



INTERNATIONAL
HELLENIC
UNIVERSITY

GREEN CONSUMER BEHAVIOUR IN GREECE

*Consumers' attitudes towards
eco labels*

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**SCHOOL OF ECONOMICS, BUSINESS ADMINISTRATION & LEGAL
STUDIES**

A thesis submitted for the degree of
Master of Science (MSc) in Management

12/2019

Thessaloniki – Greece

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I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

12/2019

Thessaloniki - Greece

Abstract

Eco-labels are marks that identify products or services proven environmentally preferable within a specific product or service category, while serving as important green marketing tools, thus, promoting eco-friendly buying behavior and sustainable consumption. Consumers' attitudes towards eco-labels has gained attention during the last years, particularly as regards perceived motives and barriers for preferring eco-labeled products over conventional ones, eco-labelling awareness and other behavioral aspects. The aim of this thesis is to investigate Greek consumers' attitudes towards eco-labelling, taking into account their demographic profile and motives for choosing eco-labeled products, in the context of the growing green consumerism trend taking place internationally. In order to do so, a quantitative research was performed with the use of a questionnaire, which was answered by 124 individuals. According to

the research findings, Greek consumers' awareness of eco-labels is moderate, in line with their relatively limited level of environmental consciousness. It was also found that although Greek consumers hold generally positive attitudes towards eco-labeled products, such attitudes are not translated in a actual buying behavior. As such, it is recommended that eco-labels should be better communicated to Greek consumers, both by private companies and independent parties (e.g. environmental organizations, public bodies), in order to improve awareness and foster a positive behavioral environmentally friendly change.

Keywords: eco-labelling, eco-labeled products, green marketing, consumer behavior.

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Chapter 1

Introduction

Green consumerism is a key feature of contemporary sustainable consumption, while environmental issues have become of significant importance in consumer decision making process during the last years. Given the increased consumer ecological awareness and the ongoing environmental debate, consumers nowadays are more likely to include ecological criteria in the buying behavior. As such, eco-labelling is a key factor affecting green consumer behavior and has also been integrated in various EU environmental policies. It worth mentioning that as of March 2019, more than 1,500 licenses of the EU eco-label have been awarded for more than 72,000 products and services available on the European market, signifying the growing consumers' and businesses' interest in eco-labelling. In this frame, consumers' attitudes towards eco-labels are a matter of great research interest internationally.

Eco labels can significantly affect consumers' purchasing decisions and promotion of green products (Thøgersen et al, 2010). Several motives have been identified for choosing eco-labeled products over conventional ones, including environmental awareness, concern about sustainability, pro-environmental beliefs, willingness to adopt a healthier lifestyle and to contribute to sustainable consumption, and higher perceived quality and safety of such products (Polonsky, 2011; Daugbjerg et al, 2014; Grunert et al, 2014; Testa et al, 2015). On the other hand, it has been suggested that consumers' positive attitudes towards eco-labelling may be hampered by various barriers, such as high levels of scepticism for green products, limited trust in companies, and higher perceived value of eco-labeled products (Rettie et al, 2012; Chen & Chang, 2012; Lee et al, 2018). Accordingly, it has been demonstrated that eco-labelling is linked to higher willingness to pay (Bougherara & Combris, 2009), as well as that consumers' demographic profile has a significant impact on their attitudes towards eco-labelling (D'Souza et al, 2007).

The aim of this thesis is to investigate Greek consumers' attitudes towards eco-labelling, taking into account their demographic profile and motives for choosing eco-labeled products, in the context of the growing green consumerism trend in the country during the last years. The particular research questions are: (1) are Greek consumers aware of the specific features of eco-labelling?, (2) does eco-labelling affect Greek consumers' buying behavior?, (3) which are the main motives of choosing eco-labeled products over conventional ones? (e.g. environmental considerations, perceived health benefits), (4) which are the main barriers not to buy eco-labeled products (e.g. lack of trust in eco-labels, limited knowledge about eco-labels), (5) does preference for eco-labeled products affects willingness to pay?, and (6) how Greek consumers' demographic profile (e.g. age, gender, level of education, employment and economic status) affects their attitudes towards eco-labelling?

In order to examine these research questions, a quantitative research was performed with the use of a questionnaire, which was answered by 124 individuals. Data collected were statistically processed with the use of the proper statistical methods and tests. This research reveals the level of Greek consumers' awareness of eco-labelling, as well as their motives and barriers for purchasing eco-labeled products, taking into account their socio-demographic profile. Another important contribution of this research is that it provides information regarding the relationship between eco-

labelling and willingness to pay. Overall, this survey gives useful insight of green consumerism in Greece by taking into account eco-labelling, given the fact that the relevant research literature concerning Greek consumers is very limited.

This thesis is organized as follows: Chapter 2 presents the theoretical framework of eco-labelling and green marketing, as well as the literature review concerning consumers' behavior towards eco-labeled products and services. In particular, the first part of the following chapter presents the historical evolution, basic concepts, types and benefits of eco-labels along with their relationship with green marketing as one of its most dominant tools, and the second part discusses research findings concerning consumers' awareness of eco-labels, motives and barriers for purchasing eco-labeled products, their willingness to pay a price premium for such products over conventional ones and, lastly, their demographic profile impact on their green purchasing behavior. Chapter 3 presents the research methodology, including the research design, the research tools, the sample and the statistical methods performed. Next Chapter 4 presents the research findings and last Chapter 5 discusses these findings in order to come to an overall conclusion and make respective recommendations.

Chapter 2

Literature review

2.1 Eco-labeling

2.1.1 Historical evolution and basic concepts

Eco-labeling emerged in the late 1970s and early 1980s along with the an environmental awareness movement, leading manufacturers of that time to address this green marketing trend by the creation of products having environmental claims (Crane, 2000). The first eco-labels appeared in the 1970s in order to provide basic environmental information for specific products. The Blue Angel, developed by the Federal Republic of Germany in 1978, was the first public eco-label, followed during the next decade by the “single-issue” labels, which mostly focused on specific

environmental issues and applied in individual sectors (Reisch, 2001). In the 1990s, the emergence of green marketing along with various initiatives taken by international organizations focusing on environmental protection, led to the development of multiple private certification schemes.

During that time, many developed countries around the world, including the US, Japan and other European countries, developed various eco-labels (Prieto-Sandoval et al, 2016). This movement was also strongly influenced by the United Nations' "Agenda 21" report, which encouraged environmental labeling as a means to enhance sustainable consumer behavior and clean production across all economic sectors (UNCED, 1992). The last 15 years have seen a significant expansion of eco-labels that vary in scope and provide different types of environmental information both for products and services (OECD, 2016). This eco-labeling growth is reflected both in the increase of the overall number of different eco-labels existing for different market sectors and the increasing complexity of the standards they use for this purpose (Bruce & Laroiya, 2007).

Eco-labels have been conceptualized in various ways and by taking into account different points of view (Galarraga Gallastegui, 2002). Basically, an eco-label can be defined as a claim made by a firm proving that it has employed environmentally friendly production and/or distribution methods (Bruce & Laroiya, 2007). According to the Global Ecolabelling Network (GEN), an eco-label is a label that identifies products or services proven environmentally preferable within a specific product or service category, and is awarded by an impartial third party that has independently determined transparent environmental criteria and standards based on life-cycle considerations (<https://globalecolabelling.net/what-is-eco-labelling/>). Accordingly, an eco-label is distinguished by a simple green symbol on the basis that is awarded by an external party.

From a business point of view, an eco-label is an environmental management tool informing customers about the environmental characteristics of a product (Thogersen et al, 2010). According to D'Souza et al (2006), an eco-label is a sign reflecting a firm's commitment to environmentally friendly production, aiming to provide information to customers regarding the environmental impact of the production and distribution processes employed. Taking a broader perspective, eco-labels are

considered as instruments of reducing the environmental impact of products and services throughout their overall life-cycle, from design to production, distribution, consumption and disposal (Thidell et al, 2015). Today, the eco-labelling trend is rapidly growing internationally, as there are currently 463 eco-labels in 199 countries around the world, covering 25 industry sectors (<http://www.ecolabelindex.com/>).

2.1.2 Types of eco-labels

Taking into account the rapid development of eco-labels internationally, as well as their wide diversity, the International Standardization Organization (ISO) set the principles of eco-labelling in ISO 14020:2002, and later, proposed three categories of eco-labels based on their distinct characteristics. According to ISO (2004), the three types of eco-labels are: (1) type I: voluntary, multiple-criteria based and third party awarded programs that provide a license authorizing the use of environmental labels on products, which indicate their overall environmental preferability based on life-cycle considerations, (2) type II: not third-party environmental claims of self-declaration made by privately-owned companies, which describe the products or services based on their characteristics that follow general environmental guiding principles, and (3) type III: voluntary programs providing environmental information based on life-cycle quantitative indicators, which are set by a qualified third party and are verified by another qualified party. The last type is usually used in a B2B context or in public procurements.

Type 1 (eco-labels) are based on ISO 14024 standards, type 2 (self-declared environmental claims) on ISO 14021, and type 3 (environmental declarations) on ISO 14025. Examples of these different types include the Nordic Swan and the Japanese Eco-Mark (type 1), the recyclable content (type 2), and the Eco-Leaf (type 3). It should also be noted that there is also another “type 1-like” category, provided by independent organizations and representing only one distinctive environmental aspect (Panainte et al, 2014). Recently, the Organisation for Economic Co-operation and Development (2016) proposed a wider categorization in order to capture the wide variety of contemporary environmental labels, which is based on the type of communication used along with the type of standards these labels are based on. Accordingly, the OECD has proposed the EcoLabel index, used to provide information for different eco-labels produced around the world.

