
CONSIDERING ECOLOGICALLY SUSTAINABLE PACKAGING DURING DECISION-MAKING WHILE BUYING FOOD PRODUCTS

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ABSTRACT

Modern production of packaging is characterized by great choice of packaging materials and the shape of the packaging. There is almost no product on the market that does not have highlighted symbols that should give information about the product and the packaging. Although most consumers pay attention to the symbols, a certain number never checks them, because they consider them irrelevant. The paper investigates consumer perception of the importance of green packaging of food products. A primary research on the sample of 115 respondents has been carried out investigating respondents' behaviour while making the choice on food product packaging. The findings suggest that concern for the environment and less danger for health are two major motives for buying food products in ecologically sustainable packaging. The respondents think that wood and paper have least influence on the environment, while plastic and glass harm the environment the most.

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Introduction

History of packaging began in the times when people used materials from nature for transporting food, through trade and industry development, when the need for better ways of protection and transport of goods emerged, until today when packaging is everywhere in modern society to such extent that it represents a threat to the environment. Packaging protects the goods from mechanical, climate, chemical and micro-biological influences, but it also protects the surroundings from potentially harmful goods. With its shape, texture, graphical solutions and identification it communicates with the consumer. Besides that, it must enable simple use and be attractive and modern at the same time.

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Packaging materials and their waste have numerous damaging influences on the environment. Some of those influences relate to the very process of packaging production, collecting the packaging waste and its subsequent disposal and management. Next to traditional packaging materials, today, there is a focus shift on biodegradable materials manufactured from renewable raw materials that are easily broken down under the influence of the factors from the surroundings. Over the last years, there is a trend of developing biodegradable packaging that can meet all the needs of the product regarding the preservation of its quality and it can reduce pollution at the same time. This paper investigates consumer perception on the importance of eco-friendly packaging of food products. For the purpose of the paper, an online research has been conducted regarding ecologically sustainable packaging and purchase frequency of food products in eco-friendly packaging. The research instrument was a questionnaire, and the research has tried to answer the following research questions (RQs):

RQ1: What are the motives for buying products in ecologically sustainable packaging?

RQ2: To what extent are the respondents ready to pay extra for a food product in eco-friendly packaging?

The research results will enable better understanding of consumer habits regarding purchases of products in eco-friendly packaging and environmental care.

Materials and methods

Introduction into the packaging

Defining packaging is complex due to its multiple purposes, but generally, it can be said that packaging suggests containers of different shapes and sizes made of packaging materials in the narrow sense, in which any type of goods or victuals is packaged, transported, stored or sold (Vujković et al., 2007). Article 4 of the Regulation on Packaging and Packaging Waste (Official Gazette, 88/2015) defines packaging and packaging waste as follows:

„Package is any type of product, regardless of the material it is made of, used for containing, protection, handling, delivery and presentation of the goods from raw materials to finished products, from manufacturers to consumers. Packaging is also any type of irretrievable items intended for the manufacture of the packaging that will be used for the above-mentioned purposes, as well as additional resources for packing used for wrapping of binding goods, packaging, sealing, preparation for shipment and labelling.” Packaging material is any type of material packaging is manufactured from, like: glass, plastic, paper, cardboard, wood, metal, composit mixed material and other materials.”

Packging can be defined from different aspects (Andrijanić et al., 2012):

- from the manufacturing aspect, packging is something the product is placed in

for the purpose of preserving it during the transport, storage and usage,

- from the aspect of preservation, packaging prevents the product spillage, protects it from the environmental effects, theft etc.,
- from the aspect of construction, packaging needs to be functional, simple, attractive; it has to comply with the modern taste and wishes of the consumers, shape and representation mode,
- from the aspect of cost-effectiveness, packaging is “sufficient packing” that, with minimal costs, preserves and represents the product.

In his book, Rodin (1977) defines packaging:

“A packaging prepares the product – from the moment of the manufacture to the consumption – for its delivery to the buyer-consumer; the way it is manufactured, in different conditions of transport, warehousing, handling, distribution and its presentation on the sales place, so the product in the packaging is best preserved from all external and internal influences.”

