation

○ Employed ○ Unemployed ○ Retired ○ Homemaker ○ Student

3.9 Professional occupation

Chief executives, senior officials and legislators
Managers
Science and engineering professionals
Health professionals
Teaching professionals
Business and administration professionals
Information technology professionals
Legal, social, artistic and cultural professionals
Science and engineering technicians
Health associate professionals
Business and administration associate professionals
Legal, social, cultural and related associate professionals
Information and communications technicians
Clerical workers
Services and personal care workers
Protective services workers
Sales workers
Skilled agricultural, forestry and fishery workers
Building, processing, craft and related trades workers
Plant and machine operators and assemblers
Elementary occupations
Armed forces occupations
Other

3.10 How many people currently live in your household?

○	○	○	○	○	○	○
1	2	3	4	5	6	> 6

3.11 How many children (under 15 years old) live in your household?

○	○	○	○
0	1	2	> 2

3.12 How many adults aged 65 years and over live in your household?

○	○	○	○
0	1	2	> 2

3.13 How much is the average monthly net-income of your household?
You are not obliged to answer to this question.

○	○	○	○
< 1000	1000-1999	2000-2999	≥ 3000

CONTACT INFORMATION

You are completely free to not provide your contact information. If you do so, be assured that your personal contacts will be kept in a different database and used only to reach you regarding feedback about the drawing and/or this survey being later deleted. At any moment, them will be associated with your responses to the questionnaire or passed to others.

☐ Check this box if you wish to participate in the drawing

☐ Check this box if you wish to receive information on the survey

If you checked any box, please enter your e-mail address:

If you wish to make a comment please use the space provided below

APPENDIX B - FORMULAS FOR COMPOSITE RELIABILITY AND AVERAGE VARIANCE EXTRACTED

Composite reliability (Fornell and Larcker, 1981):

$CR = (\Sigma\lambda_i)^2 / [(\Sigma\lambda_i)^2 + \Sigma\varepsilon_i]$

λ– indicator standardized factor loading

ε - indicator error term

Average variance extracted (Fornell and Larcker, 1981):

$AVE = \Sigma\lambda_i^2 / (\Sigma\lambda_i^2 + \Sigma\varepsilon_i)$

λ– indicator standardized factor loading

ε - indicator measurement error

APPENDIX C - PERCENTAGE DISTRIBUTION TABLES OF DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTHERISTICS OF THE ANALYSED SAMPLE AND THE NATIONAL POPULATION

Socio-demographic variables	Sample (N=704)	Adult Population (N=8 657 240)
Gender		
Female	71.2	53.0
Male	28.8	47.0
Age (years)		
18-24	5.5	9.4
25-34	22.6	16.5
35-44	35.1	18.4
45-54	23.0	17.2
55-64	10.5	15.2
> 65	3.3	23.2
Highest education level		
None	0.1	10.7
Primary	0.3	28.0
Lower secondary (2nd cycle)	1.3	12.2
Lower secondary (3rd cycle)	2.3	17.4
Upper secondary	17.9	16.8
Post-secondary	7.5	0.7
Tertiary (Bsc. - 3 years)	6.8	1.6
Tertiary (Bsc. - 5 years)	44.5	10.9
Tertiary (Msc.)	16.2	1.4
Tertiary (PhD.)	3.1	0.3
Marital status		
Single	26.3	21.6
Married	41.9	56.6
Non-marital partner	11.2	8.4
Cohabitation	8.7	-
Separated	1.6	-
Divorced	9.2	4.8
Widowed	1.1	8.5

Source of national data: Censos 2011 (INE, 2012a).

Employment situation	Sample (N=704)	Population ≥ 15 years[a] (N=8 442 683)	Population ≥ 20 years[a] (N=7 913 662)
Employed	65.1	51.7	54.6
Unemployed	17.8	7.8	7.9
Retired	7.4	27.7	29.5
Homemaker	3.6	5.0	5.3
Student	6.3	7.8	2.7

([a]) Economically active and inactive population excluding persons who are permanently unable to work or do not fall in any of the inactive categories mentioned. Source of national data: Censos 2011 (INE, 2012a).

Household size and composition	Sample (N=704)	Private households
Size		
1	11.6	21.4
2	28.7	31.6
3	28.4	23.9
4	22.7	16.6
5	6.0	4.5
6	2.0	1.4
> 6	0.6	0.6
With children (< 15 years)		
0	65.6	72.4
1	19.6	18.0
2	12.8	8.2
> 2	2.0	1.4
With elderly persons (≥ 65 years)		
0	85.2	66.0
1	9.9	20.7
2	4.5	12.9
> 2	0.2	0.4

Source of national data: Censos 2011 (INE, 2012a).