In the EU, eco-labelling has been a major trend during the last years, mostly via the development of the EU eco-label and the organic label. In particular, the European eco-label is a voluntary scheme awarding products and services with an environmental symbol, the Flower. This label is recognized throughout the EU and other countries (Norway, Liechtenstein, Iceland), it is available to manufacturers and service providers, importers and retailers, and it covers 23 different types of products and services, with further product categories being added. Besides the ISO certifications and the EU eco-label and organic label, there is now a long list of different eco-labels both in the EU and at the international level, some of which are specified to different sectors. Among European countries, the most popular ones include the Nordic Swan (Nordic countries), the Blue Angel (Germany), the RAL (Germany), the Bra Miljöval (Sweden), the Milieukeur (Netherlands), and the NG Environment (France). Outside the EU, widely applied eco-labels are the Nature Plus and the Ecologo (international), the Environmental United Certification Centre (China), the Good Environmental Choice (Australia), and the Eco Mark (Japan). In addition, sectoral eco-labels include the Energy Star (EU), the Ok-Power (Germany), the BFRC (Windows UK), the TCO Development (international IT equipment), and the OEKO-TEX (international textiles association).

2.1.3 Eco-labels' benefits

Eco-labels have many benefits in terms of environmental protection, business and market growth, consumer environmental awareness and social welfare. Considering environmental protection, eco-labelling encourages the production and consumption of environmentally preferable goods and services, as well the efficient management of resources and waste, while promoting governmental and institutional initiatives focusing on the protection of ecosystems and pollution management (Grolleau et al, 2016). It has been documented that the European eco-label's market penetration can lead to significant savings in energy consumption and CO₂ emissions, thus, contributing to environmental protection and reduction of industrial and commercial waste (Cadman & Dooley, 2004). It has also been shown that the use of eco-labels in public procurement is very helpful in reducing air pollution and greenhouse emissions (Moon, 2011). Another study indicated that eco-labelling is beneficial for the protection of species and the avoidance of unnecessary pollution, while encouraging

significant energy savings (Kaiser & Edwards-Jones, 2006). Overall, eco-labels have many environmental benefits, taking also into account the current debate on climate change and global warming.

Besides environmental benefits, eco-labels are vital for building environmental awareness in consumers and, overall, in the society (Testa et al, 2015). Various eco-labelling schemes enhance consumer awareness of environmental issues and encourage them to prefer environmentally friendly products and services over conventional ones, while promoting environmentally beneficial social initiatives (Galarraga Gallastegui, 2002). It has been suggested that consumers tend to form positive attitudes towards eco-labeled products providing environmental information, and perceive them as of added value (Rex & Baumann, 2007). As such, it can be argued that eco-labels contribute to consumer welfare, as more and more individuals pay attention to the environmental impact of their actions, as well as to firms' compliance with respective regulations. In addition, eco-labelling fosters sound business ethics at an international level, thus, promoting corporate social responsibility actions and initiatives (Castka & Corbett, 2016). In accordance, it should be mentioned that eco-labels are now part of several eco-innovation initiatives, promoting market growth, innovation and social welfare (Triguero et al, 2013).

Lastly, eco-labels are also very beneficial from a business point of view, as they serve as sound marketing tools and promote competitiveness, while facilitating compliance with environmental and other relevant legislation. Eco-labelling promotes and image of environmental and social consciousness for firms, thus, helping them to build a positive image to the public, as well an image of credibility (Bruce & Laroia, 2007). As such, firms using eco-labels are able to attract more consumers, be more competitive in the market and improve their sales volume, given also the fact that consumers are more willing to pay a premium for environmentally friendly products and services (Azizan & Suki, 2014). While meeting consumer preferences, these firms are also in a better position financially, as they are able to reduce production waste and achieve significant savings in terms of energy and other resources consumption (Burgin & Hardiman 2010). Overall, eco-labels have many benefits for the environment, the society, the economy and businesses, and as such, they serve as important tools of contemporary green marketing.

2.1.4 Eco-labels, green marketing and green consumerism

Over the past decades, environmental protection has emerged as one of the most important issues in the public debate, as well as in relevant academic research, signaling in the same time a positive change of consumer behavior towards environmental preferable products (Polonsky, 2011). As such, eco-labelling, among other environmental tools and initiatives, are directly linked to green marketing and green consumerism. Green marketing encompasses all marketing activities employed for selling goods and services based on their environmental characteristics, and it refers to an overall effort of a firm trying to build a sustainable relationship with all stakeholders, including the environmental, consumers, governmental and regulating bodies, as well as the society as a whole (Rettie et al, 2012). As such, green marketing fosters pro-environmental consumer behavior and green consumerism, which is now considered vital for achieving sustainability both in production and consumption (D'Souza et al, 2015). According to Pride & Ferrell (2008), the main objectives of green marketing include: (1) waste elimination throughout production of goods and services, (2) provision of new products and services that are consistent with the environmental protection requirements, (3) increasing the value of consumers' money via purchasing of added value products and services, and (4) foster businesses' profitability and sustainability while promoting environmental consciousness in the global markets.

Green marketing has been also described as the activities designed to generate and facilitate any exchange intended to satisfy human needs with the minimum detrimental impact on the environment (Davies, 1991). Grant (2008) have also defined green marketing as the application of several marketing tools that foster organizational and individual goals in such a way that the preservation, protection and conservation of the physical environment are upheld. Among these marketing tools, the most important ones include eco-brand, environmental advertising and eco-labelling. In particular, eco-brand refers to symbols and images of products and services that are considered as green, meaning that they have the minimum impact on the environment, which in turn are helpful for consumers in order to distinguish them from other conventional and non-green products (Punyatoya, 2014). Environmental advertising, on the other hand, encompasses all advertising activities that aim to raise public attention to environmental issues and promote green products and services so

as to influence consumers' green purchasing behavior (Chan et al, 2006). Lastly, eco-labelling also includes all labelling activities used for green products and services aiming to foster sustainable production and consumption.

Indeed, green consumerism is a key feature of contemporary sustainable consumption, and given the increased consumer ecological awareness and the ongoing environmental debate, consumers nowadays are more likely to include ecological criteria in the buying behavior (Testa et al, 2015). As such, eco-labelling is a critical initiative of modern green consumerism, as it serves as a means for providing environmental-related information of products and services to consumers (D'Souza et al, 2006). Indeed, it has been suggested that eco-labelling can generate positive changes toward a more environmental friendly consumption pattern, both by informing consumers about the ecological features of products and by encouraging producers to invest in more sustainable practices, while providing businesses the incentives to invest in green marketing (Galarraga Gallastegui, 2002). Eco labels can significantly affect consumers' purchasing decisions and promotion of green products, as they provide relevant information that is of important consideration while choosing among different products (Thøgersen et al, 2010). It worth mentioning that as of March 2019, more than 1,500 licenses of the EU eco-label have been awarded for more than 72,000 products and services available on the European market, signifying the growing consumers' and businesses' interest in eco-labelling.

Eco-labels are important green marketing tools promoting green consumerism. Besides fostering the identification of green products, eco-labelling also serve as a marketing tool for managing information asymmetry between consumers and firms, as it informs about the tangible and intangible features of products and services, focusing on their environmental impact, and it provides value itself (Sammer & Wustenhagen, 2006). Consequently, eco-labels have a significant impact on consumers' decision making, although their true influence is still debatable in academic research. Several factors have been identified affecting green consumerism and attitudes towards eco-labels, as it has been suggested that not all consumers value the same green or eco-labeled products (Lee, 2008). For example, it has been suggested that consumers' demographic profile plays a key role in their green purchasing behavior as well as in their level of environmental consciousness (Diamantopoulos et al, 2003). In this frame, consumers' attitudes towards eco-labels

are a matter of great research interest internationally, especially as regards eco-labelling awareness, motives for choosing eco-labeled products, factors hampering green consumer behavior and other influences.

2.2 Consumer behavior and eco-labels

2.2.1 Eco-labels' consumer awareness

Although environmental awareness is a major trend among consumers during the last years and key market stakeholders (governments, businesses, independent parties) make good use of eco-labelling schemes in order to further enhance sustainable consumption and inform the public about the benefits of eco-labeled products, eco-labels' awareness is still limited around the world. Indeed, it has been suggested that consumers are not fully aware of the different eco-labelling schemes and environmental certification systems available in the market (Gerrard & Janssen, 2013). Additionally, it is quite usual for consumers not to be able to distinguish between different eco-labels and get confused about the various environmental logos, including the information they provide. In this frame, several studies have tried to investigate consumers' level of awareness about different eco-labels and green products. For example, Nagaraju & Thejaswini (2014) showed that only about 20.0% of consumers are completely aware about eco-friendly fast moving products, while the 66.0% have a limited knowledge about the topic.