In order to correctly protect a food product, i.e. to be safely transported, stored and delivered to the final consumer, it must be packed in appropriate packaging (Jamnicki, 2011). From the aspect of packaging, a product can be considered a product only if it is delivered to the consumer correctly. This mission lies on the packaging and distribution conditions of the product. Only then will the product have its value, not just the nominal, set by the price, but the actual value, the practical and useful one, assigned by the manufacturer and realized by the consumer (Rodin, 1984). One of the functions of food packaging is also to pack food in the way that is most cost-effective, but also to satisfy conditions of food industry and consumers, as it has to keep food safe and minimize external influences on the stability of the packed content (Marsh and Bugusu, 2007). On their way from the producer to the consumer, goods are exposed to many influences that can more or less damage them, and the packaging should protect the goods as much as possible on this way to reach the consumers undamaged and unspoiled. Packaging has to protect the goods from many mechanical stresses, physical and chemical impacts, microorganisms and insects, atmospheric influences, and additionally, prevent the loss of goods or any of its components (Andrijanić et al., 2012). Most common damages that occur on the packaging and products happen because of the influence of (Rodin, 1977): (1) heat: spoilage, putrefaction, evaporation and drying out; (2) cold: freezing, crystallization and cracking; (3) water and water vapors: spoilage, corrosion, blistering and thawing; (4) pressure: breaking and cracking. There is also the function of protection from the influence of the oxygen – oxidation effects manifest in different ways, most often oxygen changes (spoils) the colour, taste or odour. Certain victuals, especially sensitive to oxidation, can be packed in the way that air is partly extracted, and such a packaging is called vacuum packing. The other possibility for protection from the influence of the oxygen is packing in a modified atmosphere. In this case, carbon dioxide or nitrogen is injected in the packaging. They are inert in relation to the

packed victual (Vujković et al., 2007). In general, composite packaging materials with good barrier properties are used for vacuum packing (Lazić et al., 2008).

Packaging is also required to protect the product from the moisture from the environment, which means that the share of moisture in the packed product should not rise nor fall. Should it vary, it could lead to undesirable changes of the packed goods (Vujković et al., 2007). Some packing materials, like metal, glass and minerals will get moist only on the surface, and if they are exposed to air of relatively low moisture, it will dry completely (Stipanelov Vrandečić, 2010). Foods are divided into easily perishable (meat, milk, vegetable) and microbiologically stable. Packaging protects the content while the product moves through the marketing channel and when the product is used. Packaging also prolongs the shelf life of the product, which is important to manufacturers as well as final users (Abdalkrimi AL-Hrezat, 2013).

Some raw materials, auxiliary materials, semi-finished products and almost all finished goods are stored and transported in the appropriate packaging. Packaging with well-executed *storage-transport functions* enables rational use of warehousing and transporting space and realization of these functions depends on the shape and dimensions of the packaging and its compatibility with the dimensions of the packed goods (Stipanelov Vrandečić, 2010). Shape and dimensions of the packaging should be adjusted to the dimensions of the goods because otherwise, storage facility space or the space of the transporting vehicle will not be fully used. Goods that are without shape, pastes and goods that can be disseminated or spilled, take the form of the packaging, so the volume of the packaging should be in line with the amount of the packed goods. If the goods have a stable shape, dimensions and shape of the packaging have to be adjusted to the dimensions and shape of the goods (Andrijanić et al., 2012). The space inside the transporting packaging and the space in the warehouse or the vehicle can be also used with the packaging in the shape of a cuboid. The stability of the stacked goods is increased considerably by crossing and binding the transported units during the stacking. If the goods are stacked on palettes during the transport, dimensions of the packaging should be fitted to the dimensions of the palettes in order to use the size of the palette as better as possible (Vujković et al., 2007). For the optimization of storage-transport function the packaging is labelled with graphical elements to make handling and register of the goods easier (Andrijanić et al., 2012).

Today, when it is possible to manufacture any kind of product in any amount, the problem is to market the product, i.e. to sell it, and the packaging plays here a very important role. When we talk about *the packaging sales value*, it mostly relates to sales packaging (Vujković et al., 2007). Sales packaging rationalizes the sales. It means that the amount of goods that matches consumer needs is packed and what amount of goods will be packed in a sales packaging unit depends on the type of goods, usage, durability, purchasing power etc. Packaging that has a well-realized sales function increases the sales scope. It has to attract the attention of the buyers, spark their interest in a very short time, convey a message and encourage them to buy, so the buyer is actually more ready to pay for reasons of the image, persuasion and reliability of the better packaging.

Since it is the packaging that has replaced the role of the trader in modern stores, it should contain all information that the buyer used to receive from the sales person. All necessary information should be displayed on the packaging: information about the manufacturer, the origin, content, shelf life and instruction for use, date of manufacture and the preservation instructions. Sales packaging also has to guarantee the quality and the amount of the packed goods, i.e. it has to guarantee that no one before the consumer has opened the packaging, that it is undamaged and that inside, there is the amount stated on the label (Stipanelov Vrandečić, 2010).

Usage function of the packaging becomes important when the product is used and in the period after that (Vujković et al., 2007). Packaging that has a well-realized usage function should enable easy opening, preparation for use, taking the required amount of the product without spilling it and resealing it if the product is not to be used at once (Stipanelov Vrandečić, 2010). If necessary, specific message should be printed on the packaging informing the consumer about how to open and consumate the product and what to do with the packaging. Packaging should be easy to open and safe to handle without the danger of injury (Vujković et al., 2007). For the products that are not completely used after they are opened, the packaging should have the possibility to be sealed again to preserve the quality of the food until fully consumed (Robertson, 2016). The packaging should be suitable and easy to handle, and user-friendly packaging should be eco-friendly as well (Molina-Besch and Pålsson, 2016). Packaging material and the shape of the packaging are crucial for the way it is opened. It can be opened by a smaller or larger tearing, partially or completely deforming the lid or without tearing nor deforming. The usage function should aim at enabling its reuse, be it for recycling, decorative purposes, containers or other ways useful to the consumer (Vujković et al., 2007).