Professional occupation	Sample (N=458)	Economically active population ≥ 15 years (N=4 361 187)
Chief executives, senior officials and legislators	0.4	0.1
Managers	7.4	7.3
Science and engineering professionals	10.7	2.2
Health professionals	5.5	2.7
Teaching professionals	17.2	5.8
Business and administration professionals	3.5	1.1
Information technology professionals	2.6	0.8
Legal, social, artistic and cultural professionals	6.1	2.4
Science and engineering technicians	7.2	2.1
Health associate professionals	2.6	1.1
Business and administration associate professionals	3.3	5.9
Legal, social, cultural and related associate professionals	2.6	0.9
Information and communications technicians	1.5	1.0
Clerical workers	11.8	9.0
Services and personal care workers	2.0	6.9
Protective services workers	0.2	2.5
Sales workers	3.7	10.5
Skilled agricultural, forestry and fishery workers	7.9	2.3
Building, processing, craft and related trades workers	1.1	15.7
Plant and machine operators and assemblers	0.7	6.1
Elementary occupations	0.4	12.9
Armed forces occupations	0.4	0.7
Unspecified occupation	1.1	-

Source of national data: Censos 2011 (INE, 2012a).

Nationality	Sample (N=704)	Population ≥ 15 years[a] (N=8 788 176)	Population ≥ 20 years[a] (N=8 239 979)
Portuguese	98.2	96.4	96.5
Foreign	1.8	3.6	3.5

([a]) Excluding dual nationality and stateless persons. Source of national data: Censos 2011 (INE, 2012a).

Region of residence	Sample (N=704)	Total population (N=10 562 178)
Aveiro	10.8	6.8
Beja	1.3	1.4
Braga	4.4	8.0
Bragança	0.6	1.3
Castelo Branco	1.7	1.8
Coimbra	6.1	4.1
Évora	2.0	1.6
Faro	4.5	4.3
Guarda	1.6	1.5
Leiria	5.1	4.5
Lisboa	27.7	21.3
Portalegre	0.9	1.1
Porto	9.5	17.2
Santarém	4.3	4.3
Setúbal	8.2	8.1
Viana do Castelo	1.6	2.3
Vila Real	1.3	2.0
Viseu	2.4	3.6
Açores	3.4	2.3
Madeira	2.7	2.5

Source of national data: Censos 2011 (INE, 2012a).

Urbanisation degree of place of residence	Sample (N=704)	Urbanisation degree of place of residence[a]	Private households (2009) (N=4 044 100)
Urban	68.9	Densely populated areas	69.8
Rural	31.1	Intermediate populated areas	16.7
		Thinly populated areas	13.5

([a]) The population living in densely populated areas corresponds to the urban population. Source of national data: Inquérito às despesas das famílias (Household budget survey) 2010/2011 (INE, 2012b).

Household net income (€ per month)	Sample (N=540)	Household total net income (€ per month)[a]	Private households (2009) (N=4 044 100)
< 1000	33.9	≤ 1050	27.5
1000-1999	42.0	1051-2100	40.7
2000-2999	15.9	2101-3150	17.6
≥ 3000	8.1	> 3150	14.1

([a]) Household total net income covers the net income and non-monetary income received by the household. Source of national data: Inquérito às despesas das famílias (Household budget survey) 2010/2011 (INE, 2012b).

APPENDIX D - FREQUENCY AND PERCENTAGE DISTRIBUTION TABLES OF OBSERVED VARIABLES AND THE AVERAGE SCORE FOR EACH LATENT VARIABLE

Attitude towards organic food purchasing (N=704)

Item	Scale	Frequency	%
Purchasing organic food is... [unpleasant/pleasant] (*att1*)	1 - very unpleasant	8	1.1
	2 - quite unpleasant	5	0.7
	3 - slightly unpleasant	4	0.6
	4 - neither unpleasant nor pleasant	141	20.0
	5 - slightly pleasant	92	13.1
	6 - quite pleasant	241	34.2
	7 - very pleasant	213	30.3
Purchasing organic food is... [harmful/beneficial] (*att2*)	1 - very harmful	0	0.0
	2 - quite harmful	6	0.9
	3 - slightly harmful	5	0.7
	4 - neither harmful nor beneficial	82	11.6
	5 - slightly beneficial	84	11.9
	6 - quite beneficial	246	34.9
	7 - very beneficial	281	39.9
Purchasing organic food is... [negative/positive] (*att3*)	1 - very negative	0	0.0
	2 - quite negative	3	0.4
	3 - slightly negative	7	1.0
	4 - neither negative nor positive	82	11.6
	5 - slightly positive	85	12.1
	6 - quite positive	246	34.9
	7 - very positive	281	39.9
Overall mean [(*att1*+*att2*+*att3*)/3]	1	0	0.0
	2	0	0.0
	3	7	1.0
	4	72	10.2
	5	97	13.8
	6	240	34.1
	7	288	40.9