Rashid (2009) also showed that consumers in Malaysia have limited knowledge about the various eco-friendly products and environmental logos, although they provided evidence that the higher the awareness of eco-labels the stronger the relationship between intention to purchase an eco-labeled product and environmental consciousness. Witek (2017) investigated consumers' awareness of the EU eco-label and other national eco-labels of the Polish market and showed that 42% of them believe that they have a high level of knowledge about eco-labelling. In addition, researchers demonstrated that consumers acknowledge that eco-labels are an important means of communicating different product characteristics and environmental-related information, with the 31% of them being able to distinguish different eco-labels and 43.4% being aware of the EU eco-label. In another study, Testa et al (2015) showed that Italian consumers are increasingly aware of different

eco-labels and, in the same time, they are very keen on products' environmental information, a fact that stimulate an eco-friendly consumer and purchasing behavior. Gutierrez & Thornton (2014) also proved that consumers in the US and the UK are moderately aware of seafood eco-labels, although they tend to prefer eco-labeled seafood products due to their higher perceived safety and quality.

In Greece, Fotopoulos & Krystallis (2002) showed that the larger proportion of consumers are unaware of the specific features of eco-friendly products, although there is a significant part that recognizes them but are not always keen on buying them. More recently, Alevizou et al (2015) found that overall consumers have limited knowledge about eco-labelling and limited understanding of the information provided by different eco-labels, even though their environmental knowledge may vary among them. Thus, this limited eco-labelling knowledge makes consumers feel unsettled and unsure about their purchasing decisions. To the best of our knowledge, there are no other studies in Greece that have investigated consumers' level of awareness for eco-labels specifically. It can be, though, generally suggested that eco-labelling penetration in the market is still limited, due to limited public information and education on this matter.

2.2.2 Motives and attitudes towards eco-labeled products

Determinants of green consumer behavior are a matter of great research interest during the last years, especially as regards motives for buying eco-labeled products and choosing them over conventional ones. Numerous studies have investigated the impact of eco-labels on consumer buying behavior and whether they take eco-labels into consideration in their decision making process. Accordingly, many studies have focused on the factors affecting eco-labeled products purchasing behavior, revealing that environmental attitudes, eco-labelling knowledge and personal or social values are very significant motives for consumers (Rahbar & Abdul Wahid, 2011). Several motives have been identified for choosing eco-labelled products over conventional ones, including environmental awareness (Xie et al, 2015), concern about sustainability (Grunert et al, 2014), pro-environmental beliefs (Polonsky, 2011), willingness to adopt a healthier lifestyle and to contribute to sustainable consumption (Daugbjerg et al, 2014), and higher perceived quality and safety of such products (Testa et al, 2015).

Among the different motives that have been studied in the related research literature, environmental considerations seem to play a predominant role in eco-labeled products purchasing. As such, it has been suggested that consumers who prefer eco-labeled products can be described as green consumers. For example, Wei et al (2017) demonstrated that consumers who are highly conscious about environmental protection tend to be more inclined towards products that have the minimal impact on the environment, including eco-labeled products. In accordance, Cronin et al (2011) suggest that green consumers, i.e. individuals who are involved in green activities (e.g. recycling), prefer environmentally friendly products over conventional ones. Furthermore, Xie et al (2015) argued that consumers who are environmentally aware, meaning that they take into account the impact of their consuming behavior on the environment, tend to support green marketing initiatives, such as eco-labelling, and Polonsky (2011) pointed out that strong pro-environmental beliefs have a significant impact effect on the respective purchasing behavior. It has also been demonstrated that environmentally conscious consumers are usually concerned also about products' impact on their personal health, thus, adopting a green buying behavior (Testa et al, 2015), as well as that eco-conscious individuals develop a high tendency towards eco-friendly products (Chen & Chang, 2013). Recently, Hameed & Waris (2018) provided evidence that eco-labeled products are usually preferred by eco-conscious consumers, who display high environmental concerns and have trust in green products as regards their minimum adverse effect on the environment.

Besides environmental considerations, significant motives for purchasing eco-labeled products also include personal health and quality considerations. For example, Zanoli et al (2013) suggested that organic labels are considered by consumers are identifiers of environmentally related quality, and Mostafa (2007) proved that consumers prefer eco-labeled products primarily due to personal health and food safety considerations, although the level of environmental knowledge and concern also play a significant role in green purchase behavior. It can be, thus, suggested that consumers who are highly conscious about their personal health and are keen on adopting a healthier lifestyle are more inclined towards eco-labeled products, especially as regards food products (Vega-Zamora et al, 2014). Yin et al (2010) also point out that purchase intention of organic food both in developing and developed countries is highly motivated by media coverage about several food safety issues. Indeed, Liu et al

(2017) investigated consumer attitudes towards eco-labeled rice products in China and revealed that health benefits and environmental considerations are the two most important motives for buying such products.

It should also be noted that perceived higher quality of eco-labeled products is another important motive for consumers who prefer them over conventional ones. For example, Grankvist & Biel (2001) suggested that consumers express positive beliefs about eco-labeled products because they consider them as of higher quality and safety, although green purchasing behavior is highly affected also by environmental considerations. In addition, Brécard et al (2009) argued that positive considerations about personal health issues and quality of food products, especially in terms of safety, are strong predictors of increasing demand for eco-labeled products in Europe. All in all, the most important motives of green purchasing behavior and preference for eco-labeled products include environmental consciousness, health and quality considerations, along with respective personal values.

2.2.3 Barriers for eco-labeled products

Although eco-labelling is a major trend in contemporary markets and is increasingly used as a green marketing tool, it has been suggested that its penetration is still low among consumers, due to limited awareness and other trust issues. In this frame, researchers have tried to investigate the respective barriers that prevent consumers from purchasing eco-labeled products. Indeed, it has been suggested that consumers' positive attitudes towards eco-labelling may be hampered by various barriers, such as high levels of scepticism for green products (Rettie et al, 2012), limited trust in companies as regards the objective green information provided by eco-labels (Chen & Chang, 2012), and the belief that eco-labelled products are significantly more expensive than conventional ones (Lee et al, 2018). Liu et al (2017) further suggest that consumers' socio-demographic profile may play a significant role in green purchasing behavior, acting sometimes as a barrier for eco-labeled products' preferences. For example, individuals of limited environmental awareness or of lower educational level may not be well informed about the potential benefits of eco-labeled products or be negatively biased towards using them. Accordingly, environmentally conscious individuals are better informed about the environmental impact of eco-labelling and, thus, are more willing to buy them.

A major problem as regards eco-labelling further adoption by consumers is the limited knowledge about the different eco-labels available in the market, taking also into consideration their rising number and complexity. Eden et al (2008) showed that the different eco-labelling systems lack clarity and, thus, consumers do not always trust them regarding the information they provide or the certification process according to which eco-labeled are awarded to businesses and products. As such, limited trust, especially to independent eco-labelling systems, is a significant barrier for purchasing eco-labeled products. Although consumers may have a generally positive attitude towards eco-labels, these attitudes may not be reflected in actual purchase decisions and preferences. Gerrard et al (2013) also indicated that consumers are usually not fully aware of the certification processes regarding eco-labels, and as such, they tend to be skeptical about the true quality, safety and environmental characteristics of eco-labeled products. It has also been suggested that consumers' perceptions about eco-labeled food products are significantly affected by their confidence on the different eco-labelling schemes (Janssen & Hamm, 2012). Accordingly, confidence levels are in turn affected by eco-labels' awareness and consumers' ability to distinguish them.

Several studies have investigated the barriers of green consumer behavior, especially regarding eco-labeled products purchasing. Rööös & Tjärnemo (2011) showed that although consumers may have positive attitudes towards eco-labeled products, these are not translated in actual purchasing behavior due to several barriers, among which the most important ones include perceived high price, strong habits of food purchasing, perceived low availability, lack of available and up-to-date information about eco-labelling, lack of trust in eco-labelling systems and indifferent perceptions about eco-labeled products' safety and quality. Furthermore, Moser (2016) verified that perceived higher price along with limited availability and information about eco-labelling systems are significant barriers for consumers when considering buying eco-labeled products. Tanner & Kast (2003) also suggest that green consumer behavior may be hindered both by personal barriers (e.g. indifferent attitudes towards environmental protection, limited knowledge and awareness for eco-labelling, low disposable income) and contextual (e.g. low availability of green products, living conditions, store characteristics, shopping frequency in supermarkets). Accordingly, Joshi & Rahman (2015) showed that perceived high price of green products and inconvenience in purchasing them (e.g. limited availability in conventional markets),

are the two most important barriers towards consumer green purchase behaviour, although limited information about eco-labelling schemes and lack of trust in them may also play a significant role.

2.2.4 Eco-labeled products and willingness to pay

A number of studies have also investigated if consumers are willing to pay a price premium for different eco-labeled products, although the respective findings are inconsistent. Indeed, willingness to pay for environmentally friendly products is a matter of concern both in theoretical and practical terms, as if consumers are willing to pay a price premium for such products indicates the return on the investment of respective practices (e.g. sustainable production methods, eco-labelling). Liu et al (2017) examined correlations between premiums for eco-labeled rice and consumers' concerns about food safety and environmental protection in China, and found that willingness to pay for this product category is increased only for consumers who have significant environmental concerns, while it is not differentiated on the basis of knowledge for eco-labels. Moon et al (2002) also indicated that there are significant differences in willingness to pay for eco-labeled products among consumers living in different urban districts in Germany, a finding attributed mainly to knowledge and information gaps between different consumer segments.