Ecological function of the packaging has been imposed over the last twenty years as the consequence of environmental care and can be realized in different ways: packaging made out of different eco-friendly materials, recycling, reducing the number of wrapping packagings per product unit, selling more units in a single packaging, using biodegradable materials and edible packaging for food products (Stipanelov Vrandečić, 2010). Today, ecological aspect of packaging is considered even more important than the economic one. This fact benefits the packaging materials based on cellulose since they could be replaced with afforestation of the used resource and are very suitable for recycling. These advantages lead to the increased use of packaging materials based on paper and cardboard (Jamnicki, 2011).

The term of eco-sustainable packaging defines the criteria evaluating the influence of used and discarded packaging on the environment. The dominant place is occupied by the biodegradability criterion. In addition, there are other criteria: recycling possibility, reprocessing, energy production and pollution. There is commonly accepted understanding that most eco-friendly are paper, cardboard and wood packaging because they can be degraded in natural conditions and the products do not harm the environment. Glass and metal packaging materials are also satisfactory; glass because it is, for the most part, made out of natural mineral raw materials, and metal because,

under the influence of the elements, iron and aluminium oxides are produced, which are compounds found in soil (Vujković et al., 2007).

Packaging needs to meet three basic requirements regarding environmental protection (Ščedrov and Muratti, 2008):

- reduction of packaging and not using the packaging altogether, without endangering the product,
- reuse and multi-use of the packaging and
- choice of material for the packaging that is eco-friendly (possibly biodegradable and without harmful substances).

One of the ways in which environment could be better preserved is the use of fewer materials and reduction of the size, thickness and the weight as much as possible. In the last 30 years, packaging industry has made an enormous advance in reduction of the weight of the packaging. Jars and tins are lighter by the third than they were in the 1980s. Reducing packaging means reducing the necessary amount of material and less energy is consumed for the production and transport of lighter packaging. Reuse is one other way for caring about the environment. Returnable packaging has to be made of stronger materials than packaging intended to be used once. There is the question of safety and pollution. To establish whether the reuse of the packaging is useful, an analysis of the entire life cycle of the product needs to be conducted. The use of the material with recycled content reduces resource and energy consumption used in production. Also, the market for waste material is created, which makes recycling sustainable. Technologically, it is possible to recycle all types of packaging materials, but to be sustainable, recycling needs to be economically attractive, too (Unilever, 2009).

Since the beginning of the 1970s until today, many international agreements on environmental protection have been signed. In the era of general raise of awareness on the need for environmental protection that began at the end of the 1960s and the beginning of the 1970s, in 1972, the United Nations organized the Conference on Human Environment in Stockholm. The conference was held from 5 June to 16 June 1972, with the participation of the representatives from 113 countries and numerous international organizations, being up to that point the largest UN conference ever. The term “sustainable development” has been since then highlighted in the report made by the UN World Commission on Environment under the title “Our common future” in 1987, becoming the basic framework of the new global international ecological policy. The UN Conference on Environment held in 1992 in Rio de Janeiro is considered the turning point of global ecological policy (Afrić, 2002). The exact time when green packaging began putrefaction recycled into new plastic packaging. Packaging made out of natural materials goes back to the day when hunters and collectors used animal skin, tree bark and leaves. Three decades ago, packaging was just “packing”. It was the means to achieve the goal; it was the container that enabled people to transport food and drinks from one place to another. It was a functional and practical item. Now,

of course, the situation is completely different. Modern packaging industry is under enormous pressure to constantly develop and to satisfy new standards of environmental protection (The Manufacturer, 2014). Different possibilities of green packaging are becoming more popular because people have started to recognize the issues the world is facing. It has led to the increased ecological awareness regarding the packaging manufacture. The result is packaging that can be recycled and is made out of recycled materials. The use of packaging for packing food products is increasing constantly, and the reasons are: the growing distance between the point of production and the point of consumption, more processing phases and prolongation of the shelf life of the product, raising the life standard and the growing number of the total consumers of the product. Discarded packaging appears as waste in industry and stores and it is a part of domestic waste. Parallel to the development of packaging industry and more packaging found in our daily routine, there arises the issue of packaging treatment after the use of the product. Negative influence on the environment can be prevented with the use of biodegradable packaging. The name itself implies that it is manufactured from materials that can be degradable under certain conditions. This process of decomposition takes place in natural conditions when packaging becomes waste. It can happen under the influence of moisture, electromagnetic radiation, oxygen, biological influence, and there is also compostable packaging that decomposes after specific amount of time due to chemical and physical changes in the structure without the influence of external factors (Vujković et al., 2007).