Subjective norms with regard to organic food purchasing (N=704)

Item	Scale	Frequency	%
Most people who are important to me purchase organic food (*sn1*)	1 - completely disagree	124	17.6
	2 - quite disagree	145	20.6
	3 - slightly disagree	82	11.6
	4 - neither disagree nor agree	237	33.7
	5 - slightly agree	78	11.1
	6 - quite agree	29	4.1
	7 - completely agree	9	1.3
My doctor or nutritionist thinks I should purchase organic foof (*sn2*)	1 - completely disagree	72	10.2
	2 - quite disagree	35	5.0
	3 - slightly disagree	21	3.0
	4 - neither disagree nor agree	471	66.9
	5 - slightly agree	36	5.1
	6 - quite agree	42	6.0
	7 - completely agree	27	3.8
Most of my close relatives would approve my choice to purchase organic food (*sn3*)	1 - completely disagree	39	5.5
	2 - quite disagree	39	5.5
	3 - slightly disagree	39	5.5
	4 - neither disagree nor agree	298	42.3
	5 - slightly agree	109	15.5
	6 - quite agree	104	14.8
	7 - completely agree	76	10.8
Most of my friends would approve my choice to purchase organic food (*sn4*)	1 - completely disagree	32	4.5
	2 - quite disagree	32	4.5
	3 - slightly disagree	33	4.7
	4 - neither disagree nor agree	328	46.6
	5 - slightly agree	119	16.9
	6 - quite agree	98	13.9
	7 - completely agree	62	8.8
The approvalofmy household members is important to me when purchasing organic food (*sn5*)	1 - completely disagree	143	20.3
	2 - quite disagree	52	7.4
	3 - slightly disagree	48	6.8
	4 - neither disagree nor agree	204	29.0
	5 - slightly agree	99	14.1
	6 - quite agree	86	12.2
	7 - completely agree	72	10.2
Overall mean [(*sn1*+*sn2*+*sn3*+*sn4*+*sn5*)/5]	1	14	2.0
	2	42	6.0
	3	139	19.7
	4	313	44.4
	5	147	20.9
	6	43	6.1
	7	6	0.9

Perceived behavioural control over organic food purchasing (N=704)

Item	Scale	Frequency	%
If I wanted to purchase organic food, I would find it... [difficult/easy] (*pbc1*)	1 - very difficult	24	3.4
	2 - quite difficult	87	12.4
	3 - slightly difficult	222	31.5
	4 - neither difficult nor easy	102	14.5
	5 - slightly easy	145	20.6
	6 - quite easy	82	11.6
	7 - very easy	42	6.0
Whether or not I purchase organic food is under... [no control/complete control] (*pbc2*)	1 - no control	27	3.8
	2 - very little control	18	2.6
	3 - little control	48	6.8
	4 - neither little nor great control	93	13.2
	5 - great control	202	28.7
	6 - very great control	182	25.9
	7 - complete control	134	19.0
I can purchase organic food whenever I want or need it (*pbc3*)	1 - completely disagree	22	3.1
	2 - quite disagree	57	8.1
	3 - slightly disagree	110	15.6
	4 - neither disagree nor agree	130	18.5
	5 - slightly agree	148	21.0
	6 - quite agree	140	19.9
	7 - completely agree	97	13.8
Overall mean [(*pbc1*+*pbc2*+*pbc3*)/3]	1	5	0.7
	2	17	2.4
	3	106	15.0
	4	219	31.1
	5	206	29.3
	6	110	15.6
	7	41	5.8

Personal norms with regard to organic food purchasing (N=704)

Item	Scale	Frequency	%
I feel I should purchase organic food instead of conventional one (*pn1*)	1 - completely disagree	19	2.7
	2 - quite disagree	10	1.4
	3 - slightly disagree	35	5.0
	4 - neither disagree nor agree	79	11.2
	5 - slightly agree	143	20.3
	6 - quite agree	188	26.7
	7 - completely agree	230	32.7
I would feel guilty if I purchased conventional food instead of organic one (*pn2*)	1 - completely disagree	113	16.1
	2 - quite disagree	93	13.2
	3 - slightly disagree	82	11.6
	4 - neither disagree nor agree	156	22.2
	5 - slightly agree	146	20.7
	6 - quite agree	65	9.2
	7 - completely agree	49	7.0
Purchasing organic food instead of conventional one would feel like the morally right thing (*pn3*)	1 - completely disagree	24	3.4
	2 - quite disagree	20	2.8
	3 - slightly disagree	22	3.1
	4 - neither disagree nor agree	112	15.9
	5 - slightly agree	146	20.7
	6 - quite agree	188	26.7
	7 - completely agree	192	27.3
Purchasing organic food instead of conventional one would make me feel like a better person (*pn4*)	1 - completely disagree	37	5.3
	2 - quite disagree	17	2.4
	3 - slightly disagree	31	4.4
	4 - neither disagree nor agree	142	20.2
	5 - slightly agree	153	21.7
	6 - quite agree	156	22.2
	7 - completely agree	168	23.9
Overall mean [(*pn1*+*pn2*+*pn3*+*pn4*)/4]	1	19	2.7
	2	23	3.2
	3	52	7.4
	4	137	19.5
	5	162	23.0
	6	212	30.1
	7	99	14.1