Roheim et al (2011) also indicated that consumers in the UK are willing to pay a significant price premium of 14.2% for eco-labeled seafood, arguing that there is a market differentiation for sustainable seafood, providing incentives to fisheries for adopting sustainable fisheries practices. In addition, Sörqvist et al (2013) examined consumer preferences for eco-labeled coffee and found that consumers who prefer the taste of this type of coffee and are environmentally concerned are also more willing to pay a price premium. Researchers also demonstrated that eco-labels not only promote willingness to pay more for respective products but also lead to a more favorable perceptual experience of it (Sörqvist et al, 2013). Veinstein (2007) also investigated willingness to pay for environmental attributes through environmental certification and eco-labelling for wood furniture, and indicated that consumers are willing to pay a price premium varying from 2% to 16%, a variation attributed to different levels of environmental concern and eco-labelling awareness in two different countries (Norway and England). In addition, Bougherara & Combris (2009) argued that

consumers' preferences for eco-labeled products is usually accompanied with a willingness to pay a premium, and Xu et al (2012) demonstrated that willingness to pay is higher for eco-labeled seafood among Chinese consumers, as this product category is considered as of higher quality and safety.

On the other hand, Barnard & Mitra (2010) found that although most Americans are willing to prefer environmentally friendly products over conventional ones, only 13% of them are willing to pay above a 10% price premium for eco-labeled products, while about 27% are not willing at all to pay a premium. Loureiro et al (2002) also argued that not all consumers are willing to pay a price premium for eco-labeled apples. Researchers also found that price and quality are still more important considerations for consumers that environmental friendliness when deciding to buy a product (Barnard & Mitra, 2010). In Greece, Krystallis et al (2006) demonstrated that environmentally motivated consumers are more willing to pay a price premium for a variety of organic products (e.g. olive oil, bread, raising, wine), while recently Anastasiou et al (2017) found that Greek consumers are not willing to pay more for products certified with the "Euro-leaf" organic label, which in turn was found to have been the least influential factor that determined their preferences.

It should be lastly noted that willingness to pay for eco-labeled products is also influenced by consumers' demographic profile, especially as regards educational and income level (Liu et al, 2017). Indeed, Rousseau & Vranken (2013) provided evidence that the educational level is significantly correlated with willingness to pay for organic products, as more educated individuals usually are better informed about environmental and food safety issues or/and are more environmentally conscious. In addition, higher income levels also may have a positive effect on willingness to pay a premium over eco-labeled products, as it has been suggested that individuals with higher earnings have more disposable income and are more able to purchase products of a higher price, such as eco-labeled and organic ones (Gracia & de Magistris, 2008). It can be also suggested that more wealthy or educated consumers tend to adopt a healthier lifestyle, thus, preferring eco-labeled products which are considered as of higher quality and safety.

2.2.5 The impact of demographics on eco-labeled products purchasing

As previously mentioned, consumers' demographic profile significantly affects their environmental behavior, thus, shaping their attitudes towards green and eco-labeled products. In general terms, it has been suggested that several demographic characteristics, including age, gender, income and educational level, are strongly correlated with a green consumer behavior (Diamantopoulos et al, 2003). Chekima et al (2016) suggested that consumers' demographic profile plays a crucial role in sustainable consumption, and demonstrated that the most important variables in this case include educational level and gender, proving that green purchase intentions are greater among highly educated individuals and particularly among women. Zhao et al (2014) also provided evidence that women, consumers of higher income and of higher educational level are more likely to be involved in some type of environmental purchasing behavior, such as buying organic, green or eco-labeled products. Generally speaking, it is expected that such consumers (higher income and/or higher educational level) are more knowledgeable about several environmental issues, more conscious about the environmental impact of their actions and more willing to pay for products less hazardous for the environment.

Historically, the typical green consumer profile is described as a female, well-educated and of higher income class (Gilg et al, 2005). Although most studies reveal that women are more concerned about environmental issues, Diamantopoulos et al (2003) pointed out that men tend to be more environmentally well-informed. As for age, available findings are inconsistent. According to Straughan & Roberts (1999), younger individuals tend to be more sensitive to environmental problems, although older consumers are also more environmentally knowledgeable and have greater disposable income in order to buy green products. D'Souza et al (2007) conducted a survey in Australia in order to profile green consumers in relation to their satisfaction with environmental labelling, and found that older and middle aged individuals are less satisfied with eco-labels in terms of accuracy of information, although they tend to be better aware of various eco-labelling schemes.

On the other hand, Han et al (2011) demonstrated that eco-friendly purchasing decisions are not significantly affected by age, education and household income, with gender being the only variable having an impact on pro-environmental consumer intentions, as women were found to be more willing to "go green". Accordingly,

Barnard & Mitra (2010) suggested that demographics do not play a significant role in willingness to pay for eco-labeled products. On the contrary, Liu et al (2017) showed that consumers who prefer eco-labeled products are more likely to be young, single, with a relatively higher education and higher income, also suggesting that educational level has a positive effect on consumers' willingness to pay a premium for such products. Furthermore, Samarasinghe (2012) found that individuals aged more than 45 years old are more willing to pay for green products, although are less environmentally sensitive than younger consumers, who in turn display more environmental awareness but also are more price sensitive. As such, it is obvious that there is not a typical demographic profile that explains consumer behavior towards eco-labeled products.

Chapter 3

Research methodology

3.1 Research philosophy and approach

An integral part of every research study is the selection of the appropriate methodological approach, resulting from an extensive review of the theoretical framework and the research questions raised, while choosing the proper research tools and sampling methods (Glaser, 1978). Research methodology briefly defines the ways and the tools used by researchers to investigate questions, which are intended to lead to objective truths (Newman & Benz, 1998). In social sciences, the basic methodological approaches are divided into quantitative and qualitative research methods, the difference of which refers to the way that data are collected and analyzed.

Research deals with the design experiments, collection and analysis of qualitative and quantitative data so the researcher can draw conclusions for a specific subject. These conclusions are referred to characteristics and properties of populations and exported

with the aid of information contained in samples of these populations. Systematic research can be achieved with a wide variety of processes, while the design of each survey starts from choosing a scientific issue on which the corresponding research methodology is based on. These initial decisions on the design of a study reflect assumptions about what constitutes a problem, its solution and its proof criteria. The different research approaches cover both the theoretical background and the chosen research methodology, while the two main approaches that are widely recognized by the scientific community is the qualitative and quantitative research, which are defined as follows (Cassel & Symon, 1994):

✓ Quantitative research is an examination of an identified problem, based on testing a theory and monitored by numeric data, which are analyzed using statistical techniques. The objective of quantitative research is to determine if the aforementioned generalizations apply in the theoretical underpinnings by using statistical techniques.

✓ On the other hand, a study based on qualitative research aims at understanding a problem from multiple angles, while the qualitative research methodology is conducted in a natural environment and includes a process of building a complex and holistic picture of a phenomenon that is placed under the spotlight.

In this study the research methodology followed is quantitative with the use of a questionnaire. The quantitative research selection decision came after a reviewing the previous literature and comparing it with qualitative research approach (Newman & Benz, 1998). The assessment of each scientific quantitative research should be made depending on whether it contributes to the existing theoretical knowledge, if it is scientifically reliable and methodologically consistent, if its findings can be generalized, and if it follows an efficient strategy in order to give efficient findings. These criteria correspond to the internal and external validity, reliability and objectivity of a quantitative research (Punch, 2003).

3.2 Research design

In quantitative research, the researcher seeks for the collection of objective and general data for a phenomenon, which will be turned to statistical data in order to make comparisons between different variables and provide objective explanations for

the causes or relationships between them, which will then constitute an objective and general theory about the phenomenon that the research investigates (Burns, 1997). The assumptions of the quantitative research require the existence of an objective reality, a basis of deductive procedure, the formulation of research hypotheses and finally the declaration of a specific aim that intends to review the theoretical knowledge through empirical results (Neuman & Kreuger, (2003).

The types of quantitative research are: a) experimental and b) non-experimental.

The experimental method seeks to determine the cause and effect relationship between two or more variables which is not substantiated by statistical analysis but by logical processes. Non-experimental methods have several types which can be used according to the purpose of a research both individually or in combination. These are: a) descriptive analysis, b) comparison tests, c) correlation analysis, s) reversal analysis, e) non-equivalent forces analysis, and f) of successive measurements methods.

A main feature of a quantitative research is the philosophy of positivism which embraces (Howe & Eisenhart, 1990):

- The existence of a single and clearly observable reality
- A clear separation between the observer and the observed world
- The goal of revealing causal relationships beyond spatiotemporal context
- The position that the research can and should be free of personal bias

The survey conducted as part of this thesis is an ad hoc primary research, as it was implemented to meet specific targets based on information and data collected from primary sources. The choice of a quantitative research for this study was based on the fact that the collection of data through questionnaires is one of the most common and effective methods in the context of social sciences. Respondents were invited to answer a series of closed questions, whose number and content was predetermined, codifying the answers and giving to the researcher the material to apply statistical processing. The main reason for choosing closed-ended questions is that they latter are susceptible to predefined answers of Likert Scale type, noting that they also require little time to be answered and allow effective registration and statistical

processing. As mentioned above, the research methodology used in this study is the quantitative method using closed-ended questions. The purpose of this study led to the selection of quantitative research by questionnaire which helps to quantify trends, attitudes and views of all respondents, quantitative sizes assessment and draw conclusions based on the research questions (Newman & Benz, 1998). The assessment of each scientific quantitative research is based on a series of specific characteristics which can be summarized as follows:

- The research is applied if it is estimated that it will provide further scientific conclusions to the existing knowledge
- It is scientifically substantiated
- Findings should be able to be generalizable
- Findings should be transferred to other disciplines

These criteria are directly related to the validity of the research, and the degree of reliability and the ability to approach the objective truth, as the research process is performed through the personal perspective of the participants (Bagozzi et al, 2001).