Today, development and commercial manufacture of biodegradable packaging, besides paper, is directed towards other sustainable sources of vegetable origin (corn, soy, sugar beet etc.), i.e. the production of biopolymers. Development of products from sustainable resources, besides the reduced negative influence on the environment, has the additional advantage in the reduction of energy consumption for their production (Tokić et al., 2011).

Recycling is a relatively old term. Metals have been recycled since they were discovered due to their high value, rarity and properties that enable almost constant reprocessing. Recycling of the textiles also has a long history since old textile was used for paper manufacture (Chiellini, 2008). Used and discarded packaging is very valuable secondary material that can be used again as material, in chemical and energy recycling (Stipanelov Vrandečić, 2010). Turning waste into new raw material is the true essence of green economy and sustainable development. Everything can be reused, recycled or composted; it is just a matter of the process of sorting out and good waste management (Bortek, 2014). The first step in the recycling process is sorting out different types of packaging materials. Paper packaging is raw material for the manufacture of lower quality paper, while textile is a valuable material used for the production of the best quality paper. Expensive and sought-after tin (pewter) is separated from discarded white tin cans and the leftover iron tin is used in the manufacture of steel. Aluminium cans are used for aluminium regeneration. Glass represents a very valuable packaging material because glass can be recycled over and over again without the quality being affected. Wooden packaging can be reused for energy as cheap solid fuel. Polymers can be reused as

material, energy or chemical agents. Regarding plastic, the first issue is the heterogeneity of the secondary waste, i.e. plastic is mixed with other types of waste or there are many types of plastics mixed together, and secondly, it is often manufactured from more than one type of polymers or as a composite material (Stipanelov Vrandečić, 2010).

When there is no economic benefit from the reuse of packaging waste, discarded packaging can provide energy by burning. Energy can be generated from different waste materials: paper, cardboard, wood, polymers, composites and other materials. For generating energy, raw materials and the energy for their production are consumed, but the process is justified because in this way the mass for landfills is reduced. The equipment for generating energy by burning waste is technically so designed that the losses of energy are minimal and the protection of the environment is maximized regarding possible air and water pollution (Vujković et al., 2007).

Consumers make ecological choice when they, between otherwise similar products, pick the one with environmental protection label. This way they send a clear message to the manufacturers they will buy only the products that do not influence the environment. For consumer goods, acceptable price and proved quality are not enough to find their way to the buyers. Rising ecological awareness has put before the manufacturers the condition that they should offer products that satisfy high ecological standards. Ecological acceptability has become “added value” of the product (Imamović et al., 2009). In order to reduce the labelling confusion and the labels and signs on the product could be read and applied properly, there has to be an agreement about the sign: what it should look like, that it should not have multiple meanings, there should not be more signs conveying the same message etc. The purpose of the labels is to convey some kind of message about the product (e.g. it is dangerous or heavy), the instructions how to handle it during transportation, how to store it, use it or other information; labels need to be clear, homogeneous, understandable and visible because only then will they provide good, simple and clear information (Bačun, 2009).

Ecological labels are instruments of environmental protection that manufacturers and service providers use to show that they respect high standards of environmental protection during the life cycle of the product and the provided service. They are important in advocating international policy of sustainable production and consumption which aims at reducing negative effects of production and consumption on the environment, health, climate and natural resources and which encourages socially responsible business and sustainable life styles (Ministry of Environmental Protection and Energy, N/A). Mandatory change of the signs relates to the prescribed and normed signs. Mandatory application means that manufacturer that does not place the sign on the product and/or packaging can be punished or its product will not have free access to the specific market. There are regulations for specific signs regarding their looks and their use, but the application of the signs is not mandatory. The manufacturers decide whether they want to set in motion the procedure for the right to use the sign, and what its placement on the product means for them (Bačun, 2009).

Type I Eco Labels are used throughout the world, and organizations that assign these labels are mostly voluntary or governmental organizations. It indicates that the product is ecologically more acceptable than other product from the same category and the purpose is to encourage eco-friendly products purchases (Imamović et al., 2009). Type I eco designations have been developed by governmental or private non-commercial organizations. It is voluntary and the products or the production processes have to comply with several ecological provisions, i.e. the entire life cycle of the product has to be in line with ecological standards. Type I Eco Label (ISO standardization) is allocated to only those products that have completely met ecological criteria. Considering the strict selective principle of labelling, there is limited number of products that can acquire this label (Stanković, 2012).

Type II Eco Labels are assigned by industrial associations or the companies themselves. It is the international standard called "self-declaration". This type of eco labels relate to one specific property of the selected product and not to the analysis of the entire life cycle. In a broad sense, ISO type II label can be in the form of a claim, symbol or label on the packaging. There are specific terms that have to be used, like: possibility of recycling, recycled content, reduced water consumption, less waste, sustainable sources of energy etc. (Stanković, 2012). The advantages of the application of these standards are evident not only in the area of higher environmental protection but they are also economically justifiable through better positioning of the product on the market, especially in international exchange. Since the application of the standards is voluntary and bearing in mind all the positive effects of their implementation, it is in companies' best interest to opt for the complete introduction of the labels and designations of environmental protection for all products (Simin et al., 2013).