Organic food purchase intention (N=704)

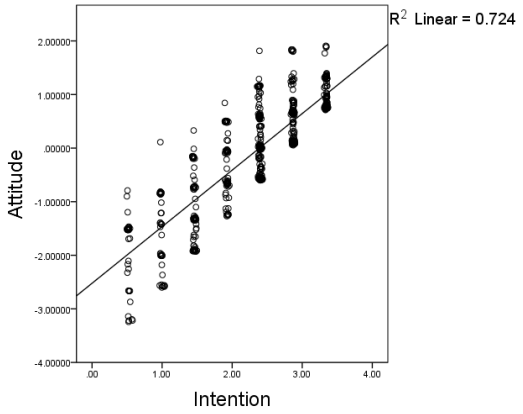
Item	Scale	Frequency	%
Willingness to pay more for organic food (*int1*)	1 - very unwilling	46	6.5
	2 - quite unwilling	86	12.2
	3 - slightly unwilling	103	14.6
	4 - neither unwilling nor willing	60	8.5
	5 - slightly willing	312	44.3
	6 - quite willing	80	11.4
	7 - very willing	17	2.4
Likelihood of purchasing organic food (*int2*)	1 - very unlikely	35	5.0
	2 - quite unlikely	44	6.3
	3 - slightly unlikely	70	9.9
	4 - neither unlikely nor likely	67	9.5
	5 - slightly likely	174	24.7
	6 - quite likely	166	23.6
	7 - very likely	148	21.0
Overall mean [(*int1*+*int2*)/2]	1	30	4.2
	2	60	8.6
	3	92	13.1
	4	88	12.5
	5	170	24.2
	6	208	29.5
	7	56	7.9

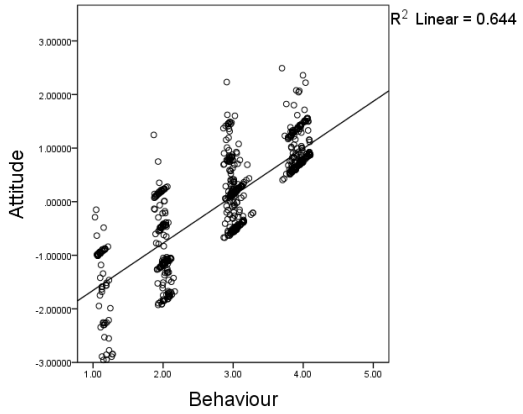
Organic food purchasing behaviour (N=704)

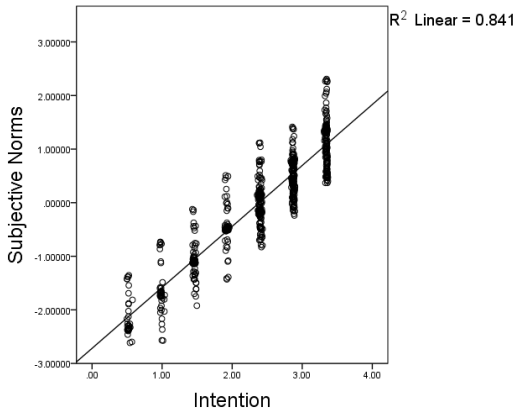
Item	Scale	Frequency	%
Organic food purchasing frequency (*beh1*)	1 - Never	67	9.5
	2 - Less than once a month	169	24.0
	3 - At least once a month	253	35.9
	4 - At least once a week	215	30.5
Average weekly expenditure on organic food (*beh2*)	1 - 0 €	236	33.5
	2 - 1-25 €	271	38.5
	3 - 26-50 €	135	19.2
	4 - >50 €	62	8.8
Overall mean [(*beh1*+*beh2*)/2]	1	236	33.5
	2	196	27.8
	3	218	31.0
	4	54	7.7