3.3 Sampling techniques and size

The sample is a representative subset of the population selected for research purposes in order to draw conclusions for the whole population. For a sample to be representative of the population, it must have critical features which are the same as the population's. This was tried to be achieved by using the random sample selection among Greek consumers, while considering the constraints imposed in terms of cost and time. Of course the larger the sample, the greater the accuracy of the results, so assuming that the sample was representative and verifying that the individuals that participated in the survey had not common features that could contaminate the results of the survey, we conducted generalizations of research findings in all of the real population adopted by the sampling frame.

The questionnaire was given to and completed by 124 Greek consumers, with the method of convenience sampling. In our case of research, we used the convenience sampling (Babbie, 1990), defined as the ability of each member of the envisaged population to be selected with the same probability. The researcher had personal

contact with the respondent's through private meetings, telephone calls or e-mail communication. The total sample number was 124 people who completed the questionnaire with responsibility.

3.4 Pilot study results and question design

Before the final distribution of the questionnaire, the research tool was first given to five consumers in order to test if it is fully understood by them. This pilot study was completed a week later when the questionnaire was given to the same individuals in order to investigate if their answers provide similar results. It was concluded that the research tool operates properly and it was decided to be distributed to the research sample. The questionnaire used in the present research consists of 2 parts.

The first part of the research tool includes 9 questions of demographic characteristics of the respondents (gender, age, level of education, occupation, financial situation, marital status, number of children [if there exist], number of persons living in the household). The second part of the study sample includes 5 subunits and all questions were given in a five- point positive Likert scale. Subunit A consists of 8 questions related to the degree of eco-labelling awareness of the respondents, subunit B has 8 questions that are referred to the degree of positive attitudes of the respondents towards eco-labeled products and subunit C also consists of 8 questions related to the degree of positive buying behavior for eco-labeled products. Finally, subunit D refers to the degree of environmental consciousness of consumers and subunit E to the degree of barriers that the consumers face while buying eco-labeled products through 6 and 7 items, respectively. All five units of the second part of the research tool correspond to individual factors calculated as the average score of the items that each section consists of.

3.5 Validity and reliability

In order to test the validity of the data the test-retest method was used during the pilot study. The correlation coefficients of the question in the first and the second part of the pilot study exceeded 0.9 and thus the content of the questionnaire was considered as valid. In order to test the internal consistency and reliability of the responses the a-Cronbach's coefficient was calculated. By testing the reliability coefficients of

Cronbach for the individual factors of the questionnaire but also for the whole research tool, it was found that it is satisfactory in each case as it exceeds 0.6.

Table 1: Cronbachs' Alpha

| | |
|---|-------|
| Eco-labelling awareness | 0.752 |
| Positive attitudes towards eco-labeled products | 0.693 |
| Positive buying behavior for eco-labeled products | 0.687 |
| Environmental consciousness | 0.852 |
| Barriers for buying eco-labeled products | 0.929 |
| Total Questionnaire | 0.826 |

3.6 Data analysis

To export the results we followed a simple process. Initially, questionnaires were collected, coded and registered in the statistical package SPSS 20.0 Multilanguage. Subsequently, the results are exported and presented with the use of measures of central tendency and dispersion, namely the mean and standard deviation and frequency allocation tables. In addition, by using the proper statistical methods, such as Pearson's correlation coefficient, independent samples t- test and One Way ANOVA, the existence of statistical significant relationships between the variables will be examined, on a 5% significance level. The results are presented through relevant comments.

3.7 Ethics

The main ethical principles that were followed during the research process and data collection are summarized as follows:

- Confidentiality and anonymity
- Honesty and trust
- Access to research results
- Informed consent
- Protection of physical and mental integrity

Chapter 4

Empirical results

The first part of this statistical study helps us to clarify the nature of the basic demographic characteristics of respondents taking part in it. Thus, as regards consumers' demographic profile, the 48.4% of the study sample consists of men and the 51.6% of women, while the 14.5% of the respondents are between 18 to 24 years old, 24.2% are 25 to 29, 33.1% are 30 to 39, 9.7% are 40 to 49, 9.7% are 50 to 59 and 8.9% are over 60 years old. As regards their educational level, 3.2% of the respondents are primary school graduates, 17.7% are high school graduates, 12.9% attended vocational education, 50.0% are higher education graduates and 16.1% hold an MSc or PhD title. The study sample consists of 18.5% public servants, 33.9% employees, 16.9% students, 6.5% unemployed, 9.7% housekeepers, while the 14.5% of the respondents own a private business. Moreover, 22.6% of the individuals state that their financial situation is very bad, 22.6% bad, 29.0% average, 21.0% good and 16.1% very good. The sample consists of 30.6% single individuals, 62.1% married, 3.2% divorced and 4.0% widowed, and 61.3% of the individuals have children. The majority of the respondents with children have 1 or 2 children, while finally the percentage of individuals living in households of one person is 21.0%, 17.7% live in households of 2, 54.8% in households of 3-4, and 6.5% in households of 5-6.

Table 2: Demographics

| | | N | % |
|--------|------|----|-------|
| Gender | Male | 60 | 48.4% |

| | | | |
|----------------------|--------------------|----------------|-------|
| | Female | 64 | 51.6% |
| Age | 18-24 | 18 | 14.5% |
| | 25-29 | 30 | 24.2% |
| | 30-39 | 41 | 33.1% |
| | 40-49 | 12 | 9.7% |
| | 50-59 | 12 | 9.7% |
| | Over 60 | 11 | 8.9% |
| | Level of education | Primary school | 4 |
| High school | | 22 | 17.7% |
| Vocational education | | 16 | 12.9% |
| Higher education | | 62 | 50.0% |
| MSc or doctorate | | 20 | 16.1% |
| Occupation | Public servant | 23 | 18.5% |
| | Employee | 42 | 33.9% |
| | Student | 21 | 16.9% |
| | Own business | 18 | 14.5% |
| | Unemployed | 8 | 6.5% |
| | Housekeeping | 12 | 9.7% |
| Financial situation | Very bad | 14 | 11.3% |
| | Bad | 28 | 22.6% |
| | Average | 36 | 29.0% |
| | Good | 26 | 21.0% |
| | Very good | 20 | 16.1% |
| Marital status | Single | 38 | 30.6% |
| | Married | 77 | 62.1% |
| | Divorced | 4 | 3.2% |

| | | | |
|--|---------|----|-------|
| | Widowed | 5 | 4.0% |
| Do you have children? | Yes | 76 | 61.3% |
| | No | 48 | 38.7% |
| If yes. how many? | 1 | 37 | 48.7% |
| | 2 | 31 | 40.8% |
| | 3 | 5 | 6.6% |
| | 4 | 3 | 3.9% |
| Number of persons living in the household | 1 | 26 | 21.0% |
| | 2 | 22 | 17.7% |
| | 3-4 | 68 | 54.8% |
| | 5-6 | 8 | 6.5% |

Considering the degree that the respondents display eco-label awareness, this is moderate, as the mean score of the corresponding factor is equal to 3.32 ($SD = 0.56$). Greek consumers show a high level of knowledge of ecological marks for different product categories and ecological marks for organic food products, while they have a satisfying level of knowledge on eco-labelling. Their ability to distinguish different ecological marks and understand information provided by eco-labels is slightly lower, while the respondents show moderate knowledge of the EU and Greek eco-labels. Finally, the study sample has little knowledge of the marks used by manufacturers on eco-labels.

Table 3: Eco-labelling awareness degree

| | Strongly disagree | | Disagree | | Nor agree or disagree | | Agree | | Strongly agree | | M | SD |
|---|-------------------|------|----------|-------|-----------------------|-------|-------|-------|----------------|-------|------|------|
| | N | % | N | % | N | % | N | % | N | % | | |
| I know ecological marks for different products categories | 6 | 4.8% | 16 | 12.9% | 38 | 30.6% | 24 | 19.4% | 40 | 32.3% | 3.61 | 1.20 |

| | | | | | | | | | | | | |
|--|----|-------|----|-------|----|-------|----|-------|----|-------|-------------|-------------|
| I know ecological marks for organic food products | 4 | 3.2% | 8 | 6.5% | 46 | 37.1% | 54 | 43.5% | 12 | 9.7% | 3.50 | 0.88 |
| I am able to distinguish different ecological marks | 8 | 6.5% | 6 | 4.8% | 54 | 43.5% | 46 | 37.1% | 10 | 8.1% | 3.35 | 0.94 |
| I have a high level of knowledge on eco-labelling | 2 | 1.6% | 10 | 8.1% | 56 | 45.2% | 36 | 29.0% | 20 | 16.1% | 3.50 | 0.92 |
| I know the marks used by manufacturers on eco-labels | 48 | 38.7% | 26 | 21.0% | 20 | 16.1% | 8 | 6.5% | 22 | 17.7% | 2.44 | 1.49 |
| I know the EU eco-labels (e.g. Flower, Euro leaf) | 6 | 4.8% | 12 | 9.7% | 66 | 53.2% | 8 | 6.5% | 32 | 25.8% | 3.39 | 1.12 |
| I know the Greek eco-labels | 2 | 1.6% | 14 | 11.3% | 64 | 51.6% | 22 | 17.7% | 22 | 17.7% | 3.39 | 0.96 |
| I understand information provided by eco-labels | 2 | 1.6% | 4 | 3.2% | 66 | 53.2% | 44 | 35.5% | 8 | 6.5% | 3.42 | 0.73 |
| Eco-labelling awareness | | | | | | | | | | | 3.32 | 0.56 |

Moreover, Greek consumers consider eco-labeled products as of higher quality, they believe that eco-labeled products are better for their health and image, and state that higher price of eco-labeled products is consistent with their higher quality. In addition, respondents display a high degree of trust in eco-labeled products and companies that use eco-labels, while they buy eco-labeled products because they are environmentally concerned, although in a moderate degree. Aggregate average rating of the factor regarding the positive attitudes towards eco-labeled products is considered as high, as it equals to 3.43 (SD = 0.57).