Type III eco labels are voluntary programmes that provide quantified environmental data of products based on pre-set parameters. These parameters are assigned based on life cycle assessment by a qualified third party that provides data on the influences of the products on the living environment. Unlike ISO type I, this label does not imply such strict selection of products, but it is a much more complex type of eco label. ISO Type III is therefore firstly intended for the industry and not the consumers. More accurately, ISO Type III is most suitable for successful trading of raw materials, auxiliary materials and components among the companies and not the distribution of final products to the consumers (Budak et al., 2009).

It is important to point out that the basic purpose of a systematic packaging labelling is to give the right, unambiguous information about what material the packaging is manufactured from. This information is extremely important to those included in the process of sorting and managing packaging waste. Symbols have dual purpose: to consumers, they mostly show that the packaging can be recycled and to those that are better informed it gives information about what type of plastic is used. Plastic bottles, containers and other packaging have one of the oldest and most elaborate systems for labelling (numeric label and abbreviation for plastic). For labelling plastic (polymeric) materials, numbers from 1 to 19 are reserved by the Regulation, however, only numeric labels from 1 to 6 are assigned letters of specific plastic polymeric materials (Bačun, 2009).

The process of recycling glass implies turning discarded glass into a useful product. The Regulation does not prescribe whether a sign or a part of a sign should be inside the triangle, whether the triangle should be used at all, if they should be placed and, if yes, where in relation to the circle etc. Glass can have different colours, but three most common are: colourless (transparent) glass, green and brown glass. Looking at these labels, the question arises as to what about the bottles that are blue or some other colour? Naturally, they should be disposed of in the container for waste glass (Bačun, 2009).

In practice, it is impossible to find wooden packaging with the label of material, which is logical, because it is not necessary to label the obvious. For that reason, most of cardboard packaging is also not labelled.

The overview of the existing research of eco-packaging of food products

Ricci et al. (2018) have conducted research with the aim of exploring of consumer intentions for buying eco-friendly convenience food. Primary data has been collected through face to face interviews with respondents in Milan (Italy). Results have confirmed that respondents are ready to buy food that has marked more eco-friendly attributes. It is confirmed that characteristics of products that remarked on it are crucial for consumer trust.

Prakash and Pathak (2017) have conducted primary research to explore the influence of ecodesigned packaging on the consumers' behaviour. In the survey it has participated 204 young consumers from India. Results of conducted research have indicated that consumers decision about buying product that is eco-designed packed depends on its personal norms, attitudes, concern about environment and finally with willingness to pay.

Jiménez-Guerrero et al. (2015) were analyzing innovations in eco-packaging in private labels. Packaging represents very important attribute of the product and especially for the private labels which are related to the products of lower price. Authors remarked that innovation in eco-packaging can be a source of competitive advantage as it can either influence on increase of sale or it can reduce costs.

Lindh et al. (2015) provided insight into consumers in Sweden and their perceptions regarding food packaging and environmental protection. The research on the packaging accentuates its protective function as the main contribution to environmental protection. Opposite to that, the consumers almost exclusively think how the material is the most important factor. Swedish people think that paper is eco-friendly, while metal and plastic are not.

Vlaeminck et al. (2014) were investigating perception of Belgian consumers about food labelling and eco-friendly consumption. As well they wanted to see how important if consumers visibility of informations about product's environmental impact. For the purpose of the paper they have conducted an online survey and results have confirmed that label with well marked informations about environmental impact stimulate consumers to buy that product.

Rahman et al. (2013) conducted research with aim of investigating the relationship between green elements of packaging and the eco-friendly packaging design. For the purpose of investigating the mentioned relationship, they have conducted primary research on 157 respondents in Malaysia. The results of the research have confirmed that four green elements (mainly green resources, carbon footprint, eco label and eco elements) are in relation with the eco-friendly packaging design, while it has not been confirmed significant relationship of eco-efficiency structure and eco-friendly packaging.

Cerf et al. (2011) investigated the influence of different levels of information of environmental protection on key consumer metrics. More precisely, they had a goal of comparing ecologically benign products with those having negative influence on the environment. The findings show that consumer perception on the quality of the product and their value does not considerably differ regarding the products with positive messages on environmental preservation and those without any message. Consumers think products with positive messages are better than those which have labels with negative messages regarding environmental protection.

Finisterra do Paco and Raposo (2010) investigated behaviour of individuals and their perceptions on green consumerism. The research encompassed 887 consumers in Portugal. The findings show how certain ecological and demographic variables are significant in distinguishing “green” consumer groups and other segments. Portuguese consumers, despite their support of the policies directed towards better environmental protection, do not always want to transfer their concerns into eco-friendly behaviour.