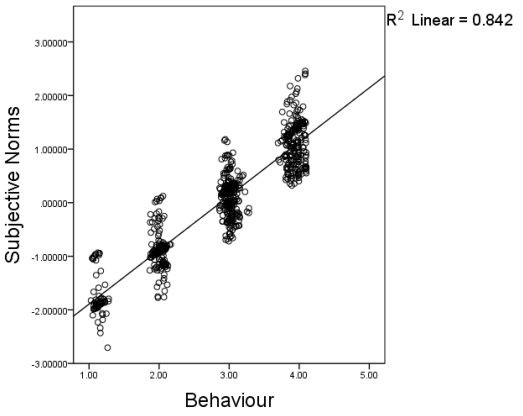
APPENDIX E - GRAPHICAL ANALYSIS OF RESIDUALS TO TEST FOR LINEARITY AND HOMOSCEDASTICITY

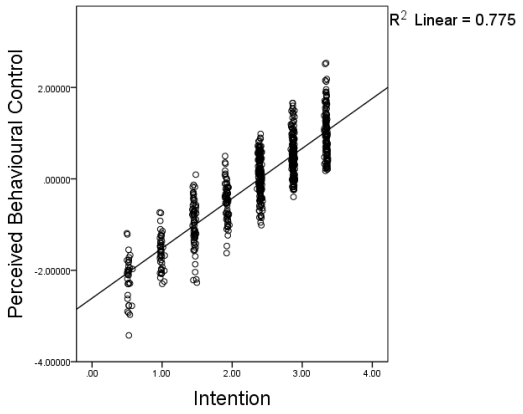
TPB Model

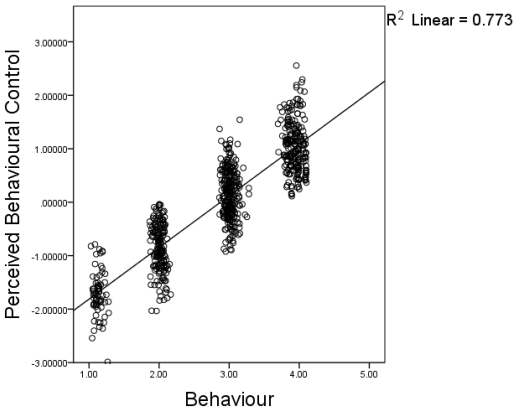




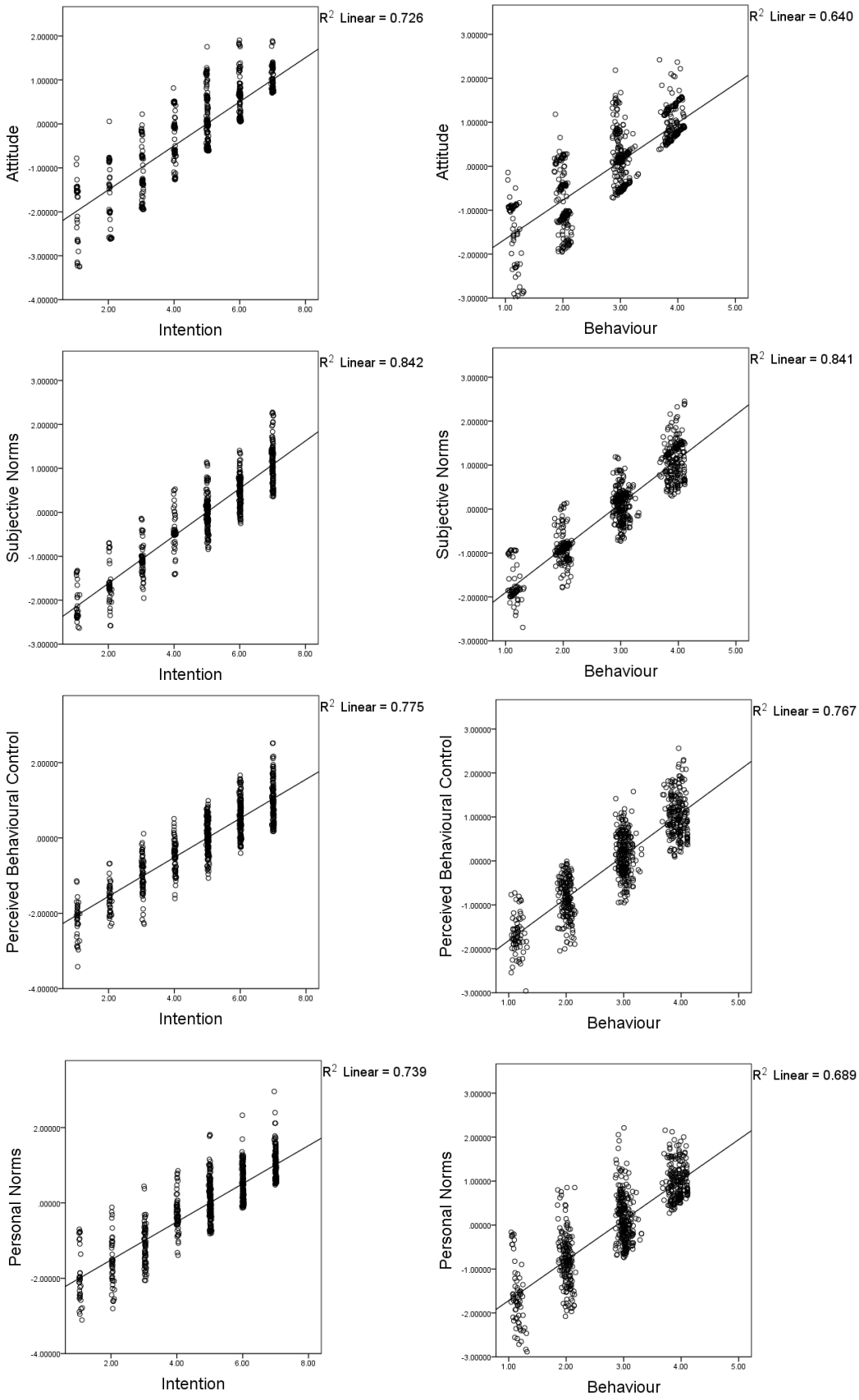








Extended TPB Model



APPENDIX F – STANDARDIZED RESIDUAL COVARIANCES FOR THE TPB AND EXTENDED TPB MEASUREMENT AND STRUCTURAL MODELS

TPB Measurement Model

	att1	*att2*	*att3*	*sn1*	*sn2*	*sn3*	*sn4*	*sn5*	*pbc1*	*pbc2*	*pbc3*	*int1*	*int2*	*beh1*	*beh2*
att1	0														
att2	-0.20	0													
att3	-0.07	0.03	0												
sn1	2.07	-0.96	-0.57	0											
sn2	**3.50**	1.17	1.42	**7.24**	0										
sn3	1.03	0.23	0.01	-0.34	1.33	0									
sn4	-0.02	-0.11	-0.27	-0.77	0.23	0.18	0								
sn5	1.04	-0.59	-0.19	**3.50**	2.35	-0.40	-0.26	0							
pbc1	2.52	0.99	0.11	**2.71**	0.90	-0.82	-0.43	-0.35	0						
pbc2	**2.89**	2.38	1.80	-0.05	0.05	0.76	0.37	-0.25	-0.70	0					
pbc3	0.65	-0.57	-1.15	**2.60**	1.63	0.07	-0.29	1.12	0.05	0.32	0				
int1	1.39	0.52	0.29	0.57	0.91	0.95	0.01	0.04	0.60	1.93	0.93	0			
int2	0.92	0.06	-0.14	1.52	2.21	-0.09	-0.27	-1.36	0.19	0.97	-0.35	0	0		
beh1	1.87	-0.29	-0.01	1.09	1.39	-0.11	-0.29	-1.12	0.45	-0.34	-0.43	-0.34	-0.01	0	
beh2	2.40	-0.35	-0.32	1.86	1.46	0.49	0.53	-0.21	0.82	0.46	0.36	0.01	-0.06	0	0

Note: Standardized residuals that exceed the cutoff criteria are highlighted in boldface.