Table 4: Positive attitudes towards eco-labeled products degree

| | Strongly disagree | | Disagree | | Nor agree or disagree | | Agree | | Strongly agree | | M | SD |
|--|-------------------|-------|----------|-------|-----------------------|-------|-------|-------|----------------|-------|------|------|
| | N | % | N | % | N | % | N | % | N | % | | |
| Eco-labeled products help to protect the environment | 14 | 11.3% | 28 | 22.6% | 26 | 21.0% | 20 | 16.1% | 36 | 29.0% | 3.29 | 1.39 |
| I consider eco-labeled products as of higher quality | 4 | 3.2% | 6 | 4.8% | 48 | 38.7% | 54 | 43.5% | 12 | 9.7% | 3.52 | 0.86 |
| I believe that eco-labeled products are better for my health | 4 | 3.2% | 4 | 3.2% | 50 | 40.3% | 52 | 41.9% | 14 | 11.3% | 3.55 | 0.86 |
| I have more trust in eco-labeled products | 4 | 3.2% | 4 | 3.2% | 56 | 45.2% | 42 | 33.9% | 18 | 14.5% | 3.53 | 0.90 |

| | | | | | | | | | | | | |
|--|----|-------|----|-------|----|-------|----|-------|----|-------|-------------|-------------|
| I have more trust in companies that use eco-labels | 6 | 4.8% | 2 | 1.6% | 62 | 50.0% | 24 | 19.4% | 30 | 24.2% | 3.56 | 1.03 |
| I believe higher price of eco-labeled products is consistent with their higher quality | 2 | 1.6% | 6 | 4.8% | 66 | 53.2% | 34 | 27.4% | 16 | 12.9% | 3.45 | 0.84 |
| I believe buying eco-labeled products is good for my image | 2 | 1.6% | 2 | 1.6% | 50 | 40.3% | 56 | 45.2% | 14 | 11.3% | 3.63 | 0.77 |
| I buy eco-labeled products because I am environmentally concerned | 34 | 27.4% | 14 | 11.3% | 28 | 22.6% | 28 | 22.6% | 20 | 16.1% | 2.89 | 1.44 |
| Positive attitudes towards eco-labeled products | | | | | | | | | | | 3.43 | 0.57 |

By examining the average rating of the items referring to factor of consumers' positive buying behavior for eco-labeled products, initially, it is observed that respondents do not read the eco-labels carefully when buying a product, while they do not regularly buy eco-labeled products and don't prefer eco-labeled products over regular ones. Also, consumers do not return to the eco-label when they buy a product and their willingness to pay a higher price for an eco-labeled product is moderate. On the contrary, consumers who are inclined to choose an eco-labeled product when they do not have knowledge for it, while they state that they pay much attention to the information provided by an eco-label when buying a product, with the general degree of the positive buying behavior for eco-labeled products being lower than moderate ($M = 2.92$, $SD = 0.73$).

Table 5: Positive buying behavior for eco-labeled products degree

| | Strongly disagree | | Disagree | | Nor agree or disagree | | Agree | | Strongly agree | | M | SD |
|---|-------------------|-------|----------|-------|-----------------------|-------|-------|-------|----------------|-------|------|------|
| | N | % | N | % | N | % | N | % | N | % | | |
| I regularly buy eco-labeled products | 50 | 40.3% | 20 | 16.1% | 18 | 14.5% | 20 | 16.1% | 16 | 12.9% | 2.45 | 1.47 |
| I prefer eco-labeled products than regular ones | 36 | 29.0% | 40 | 32.3% | 28 | 22.6% | 12 | 9.7% | 8 | 6.5% | 2.32 | 1.18 |
| When I buy a product I return to the eco-label | 24 | 19.4% | 52 | 41.9% | 40 | 32.3% | 4 | 3.2% | 4 | 3.2% | 2.29 | 0.93 |

| | | | | | | | | | | | | |
|--|----|-------|----|-------|----|-------|----|-------|----|-------|-------------|-------------|
| I read the eco-labels carefully when buying a product | 44 | 35.5% | 58 | 46.8% | 18 | 14.5% | 2 | 1.6% | 2 | 1.6% | 1.87 | 0.84 |
| I am willing to pay a higher price for an eco-labeled product | 22 | 17.7% | 28 | 22.6% | 32 | 25.8% | 26 | 21.0% | 16 | 12.9% | 2.89 | 1.29 |
| If I do not have knowledge for a product I am inclined to choose an eco-labeled one | 8 | 6.5% | 12 | 9.7% | 20 | 16.1% | 38 | 30.6% | 46 | 37.1% | 3.82 | 1.22 |
| The large majority of products I buy are eco-labeled | 0 | 0.0% | 0 | 0.0% | 48 | 38.7% | 38 | 30.6% | 38 | 30.6% | 3.92 | 0.83 |
| I pay much attention to the information provided by an eco-label when buying a product | 0 | 0.0% | 0 | 0.0% | 56 | 45.2% | 40 | 32.3% | 28 | 22.6% | 3.77 | 0.79 |
| Positive buying behavior for eco-labeled products | | | | | | | | | | | 2.92 | 0.73 |

Regarding the factor that examines the degree of environmental consciousness of consumers, it is observed that they produce green products themselves in a low frequency, while lower than moderate is the degree that the respondents are considered as environmentally conscious individuals or prefer environmentally friendly products. On the other hand, consumers tend to protect the environment in a high degree, are very concerned about the impact of consumerism on the environment and try to pursue other people to be environmentally conscious. The total average degree environmental consciousness of the study sample is moderate ($M = 3.16$, $SD = 0.44$).

Table 6: Environmental consciousness degree

| | Strongly disagree | | Disagree | | Nor agree or disagree | | Agree | | Strongly agree | | M | SD |
|--|-------------------|------|----------|-------|-----------------------|-------|-------|-------|----------------|-------|------|------|
| | N | % | N | % | N | % | N | % | N | % | | |
| I consider myself as an environmentally conscious person | 12 | 9.7% | 14 | 11.3% | 82 | 66.1% | 6 | 4.8% | 10 | 8.1% | 2.90 | 0.93 |
| I protect the environment (e.g. by recycling or energy saving) | 2 | 1.6% | 12 | 9.7% | 62 | 50.0% | 18 | 14.5% | 30 | 24.2% | 3.50 | 1.02 |
| I always prefer environmentally friendly products | 8 | 6.5% | 24 | 19.4% | 76 | 61.3% | 16 | 12.9% | 0 | 0.0% | 2.81 | 0.74 |

| | | | | | | | | | | | | |
|--|----|-------|----|-------|----|-------|----|-------|----|-------|-------------|-------------|
| I produce green products myself | 30 | 24.2% | 32 | 25.8% | 58 | 46.8% | 4 | 3.2% | 0 | 0.0% | 2.29 | 0.87 |
| I am very concerned about the impact of consumerism on the environment | 0 | 0.0% | 2 | 1.6% | 60 | 48.4% | 38 | 30.6% | 24 | 19.4% | 3.68 | 0.80 |
| I try to pursue other people to be environmentally conscious | 0 | 0.0% | 0 | 0.0% | 54 | 43.5% | 46 | 37.1% | 24 | 19.4% | 3.76 | 0.76 |
| Environmental consciousness | | | | | | | | | | | 3.16 | 0.44 |

Finally, as it is shown in table 7, consumers identify high barriers for buying eco-labeled products ($M = 3.50$, $SD = 0.52$), especially due to lack of trust in eco-labels and companies using eco-labels, limited availability of eco-labeled products and higher price of eco-labeled products. Also, respondents identify quite high difficulties in understanding information of eco-labels and moderate degree of confusing information of eco-labels.