Research methodology

A primary and secondary research have been conducted for the purpose of this paper. The secondary research includes the analysis of the existing data, i.e. of the earlier research on the similar subjects. The primary research was conducted during September and October of 2016, with a questionnaire that was posted for the respondents online on www.facebook.com. The questionnaire comprised of 16 questions, 11 of them being closed-ended, 3 multiple choice questions and 2 questions with statements. The purpose of the research was to gain the best possible insight into the perception of the consumers on the importance of ecologically sustainable food product packaging.

Research sample

The respondents were men and women between 18 and 65, users of the Facebook social network. The respondents from all over Croatia participated in the research, belonging to various age groups and of different profiles. The sample consisted of 115 respondents.

Research results

The respondents answered questions regarding their age, monthly household income, region where they live, level of education and work status. The primary research sample structure and the display of sociodemographic characteristics of the respondents are displayed in Table 1.

Table 1. Sociodemographic characteristics of the respondents

		FREQUENCY
GENDER	Male	29 (25.2%)
	Female	86 (74.8%)
AGE	18 - 24	10 (8.7%)
	25 – 34	80 (69.6%)
	35 - 44	17 (14.8%)
	45 - 54	4 (3.5%)
	55 - 64	4 (3.5%)
	over 65	0 (0.0%)
MONTHLY INCOME OF HOUSEHOLD	≤ 1800 Kuna	5 (4.3%)
	1801 – 3500 Kuna	5 (4.3%)
	3501 – 5500 Kuna	13 (11.3%)
	5501 – 8000 Kuna	19 (16.5%)
	8001 – 11000 Kuna	29 (25.2%)
	over 11000 Kuna	44 (38.3%)
QUALIFICATIONS	No lower qualifications/no elementary education	2 (1.7%)
	Elementary education	0 (0.0%)
	Qualified (a three-year vocational school)	0 (0.0%)
	Highly qualified (four-year vocational school /gymnasium)	19 (16.5%)
	Higher or highest level of education	85 (73.9%)
	Master's/doctorate	9 (7.8%)
WORK STATUS	Employed; contract of indefinite duration	65 (56.5%)
	Employed; contract of definite duration	24 (20.9%)
	Part-time job	9 (7.8%)
	Working undeclared	1 (0.9%)
	Self-employed	1 (0.9%)
	Unemployed	15 (13%)
REGION	Zagreb and the surrounding area	88 (76.5%)
	North Croatia	10 (8.7%)
	Slavonia	4 (3.5%)
	Lika, Kordum and Banovina	2 (1.7%)
	Istria, Primorje and Gorski Kotar	1 (0.9%)
	Dalmatia	10 (8.7%)

Source: primary research

The questionnaire was filled out by 86 women and 29 men, i.e. high percentage of female respondents participated in the survey (75.0%), while the share of men was only 25%. Most respondents were women, although, regarding the fact that the survey had been distributed to a large number of consumers, it was expected that there would be a somewhat equal number of the respondents of both gender. Most respondents, 80 of them, are between 25 and 34 years of age and make up 69.6% of the sample. Then, there is the group between the ages of 35 and 44, 17 of them (14.8%). Then there are 10 of them (7%) in the group between 18 and 24. The least respondents (4 of them) are in the groups between the ages of 45 and 54, and 55 and over. The assumption is that older people use the Internet less or do not use social networks at all. More

than half of the respondents, 85 of them (73.9%) have finished higher of the highest level of education (university level). 19 respondents (16.5%) have finished high school and other respondents are without formal education (1.7%) or have a master's or a doctoral degree (7.8%). Based on this data, we can conclude that most respondents are of higher education. 65 respondents (56.5%) are employed permanently. Then there is the category of those that have contracts of definite duration, 24 respondents (20.9%), and the unemployed (13% of them, i.e. 15 respondents). Other respondents work part time (7.8%), undeclared (0.9%) or are self-employed, also 0.9%. Most of them live in Zagreb or the surrounding area, 88 respondents (76.5%). 10 respondents (8.7%) come from northern Croatia and Dalmatia, respectively. 4 respondents (3.5%) live in Slavonia, and in Lika, Kordun and Banovina 2 respondents (1.7%), while only one respondent (0.9%) comes from Istria, Primorje and Gorski Kotar. Out of 115 of them, 50 (43.5%) say they buy food products in eco-friendly packaging, while the rest 65 (56.5%) state they do not buy such products.

According to the research made by Brčić-Stipčević, Petljak and Guszak (2010), one of the most mentioned obstacles to buying food products in eco packaging is higher price. The answers to the question about the reasons why they do not buy the products packed in green packaging were: 33 of them say it is the high price (28.7%), for 15 respondents the reason is the insufficient content (13.0%). The next reason is poor quality of the packaging (5 respondents, 4.3%), and even 15 respondents claim it is some other reason.