Extended TPB Measurement Model

	att1	*att2*	*att3*	*sn1*	*sn2*	*sn3*	*sn4*	*sn5*	*pbc1*	*pbc2*	*pbc3*	*pn1*	*pn2*	*pn3*	*pn4*	*int1*	*int2*	*beh1*	*beh2*
att1	0																		
att2	-0.33	0																	
att3	-0.15	0.06	0																
sn1	2.03	-1.00	-0.59	0															
sn2	**3.41**	1.06	1.32	**7.08**	0														
sn3	1.04	0.31	0.13	-0.28	-1.47	0													
sn4	-0.11	-0.19	-0.31	-0.90	-0.52	0.26	0												
sn5	0.98	-0.67	-0.26	**3.39**	2.21	-0.50	-0.47	0											
pbc1	2.33	0.76	-0.11	**2.63**	0.79	-0.89	-0.59	-0.43	0										
pbc2	**2.85**	2.35	1.78	-0.06	0.03	0.80	0.36	-0.27	-0.84	0									
pbc3	0.66	-0.53	-1.08	**2.67**	1.63	0.28	-0.18	1.12	0.06	0.50	0								
pn1	**2.90**	1.23	1.03	0.78	**2.78**	0.05	0.73	1.12	-0.27	1.18	1.34	0							
pn2	0.15	-1.23	-1.33	1.47	**4.46**	-1.40	-1.17	2.31	-1.14	-0.19	0.49	-0.18	0						
pn3	1.27	-0.60	-0.25	-0.02	**3.07**	-0.96	-0.44	2.17	-1.45	1.00	0.34	-0.18	-0.11	0					
pn4	1.70	-0.79	-0.73	0.36	**4.17**	-0.56	0.03	2.29	-0.87	0.21	0.48	-0.45	0.89	0.45	0				
int1	1.37	0.54	0.34	0.57	0.87	1.03	0.01	0.01	0.49	1.94	1.05	0.29	-0.55	-0.59	-0.17	0			
int2	0.84	0.03	-0.12	1.49	2.10	0.01	-0.33	-1.43	-0.04	0.97	-0.17	1.16	-0.15	-0.21	-0.98	0	0		
beh1	1.78	-0.31	0.02	1.06	1.29	-0.02	-0.35	-1.19	0.21	-0.35	-0.28	0.98	0.07	-0.54	-0.79	-0.28	0.02	0	
beh2	2.29	-0.42	-0.35	1.82	1.36	0.53	0.44	-0.28	0.58	0.44	0.45	1.21	0.93	0.41	-0.13	-0.01	-0.12	0	0