Table 7: Barriers for buying eco-labeled products degree

| | Unimportant | | Slightly important | | Moderately important | | Important | | Very important | | M | SD |
|---|-------------|----------|--------------------|----------|----------------------|----------|-----------|----------|----------------|----------|-------------|-------------|
| | N | % | N | % | N | % | N | % | N | % | | |
| Higher price of eco-labeled products | 0 | 0.0% | 0 | 0.0% | 54 | 43.5% | 50 | 40.3% | 20 | 16.1% | 3.73 | 0.73 |
| Limited availability of eco-labeled products | 0 | 0.0% | 0 | 0.0% | 58 | 46.8% | 38 | 30.6% | 28 | 22.6% | 3.76 | 0.80 |
| Lack of trust in eco-labels | 6 | 4.8% | 6 | 4.8% | 24 | 19.4% | 50 | 40.3% | 38 | 30.6% | 3.87 | 1.06 |
| Lack of trust in companies using eco-labels | 2 | 1.6% | 6 | 4.8% | 32 | 25.8% | 50 | 40.3% | 34 | 27.4% | 3.87 | 0.93 |
| Limited knowledge about eco-labels | 38 | 30.6% | 20 | 16.1% | 32 | 25.8% | 28 | 22.6% | 6 | 4.8% | 2.55 | 1.27 |
| Difficulties in understanding information of eco-labels | 6 | 4.8% | 10 | 8.1% | 40 | 32.3% | 58 | 46.8% | 10 | 8.1% | 3.45 | 0.93 |
| Confusing information of eco-labels | 4 | 3.2% | 20 | 16.1% | 48 | 38.7% | 42 | 33.9% | 10 | 8.1% | 3.27 | 0.94 |
| Barriers for buying eco-labeled products | | | | | | | | | | | 3.50 | 0.52 |

Subsequently, a correlation analysis of the individual factors resulting from the research tool is performed, by using the Pearson's r parametric linear correlation coefficient. By means of process of correlation, the kind of relationship between 2 variables is outlined, focusing on both the sign, but also on whether the relationship is

weak (correlation coefficient 0-0,3), moderate (correlation coefficient 0.3 - 0,5) strong (correlation coefficient 0.5 to 0.8) or very strong (correlation coefficient 0.8 and above). Initially, a positive, strong and statistically significant correlation between “Eco-labelling awareness” and the factors of “Positive attitudes towards eco-labeled products” ($r = 0.565$, $p < 0.001$) and “Positive buying behavior for eco-labeled products” ($r = 0.593$, $p < 0.001$) is observed. Thus, the greater the eco-labelling awareness the more positive are the attitudes towards eco-labeled products and the buying behavior for eco-labeled products, and vice versa. Also, a positive, statistically significant but moderate correlation relationship between the factor “Eco-labelling awareness” and “Environmental consciousness” ($\rho = 0.307$, $p = 0.002$) and “Barriers for buying eco-labeled products” ($\rho = 0.483$, $p < 0.001$) is found, showing that as eco-labelling awareness increases, environmental consciousness and barriers for buying eco-labeled products also increase. Also, as shown below, positive attitudes towards eco-labeled products is significantly correlated with positive buying behavior for eco-labeled products ($\rho = 0.526$, $p < 0.001$), environmental consciousness ($\rho = 0.198$, $p = 0.028$) and barriers for buying eco-labeled products ($\rho = 0.486$, $p < 0.001$). The positive sign of the corresponding coefficients proves a liner relationship between the variables under examination, while similar is the nature of the relationship between the factor of “Positive buying behavior for eco-labeled products” and the factor of “Environmental consciousness” ($\rho = 0.557$, $p < 0.001$) and “Barriers for buying eco-labeled products” ($\rho = 0.480$, $p < 0.001$).

Table 8: Correlation matrix of the factors scores

| | Eco-labelling awareness | Positive attitudes towards eco-labeled products | Positive buying behavior for eco-labeled products | Environmental consciousness | Barriers for buying eco-labeled products |
|---|----------------------------------|---|---|-----------------------------|--|
| Eco-labelling awareness | r 1 p | | | | |
| Positive attitudes towards eco-labeled products | r 0.565 p 0.000 | 1 | | | |
| Positive buying behavior for eco-labeled products | r 0.593 p 0.000 | 0.526 0.000 | 1 | | |
| Environmental consciousness | r 0.307 | 0.198 | 0.577 | 1 | |

| | | | | | | |
|--|----------|-------|-------|-------|-------|---|
| | p | 0.002 | 0.028 | 0.000 | | |
| Barriers for buying eco-labeled products | r | 0.483 | 0.486 | 0.480 | 0.032 | 1 |
| | p | 0.000 | 0.000 | 0.000 | 0.727 | |

In order to compare the mean scores of the factors based on the gender of the respondents, independent samples t- test is used. As show in table 9, the only case that statistically significant differences are appeared is the one of “Environmental consciousness” (p=0.030). More specifically, females show greater degree of environmental consciousness than males, as the corresponding average score is significantly higher.

Table 9: Independent samples t- test of the factors scores based on gender

| | Gender | | | | |
|---|----------|-----------|----------|-----------|----------|
| | Male | | Female | | p |
| | M | SD | M | SD | |
| Eco-labelling awareness | 3.30 | 0.58 | 3.35 | 0.56 | 0.640 |
| Positive attitudes towards eco-labeled products | 3.40 | 0.63 | 3.45 | 0.52 | 0.664 |
| Positive buying behavior for eco-labeled products | 2.94 | 0.71 | 2.89 | 0.75 | 0.697 |
| Environmental consciousness | 3.07 | 0.42 | 3.24 | 0.45 | 0.030 |
| Barriers for buying eco-labeled products | 3.52 | 0.56 | 3.48 | 0.49 | 0.733 |

In addition, based on the One Way ANOVA analysis, there are no statistically significant differences on the average scores of the factors under examination based on the age and the level of education of the consumers, as p- value is greater than the significance level of 0.05 in every case. Finally, based on the correlation analysis, there is no statistically significant relationship between the factors under examination and the financial situation of consumers.

Table 10: One Way ANOVA of the factors scores based on age

| | Age | | | | | | | | | | | | |
|--|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|
| | 18-24 | | 25-29 | | 30-39 | | 40-49 | | 50-59 | | Over 60 | | p |
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | |

| | | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| Eco-labelling awareness | 3.47 | 0.43 | 3.27 | 0.60 | 3.26 | 0.56 | 3.18 | 0.76 | 3.38 | 0.46 | 3.57 | 0.53 | 0.423 |
| Positive attitudes towards eco-labeled products | 3.53 | 0.61 | 3.39 | 0.66 | 3.42 | 0.57 | 3.24 | 0.72 | 3.47 | 0.35 | 3.55 | 0.30 | 0.769 |
| Positive buying behavior for eco-labeled products | 3.16 | 0.82 | 2.76 | 0.68 | 2.86 | 0.72 | 2.66 | 0.62 | 3.10 | 0.56 | 3.25 | 0.86 | 0.140 |
| Environmental consciousness | 3.27 | 0.48 | 3.11 | 0.46 | 3.14 | 0.42 | 3.06 | 0.36 | 3.07 | 0.43 | 3.35 | 0.51 | 0.469 |
| Barriers for buying eco-labeled products | 3.56 | 0.39 | 3.45 | 0.58 | 3.44 | 0.52 | 3.40 | 0.59 | 3.60 | 0.34 | 3.74 | 0.65 | 0.538 |

Table 11: One Way ANOVA of the factors scores based on level of education

| | Level of education | | | | | | | | | | | | p |
|---|--------------------|------|-------------|------|----------------------|------|------------------|------|------------------|------|--|--|-------|
| | Primary school | | High school | | Vocational education | | Higher education | | MSc or doctorate | | | | |
| | M | SD | M | SD | M | SD | M | SD | M | SD | | | |
| Eco-labelling awareness | 3.50 | 0.20 | 3.16 | 0.77 | 3.45 | 0.35 | 3.37 | 0.47 | 3.24 | 0.73 | | | 0.419 |
| Positive attitudes towards eco-labeled products | 3.44 | 0.54 | 3.29 | 0.72 | 3.68 | 0.32 | 3.43 | 0.48 | 3.38 | 0.78 | | | 0.341 |
| Positive buying behavior for eco-labeled products | 2.81 | 0.51 | 2.77 | 0.83 | 3.22 | 0.80 | 2.92 | 0.67 | 2.86 | 0.74 | | | 0.434 |
| Environmental consciousness | 2.88 | 0.25 | 3.15 | 0.47 | 3.28 | 0.57 | 3.14 | 0.46 | 3.18 | 0.24 | | | 0.561 |
| Barriers for buying eco-labeled products | 3.57 | 0.87 | 3.34 | 0.53 | 3.58 | 0.54 | 3.51 | 0.48 | 3.58 | 0.57 | | | 0.558 |

Table 12: Correlation of factors scores and financial situation

| | Financial situation | |
|---|---------------------|-------|
| | r | p |
| Eco-labelling awareness | 0.097 | 0.282 |
| Positive attitudes towards eco-labeled products | 0.065 | 0.470 |
| Positive buying behavior for eco-labeled products | 0.106 | 0.239 |
| Environmental consciousness | 0.036 | 0.692 |
| Barriers for buying eco-labeled products | -0.090 | 0.323 |

Chapter 5

Conclusions and recommendations

Given the fact that environmental protection has emerged as a critical issue of public debate nowadays, both consumers and companies are called to adopt a positive change towards the consumption and production of environmentally preferable goods and services. In this light, green marketing has emerged as a very popular trend in today's markets, in order to achieve environmental sustainability. Eco-labelling is a major tool of green marketing initiatives, as it serves as a means for providing environmental-related information of products and services to consumers, while promoting eco-friendly consumer behavior. Thus, the aim of this study was to investigate Greek consumers' behavior and attitudes towards eco-labels, taking into account their demographic profile as well as their environmentally consciousness.