Out of 50 respondents that buy eco-friendly packaged food products, 15 of them say (30%) they do it daily. Another 15 respondents buy them once a week. 13 of them buy the products in green packaging once a month, while 7 of them (14%) buy those products only a few times a year.

Lately, most consumers have come to conclusion that their purchasing habits have a direct influence on environmental issues, and it is one of the criteria consumers take under consideration while buying products (Esmailpour and Rajabi 2016). The next question had the possibility of multiple choice, and the answers that were offered had been adjusted respecting the findings from the research by Brčić-Stipčević, Petljak and Guszak (2010). More than one third of the respondents (34.0%) chose the care for the environment as the key motive for buying the product in eco-friendly packaging. Next, there is less danger to the health, chosen by 18 respondents (15.7%). Then, there is support for "the better tomorrow" with 13% of the respondents, while the last place is occupied by the motives related to the attractive design of the packaging (8.0%) and habits (6.0%).

Most respondents (62.0%) think that it is most important that milk and dairy come in green packaging. Then there are baby foods (44.0%) and meat and meat products. Sweets and snacks come last. In the research conducted by Lindh and Williams (2015), almost 79.0% of the respondents think that paper packaging has the least effect on the environment. After that, there are glass and plastic. Their research also suggests that plastic (62.0%) has highest negative influence on the environment, after which there is metal.

In the current research, most respondents, 47 of them (40.9%), think that wood least affects the environment. Then there are paper and cardboard (39 respondents, 33.9%) and glass (19 respondents, 16.5%). Six respondents think that textile has least negative effect; two of them think it is metal and one respondent opted for some other type of packaging material. According to the respondents, it is plastics that have major negative influence on the environment (91 respondents, 79.1%). Then there is metal with 16.5% (19), glasss with 2.6% (3), while wood and textile are in the last place with just one answer.

Consumer attitudes on recycling and eco-friendly packaging

The respondents were asked to express their level of agreement about the statements on the scale from 1 to 5, where 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree and 5= strongly agree. The statements were divided in two categories. They relate to the perception of the respondents on food products in eco-friendly packaging and eco labels, and their habits regarding packaging recycling.

Table 2. The level of respondents agreement with the statements regarding the perception of food products in eco-friendly packaging

	1	2	3	4	5	Mean	Standard deviation
I prefer buying food products in eco-friendly packaging.	0	1	10	17	22	4.2	0.833
I have convinced the members of my family and my friends to buy food products in eco-friendly packaging.	2	8	26	10	4	3.12	0.918
I am ready to pay more for food products packed in green packaging.	8	4	17	13	8	3.18	1.273
If the prices of the products in eco-friendly packaging rise, I will continue to buy them.	4	11	23	9	3	2.92	0.986
If the prices of the products in eco-friendly packaging rise, I will stop buying them.	9	13	18	5	5	2.68	1.186
I read labels on food products packaging to find out if they are eco-friendly.	3	4	17	16	10	3.52	1.092
I think eco labels on food products are reliable.	2	3	18	19	8	3.56	0.972
I think food product packaging labelled as eco-friendly is really manufactured in line with the classification.	1	6	16	19	8	3.54	0.973
I am ready to stop buying the product if I found out that the manufacturer did not use eco-friendly packaging.	4	9	16	8	13	3.34	1.272

Source: primary research

50 respondents that had declared they bought food products in green packaging answered the next two questions. By analysing the data presented in Table 2, it can be noticed almost half of the 50 respondents strongly agree with the statement that they prefer buying products in eco-friendly packaging, and additional 34.0% of them stated they agreed with the statement. Also, many respondents, 42.0%, are ready to pay higher price for the products packed in eco-friendly packaging, while 24% of them are not

willing to do that. They largely agree with the statements that they read the labels on the packaging (52.0%), and that eco labels on food products are reliable (54.0%). Twenty-one respondents, 42%, agree with the statement that they would be ready to stop buying the product if the manufacturer did not use green packaging.

Table 3. The level of agreement with the statements regarding recycling and environmental protection

	1	2	3	4	5	Mean	Standard deviation
When there is a choice, I choose products that have less negative influence on the environment.	0	2	5	18	25	4.32	0.819
I think that purchase of food products in eco-friendly packaging contributes to environmental protection.	0	0	4	17	29	4.5	0.647
I usually buy food products in recycled packaging.	1	3	16	20	10	3.7	0.931
I usually buy food products in packaging that can be reused.	1	2	17	20	10	3.72	0.904
I separate waste to recyclable materials and non-recyclable waste.	3	3	7	21	16	3.88	1.118
I think manufacturers should use more recycled materials for the production of the packaging for food products.	0	0	3	22	25	4.44	0.611
I think manufacturers should provide more information on the recycling possibilities of food product packaging.	0	0	5	18	27	4.44	0.675

Source: primary research

According to the answers in Table 3, conclusions can be made that respondents take care of the environment and that they mostly recycle the packaging. A big percentage of the respondents, 87.0%, agree with the statement that when possible, they choose products with less negative effects on the environment. According to the research by Borin, Cerf and Krishnan (2011) on the sample of 329 respondents, most of them separate waste to recyclable and non-recyclable. Similar results come from this research as well, where 74.0% of the respondents also separate waste material. This data is not surprising due to the rising environmental concern and more possibilities for recycling different materials. Also, many respondents (90.0%) think how manufacturers should give more information about the recycling possibilities of the packaging.