Note: Standardized residuals that exceed the cutoff criteria are highlighted in boldface.

TPB Structural Model

	att1	*att2*	*sn3*	*sn4*	*pbc1*	*pbc3*	*int1*	*int2*	*beh1*	*beh2*
att1	0									
att2	0	0								
sn3	0.02	0.11	0							
sn4	-0.72	0.15	0	0						
pbc1	1.22	0.09	-0.79	-0.18	0					
pbc3	-0.22	-0.92	0.60	0.45	0.02	0				
int1	-0.29	-0.68	0.24	-0.45	-0.11	0.67	0			
int2	-0.82	-0.52	-0.26	-0.06	-0.09	0.13	0.71	0		
beh1	1.98	1.53	0.29	0.46	-0.10	-0.22	-1.58	0	0	
beh2	2.45	1.15	0.78	1.13	0.31	0.49	-1.15	-0.17	0	0

Extended TPB Structural Model

	att1	*att2*	*sn3*	*sn4*	*pbc1*	*pbc3*	*pn2*	*pn3*	*pn4*	*int1*	*int2*	*beh1*	*beh2*
att1	0												
att2	0	0											
sn3	0.10	0.58	0										
sn4	-1.08	0.06	0	0									
pbc1	0.84	-0.10	-0.71	-0.42	0								
pbc3	-0.23	-0.66	1.02	0.56	0.01	0							
pn2	-0.66	-0.58	-0.87	-0.65	-0.88	1.02	0						
pn3	0.27	0.31	-0.22	0.29	-1.08	1.07	-0.19	0					
pn4	0.37	-0.28	-0.12	0.45	-0.61	1.10	0.37	-0.07	0				
int1	-0.50	-0.60	0.43	-0.62	-0.26	0.87	-1.00	-1.15	-0.93	0			
int2	-1.14	-0.38	0.06	-0.31	-0.32	0.48	0.05	0.12	-0.99	0.91	0		
beh1	1.54	1.48	0.47	0.12	-0.29	0.16	1.46	1.32	0.74	-1.61	-0.02	0	
beh2	2.04	1.08	0.91	0.82	0.13	0.80	2.09	1.98	1.15	-1.20	-0.22	0	0

APPENDIX G - QUESTIONING ROUTE AND GUIDELINES FOR FOCUS GROUP DISCUSSIONS

This focus group discussion is being held within the framework of the PhD programme in Agricultural Ecology at the University of Milan in Italy regarding organic food purchasing behaviour of the Portuguese.

I'm particularly interested in your food purchasing habits, attitude towards food and more specifically, in your opinions about organic food.

There are no wrong answers but rather different points of view. Please feel free to share your point of view even if it differs from what others have said.

I invite you to speak one at a time. Recording is taking place as a tool to help capture everyone's comments for later analysis but there will be any names attached to comments when reporting results.

This meeting will last approximately 2 hours and we will have a 15 minutes break in the middle.

1 - What is the importance of food and diet in your daily lives?

Hints for further probing: meals and cooking habits and atypical diets.

2 - Think back to the last time you went shopping for food.

What were the three primary criteria that helped you to choose the food products you have bought?

3 - What comes to mind when you first think of organic food?

(Parallel format: What does organic food mean to you?)

4 - What prompts you to buy certified organic food for your household instead of conventional one?

(Parallel format: What are the main reasons for you to purchase certified organic food for your household instead of conventional one?)

Non-buyers format: What prompts some people to buy certified organic food for their households instead of conventional one?

5 - What is preventing you from buying more certified organic food for your household?

(Parallel format: What would make it easy or enable the purchase of certified organic food for your household?)

Non-buyers format: What is preventing you from buying certified organic food for your household?

6 - What was the influence of other important people when it came to the decision to start purchasing certified organic food for your household?

Non-buyers format: What would be the opinions of other important people, if you decided to start purchasing certified organic food for your household?