According to the research findings, it was found that Greek consumer's awareness of eco-labels is relatively moderate. In particular, consumers are somewhat aware of the different eco-marks available in the market for different products, but their ability to distinguish them is low, along with their ability to understand information provided by eco-labels. This finding comes in agreement with previous research on this matter, as it has been well documented that consumers are not fully aware of the different eco-labelling schemes and environmental certification systems available in the international markets (Rashid, 2009; Gerrard & Janssen, 2013; Nagaraju & Thejaswini, 2014; Witek, 2017). Such a suggestion has been also be made for Greek consumers, who display limited knowledge both for eco-labelling and the specific features of eco-friendly products (Fotopoulos & Krystallis, 2002; Alevizou et al,

2015). Greek consumers' moderate level of eco-labelling awareness is also in line with their relatively limited environmental consciousness, as demonstrated in this research.

As regards their attitudes and motives towards eco-labeled products, it was found that Greek consumers hold overall positive attitudes, although such attitudes are not translated into a positive buying behavior. In particular, although they trust eco-labels and companies using them, on the contrary, they do not regularly buy eco-labeled products or prefer them over conventional ones. The fact that positive attitudes towards eco-labelling does not necessarily lead to a positive buying behavior has been well documented in the research literature (Röös & Tjärnemo, 2011; Janssen & Hamm, 2012; Rettie et al, 2012; Gerrard et al, 2013). On the other hand, this research revealed that Greek consumers hold strong motives for choosing eco-labeled products, although they do not actually do.

Among these motives, the most important ones include their belief that eco-labeled products are of higher quality, and better for their personal health and image, although their environmental consciousness seem to play a moderate role in their purchasing behavior. Indeed, it has been suggested that consumers' willingness to adopt a healthier lifestyle, and higher perceived quality and safety of eco-labeled products and services are crucial motivators for adopting a positive consumer behavior towards eco-labelling (Grankvist & Biel, 2001; Brécard et al, 2009; Daugbjerg et al, 2014; Vega-Zamora et al, 2014; Testa et al, 2015; Liu et al, 2017). On the contrary to the existing evidence suggesting that environmental consciousness play also a significant role for eco-friendly products' preferences (Polonsky, 2011; Chen & Chang, 2013; Grunert et al, 2014; Hameed & Waris, 2018), this study suggests that this variable impact is moderate.

In addition, Greek consumers' willingness to pay for eco-labeled products is also moderate. Indeed, although several studies have indicated that consumers are willing to pay a price premium for eco-labeled and eco-friendly products (Veinstein, 2007; Bougherara & Combris, 2009; Xu et al, 2012; Sörqvist et al, 2013), other studies suggest that willingness to pay is only evident for consumers of high environmental consciousness (Loureiro et al, 2002; Barnard & Mitra, 2010; Liu et al, 2017). Present findings are also in agreement with recent empirical evidence in Greece, as it has been

found that Greek consumers are not willing to pay more for products certified with the “Euro-leaf” organic label (Anastasiou et al, 2017). Once more, this finding suggests that although consumers may have a generally positive attitude towards eco-labels, these attitudes may not be reflected in actual purchase decisions and preferences.

Regarding perceived barriers for buying eco-labeled products, this study revealed that the most important ones include the limited availability and high price of such products, along with difficulties in understanding information provided by eco-labels. These findings verify available empirical evidence considering the factors that hamper positive buying behavior towards eco-labeled products, which refer to the belief that eco-labeled products are significantly more expensive than conventional ones (Moser, 2016; Lee et al, 2018), lack of clarity of different eco-labelling schemes (Eden et al, 2008; Janssen & Hamm, 2012), and lack of availability of such products in different markets (Tanner & Kast, 2003; Rööös & Tjärnemo, 2011; Joshi & Rahman, 2015). Lastly, as regards consumers demographic profile impact on their attitudes and behavior towards eco-labeled products, the only demographic variable that actually has a significant impact is gender, as females display a greater degree of environmental consciousness than the males, as it has been well documented in previous studies (Gilg et al, 2005; Han et al, 2011; Zhao et al, 2014).

Overall, findings of this study support the idea that Greek consumers hold generally positive attitudes towards eco-labeled products, but these attitudes are not greatly reflected in their actual purchasing behavior, given also their moderate awareness of eco-labelling and their limited level of environmental consciousness. On the other hand, it seems that positive beliefs for eco-labeled products (healthier, of better quality and enhanced safety) are affected by eco-friendly personal values and behaviors, although it seems that there is a great potential for improvement as regards eco-labelling communication in the market. In this light, it is recommended that eco-labels should be better communicated to Greek consumers, both by private companies and independent parties (e.g. environmental organizations, public bodies), in order to improve awareness and foster a positive behavioral environmentally friendly change. In accordance, consumers’ should be provided with specific information about different eco-labelling schemes and certification processes for awarding companies with eco-labels, so as to enhance consumer trust and confidence on this matter.

This study is characterized by a number of limitations that should be taken into account while interpreting present findings. Firstly, this study is limited by the relatively limited sample, especially in geographical terms, as respondents included in the sample live mostly in urban centers of Northern Greece. Secondly, the research tool used in the survey was constructed only for this research purposes. Thirdly, another research limitation refers to the fact that no information was provided to respondents regarding different types of eco-labels (I, II and III), so as to investigate their respective views, attitudes and behaviors. As such, future research should further explore Greek consumers' attitudes and purchasing behavior towards eco-labeled products by using a larger and more differentiated in geographical terms sample. In addition, future research should also focus on consumers' views towards different types of eco-labels. Lastly, the issue of trust in eco-labels is another important issue of green marketing that needs further investigation.

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Appendix

Questionnaire

Introduction

This questionnaire aims at assessing your attitudes and buying behavior towards eco-labels. This survey is purely conducted for academic purposes. Responses will be kept strictly confidential and you are not requested to display anywhere your name or other personal information, as this survey is anonymous.

Please note that eco-labels refer to claims made by a firm proving that it has employed environmentally friendly production and/or distribution methods. According to the Global Ecolabelling Network (GEN), an eco-label is a label that identifies products or services proven environmentally preferable within a specific product or service category, and is awarded by an impartial third part that has independently determined transparent environmental criteria and standards based on life-cycle considerations.

Demographics

Gender

- Male
- Female

Age

- 18-24
- 25-29
- 30-39
- 40-49
- 50-59
- Over 60

Level of education

- Primary school
- High school
- Vocational education
- Higher education
- MSc or doctorate

Occupation

- Public servant
- Employee
- Student
- Own business
- Unemployed
- Housekeeping

Financial situation

- Very bad
- Bad
- Average
- Good
- Very good

| | |
|--|---|
| Marital status | <input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed |
| Do you have children? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If yes, how many? | _____ |
| Number of persons living in the household | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3-4 <input type="checkbox"/> 5-6 <input type="checkbox"/> Over 7 |

Questions

Eco-labelling awareness

*Ecolabelling is a method of environmental performance certification practiced around the world. It identifies products or services proven environmentally preferable overall, within a specific product/service category. (www.globalecolabelling.net)

| | |
|---|---|
| Please note the level of agreement with the following sentences: | <p align="center"> Strongly disagree Disagree Nor agree or disagree Agree Strongly agree </p> |
| 1. I know ecological marks for different products categories 2. I know ecological marks for organic food products 3. I am able to distinguish different ecological marks 4. I have a high level of knowledge on eco-labelling 5. I know the marks used by manufacturers on eco-labels 6. I know the EU eco-labels (e.g. Flower, Euro leaf) 7. I know the Greek eco-labels 8. I understand information provided by eco-labels | |

Attitudes towards eco-labeled products

| | |
|--|--|
| <p>Please note the level of agreement with the following sentences:</p> | <p>Strongly disagree Disagree Nor agree or disagree Agree Strongly agree</p> |
| <ol style="list-style-type: none"> 1. Eco-labeled products help to protect the environment 2. I consider eco-labeled products as of higher quality 3. I believe that eco-labeled products are better for my health 4. I have more trust in eco-labeled products 5. I have more trust in companies that use eco-labels 6. I believe higher price of eco-labeled products is consistent with their higher quality 7. I believe buying eco-labeled products is good for my image 8. I buy eco-labeled products because I am environmentally concerned | |

Buying behavior for eco-labeled products

| | |
|--|--|
| <p>Please note the level of agreement with the following sentences:</p> | <p>Strongly disagree Disagree Nor agree or disagree Agree Strongly agree</p> |
| <ol style="list-style-type: none"> 1. I regularly buy eco-labeled products 2. I prefer eco-labeled products than regular ones 3. When I buy a product I return to the eco-label 4. I read the eco-labels carefully when buying a product 5. I am willing to pay a higher price for an eco-labeled product 6. If I do not have knowledge for a product I am inclined to choose an eco-labeled one 7. The large majority of products I buy are eco-labeled 8. I pay much attention to the information provided by an eco-label when buying a product | |

Environmental consciousness

Please note the level of agreement with the following sentences:

Strongly disagree Disagree Nor agree or disagree Agree Strongly agree

1. I consider myself as an environmentally conscious person
2. I protect the environment (e.g. by recycling or energy saving)
3. I always prefer environmentally friendly products
4. I produce green products myself
5. I am very concerned about the impact of consumerism on the environment
6. I try to pursue other people to be environmentally conscious

Barriers for buying eco-labeled products

How important are the following barriers for you for buying eco-labeled products?

Unimportant Slightly important Moderately important Important Very important

1. Higher price of eco-labeled products
2. Limited availability of eco-labeled products
3. Lack of trust in eco-labels
4. Lack of trust in companies using eco-labels
5. Limited knowledge about eco-labels
6. Difficulties in understanding information of eco-labels
7. Confusing information of eco-labels