Influence of socio-demographic characteristics on consumer behaviour

The subchapter is focused on defining differences among the respondents that come from sociodemographic characteristics. Some of the characteristics used in these comparisons are the level of education, age and region where they live. Those who had answered the first question affirmatively (50 respondents), also answered questions regarding the crosstabs. If we compare the level of education and the preferences for buying food products in eco-friendly packaging, we come to the following conclusions: as it was expected, most of those who prefer buying products in green packaging are

the respondents who have finished higher or high level of education (28 respondents). Seven respondents who agree with the statement have finished high school and four of them are with a masters or a doctoral degree.

It is evident from the research that consumers who separate waste into recyclable and non-recyclable live mostly in Zagreb and the surrounding area. Out of 37 of the respondents who separate the waste material, 26 of them live in Zagreb and its surrounding area. This is not surprising, because most respondents who have participated in the survey come from that area. The age category has been first divided in six groups, but for the purpose of further research and better understanding, the respondents were divided into two groups. The first group is made of young people, from 18 to 34, and the other of those between 35 and 55 and over. Out of 50 respondents that said they bought food products in eco-friendly packaging, 34 respondents are younger people from the group between 18 and 35, and there are 16 respondents from the other group. Out of 65 respondents who said they did not buy such products, most of them (56) are from the first, younger group, and only 9 of them from the second, older group.

One more time, age has been considered as a socio-demographic characteristic for the comparison of consumer behaviour. It is compared with the statement how the respondents are ready to pay more for food products packed in eco-friendly packaging. Here, the age category was also divided into two groups. In the first group, younger than 35, 15 respondents said they agreed or strongly agreed with the statement. In the category of older respondents, the number was considerably smaller, 6 respondents. Many respondents, 17 in total from both categories, have neutral opinion about the statement, i.e. they neither agree nor disagree with the statement.

When comparing the frequency of purchase of food products in green packaging in relation with the monthly household income, most respondents who buy those types of products daily have monthly household income from 8,001 to 11,000 kuna and more. In the same category of monthly income, 12 respondents do it on a weekly basis, 11 on a monthly basis and two respondents only few times a year. As could be expected, only two respondents that have the income of less than 3,500 kuna buy such products daily or once a week.

Discussions

The respondents participating in this research are Internet users, mostly over 18 years old with a profile on www.facebook.com. In Croatia, there are 1.5 million Facebook users (<http://marketingmagazin.eu>), one third (560,000) of them living in Zagreb. The use of Facebook differs regarding the age groups. Most users are in the group between 25 and 34 years (430,000), while the fewest are from the group between 13 and 17 (71,000). A considerable number of users, 110,000 are older than 55. Although the respondents of all ages were included in the survey, a small number of the respondents older than 55, 4 of them (3.5%), filled out the questionnaire.

There are several other limitations regarding the research. The sample of the consumers that have filled the questionnaire is not big enough to use the conclusions based on

their answers for some broader framework. Furthermore, the most part of the research on the consumer perception about the importance of eco-friendly packaging relates to the consumers from the Zagreb area.

The recommendation is that the research be conducted again on a larger sample and that it should include more respondents over 45 years of age. The research should also include more respondents from other parts of Croatia. Besides using only Facebook, the research could be conducted via other social networks, emails or interviews. Also, the questionnaire could be added some more questions and statements to broaden the research topic. Such research would result in new valuable knowledge about the importance of sustainable food product packaging.

Conclusions

Packaging has ever since its beginning evolved together with the development of human civilization. Over the last years, there is a growing development of materials for packaging products, mostly due to high demands for product safety and environmental influence and the ecological question prompted by packaging waste is becoming more and more serious. Most consumers have understood how their purchasing habits have direct influence on the environment and for that reason they are starting to change their behaviour and habits.

By researching consumer behaviour while they are buying food products in eco-friendly packaging, the following conclusions have been drawn:

- Fewer than 50% of the respondents buy food products in green packaging and the most common reasons are high prices and insufficient content of the packed food.
- Motives of those who buy such products are environmental care and less harm to their health.
- They consider wood a material with least negative effect on the environment and plastic being the most harmful to the environment.

Continual pressure for eco-friendly materials is not just a whim any more, it is a life style and environmental concern and how to protect it are thoughts ever more rising in the mindsets of more and more people.

Conflict of interests.

The authors declare no conflict of interest.

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