Hints for further probing: nuclear family, extended family, friends, social groups to which one belongs

7 - Does it feel like the right thing to do, when you purchase certified organic food for your household instead of conventional one? Or, on the contrary, does it feel bad, when you purchase conventional food for your household instead of certified organic one?

Non-buyers format: Do you expect it will feel like the right thing to do, when purchasing certified organic food for your household instead of conventional one? Or, on the contrary, do you expect it will feel bad, next time you purchase conventional food for your household instead of certified organic one?

Hints for further probing: moral obligation, morally right, self-satisfaction, pride, guilty, heavy heart.

APPENDIX H - CHARACTERIZATION OF FOCUS GROUPS PARTICIPANTS

Purchase Frequency	ID Code	Age	Gender	Professional occupation	Household composition
At least once a week	Box-scheme buyer #1	45	Female	Therapist	Couple, 3 child <15
	Box-scheme buyer #2	33	Female	TV actress	Young couple, 2 child <15
	Box-scheme buyer #3	47	Female	Craftswoman	Couple, 1 child <15
	Box-scheme buyer #4	33	Male	Web Designer	Young couple, 2 child <15
	Box-scheme buyer #5	45	Female	Commercial professional	Couple, 1 child <15
	Box-scheme buyer #6	40	Female	Marketing professional	Couple, 4 child <15
	Box-scheme buyer #7	45	Female	University teacher	Couple, no children
	Urban regular buyer #1	45	Female	Financial adviser	Couple, 2 child <15
	Urban regular buyer #2	35	Female	Key accountant	Young couple, no children
	Urban regular buyer #3	53	Female	Civil engineer	Couple, no children
	Urban regular buyer #4	64	Female	Chemistry teacher	Divorced, 2 child ≥18
	Urban regular buyer #5	57	Male	Arts professor	Couple, 1 child ≥18
	Urban regular buyer #6	41	Male	Architect	Divorced, 1 child <15
	Urban regular buyer #7	36	Male	Navy officer	Young couple, no children
	Urban regular buyer #8	45	Female	High school teacher	Couple, 1 child <15
	Rural regular buyer #1	38	Female	Researcher	Couple, 1 child <15
	Rural regular buyer #2	43	Female	Designer	Couple, 1 child <15
	Rural regular buyer #3	42	Male	Computer programmer	Couple, 2 child <15
	Rural regular buyer #4	32	Female	Researcher	Single, no children
	Rural regular buyer #5	35	Male	Architect	Young couple, 2 child <15
	Rural regular buyer #6	51	Female	School teacher	Single, no children
At least once a month	Urban occasional buyer #1	30	Female	Unemployed	Single, with mother
	Urban occasional buyer #2	38	Female	Web developer	Single, no children
	Urban occasional buyer #3	45	Male	Choreographer	Couple, no children
	Urban occasional buyer #4	21	Male	University student	Single, with father
	Urban occasional buyer #5	68	Female	Nurse (retired)	Elderly couple, no children
	Urban occasional buyer #6	32	Female	Researcher	Young couple, no children
	Urban occasional buyer #7	26	Female	Marketing professional	Single, with parents
	Rural occasional buyer #1	38	Male	Visual artist	Couple, 1 child <15
	Rural occasional buyer #2	39	Female	Painter	Couple, 2 child <15
	Rural occasional buyer #3	28	Male	Documentary filmmaker	Young couple, no children
	Rural occasional buyer #4	37	Female	Animation film producer	Divorced, 1 child <15
	Rural occasional buyer #5	66	Female	Painter	Single, no children
	Rural occasional buyer #6	48	Female	Bookshop keeper	Couple, 1 child <15
Never	Urban non-buyer #1	38	Male	Fashion booker	Single, no children
	Urban non-buyer #2	38	Female	Bank account manager	Couple, 3 child <15
	Urban non-buyer #3	53	Female	School teacher	Couple, 2 child ≥18
	Urban non-buyer #4	26	Male	Armed forces officer	Single, no children
	Urban non-buyer #5	35	Female	Geologist	Young couple, 1 child <15
	Urban non-buyer #6	80	Female	Classical dancer (retired)	Widow, no children
	Rural non-buyer #1	42	Male	Bank manager	Couple, 3 child <15
	Rural non-buyer #2	36	Female	Environmental engineer	Young couple, no children
	Rural non-buyer #3	30	Female	Unemployed	Young couple, 1 child <15
	Rural non-buyer #4	41	Male	Computer technician	Single, no children
	Rural non-buyer #5	66	Female	Retired	Elderly couple, no children
	Rural non-buyer #6	63	Female	Retired	Elderly couple, no children
	Rural non-buyer #7	42	Male	Civil clerk	Couple, 1 child <15