Università
Ca'Foscari
Venezia

Master's Degree
in
Management
Innovation and Marketing

Final Thesis

The impact of sustainable packaging on consumers' choices: an empirical analysis in the food industry

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Academic Year
2021 / 2022

My heartful thanks to my family

“Positivi sempre”

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INTRODUCTION

The market is constantly changing, and with it, consumers' preferences as well.

Keeping up with social changes, new trends and innovations is an ongoing challenge for all kinds of organizations. In recent years, in particular, one trend on which global attention has been focusing is sustainable development.

Therefore, a progressive increase of interest is taking place both in the supply of products marked by a wide range of green features, and in more responsible and conscious consumption choices with respect to these products.

In this context, packaging appears to be one of the main elements on which companies focus to support sustainability, since, on the one hand, the initial idea of packaging was linked to end-of-life cycle after its use, and, on the other hand, its capacity of drawing the attention of consumers being different thanks to its design elements, such as image, shape, and material.

These considerations gave rise to the idea for this work, which aims to analyse the topic of sustainable packaging, focusing in the food industry. Specifically, based on the theoretical analysis of its elements and their impact on consumer behaviour, the purpose of this work is to empirically identify the factors that most influence consumers' decisions to purchase foods in eco-friendly packaging.

In the first chapter, after an introduction of the earliest theories used to study consumer behaviour, the most recent interpretative framework is presented, summarizing the previous models and explicating the factors that influence consumers' purchasing choices, such as individual, social and relational sphere, habits and intentions.

Such approaches have been commonly used as they provide a good insight into the market's motivations to become interested in sustainable development, over the years.

From there, the focus shifts to a theoretical and general description of the concept of sustainability and its evolution. In tandem, the cornerstone principles and framework of the circular economy are presented, in order to understand paradigms based on notions such as reduction, reuse, recycling and recovery, which aim to address environmental challenges and guide the market towards sustainable development.

The second chapter refers to the fact that consumers’ attention is drawn by what they visually like and their purchase following the impulse of the moment, especially in a market characterized by a wide range of offerings such as food.

Therefore, it’s key to analyse the importance of the packaging, starting from the definition of the term and its various characteristics, like types and functions.

A further multifaceted aspect of packaging, understood as an enabling factor for sustainability, is then highlighted. In fact, it represents one of the most significant marketing tools for communicating the sustainable values of product: an effective packaging ensures that the latter is noticed by consumers,

stimulating their purchase intention, and creates positive impressions. Therefore, through this means, companies aim to guide consumers towards sustainable behaviours.

Finally, through a brief literature review, the impact that green packaging has on purchase choices in food products is specifically described. The factors are divided into three principal categories: internal category, external category, and demographic category.

In the third and final chapter, in order to give a practical focus to the above, the results of an exploratory survey conducted through the administration of a questionnaire are presented.

The study, starting from consumers' habits about the purchase of food products, explores the impact of environmental-friendly packaging on buying behaviours and choices.

The structure of the survey and the methodology used are, therefore, shown in order to analyse the results obtained and finally draw conclusions about the initial research question: which are the factors influencing consumers' decisions to purchase foods in eco-friendly packaging?

I CHAPTER

Consumer behaviour theories and their relationship to sustainability

1.1 Consumer behaviour

Over the years, there has been an incredible increase in consumerism, which has led to the rise of consumption of commodities that satisfy secondary needs, aided by the increase in national and per capita wealth, the phenomenon of urbanization, and the advent of the welfare state.

Nowadays, the purchase, consumption, and use of goods and services are activities that shape and characterize each individual's daily life and are strongly influenced by marketers, advertisements, and the opinion of other consumers, who shape their preferences.

This has led marketing activities to evolve over the years, changing their philosophy and business objectives: they turn more attention towards customers, placing them at the center of every decision, strategy and transition, with their needs and satisfactions.

The philosophies, initially used in corporate marketing activities, were oriented towards production, product and sales: "production orientation" focused on advancing the production process, reducing its costs, and expanding distribution; "product orientation" spotlighted on improving the supply of goods and services, considering that customers preferred buying higher quality products; "sales orientation", given the increased supply in the market, placed more attention on the seller's needs, rather than those of the consumer (Levitt, 1960).

However, around the 2000s, when the propensity to consume reached 80 percent, companies realized that the customer had an ever more active role as they began to recognize their needs and preferences, to compare prices and different offerings, and to look for value in products. Therefore, from then on, the focus shifted on the consumer: for achieving the business goal it is necessary to place more value on the product in order to meet the expectations of one's target audience and to be more effective than the competition.

The concept of Consumer Behaviour was integrated to this philosophy. It is defined as "the set of processes of evaluation, selection, use and elimination of products, services or other goods for the satisfaction of needs and desires" (Gandolfo & Romani, 1998).

This implies that, studying consumer behaviour, each individual has his or her own logic behind the decision-making and the evaluation process of purchasing products. Its main elements are judgment and choice, which are closely related to each other as they depict the ways by which a consumer expresses his or her preferences and consequently makes purchasing decisions.

The latter are clearly influenced by various factors, such as personal, product and environmental characteristics (Dalli & Romani, 2003).

The first concern both the values associated with the product and the consumer's needs, motivations and attitudes.

The values associated with the product are defined as the life goals of each individual, as they are able, by means of the good features and attributes, to manifest the consumer's values and goals, eliciting positive feelings through purchase. Although they are complicated to study as part of an abstract and unconscious level of consumer's personality, they are a relevant aspect in shaping the consumer-product relationship (Romano, 2003).

Needs, on the other hand, are defined as a consumer's needs that, if met, allow him or her to live better. They manifest themselves according to the context and situation in which the individual is found.

From a market perspective, they represent a great opportunity, because their identification enables companies to create products that drive consumers to purchase and to their subsequent satisfaction.

Strictly related to needs, motivations represent another relevant variable. They are the incentive that drives consumers to satisfy their wants (Rheinberg, 1995). Motivation lies in the degree to which a person reacts to a need and can be measured in terms of time, money, effort or other factors.

Needs and motivations are closely related to the involvement an individual feels towards a particular product and lies in the weight given to it by the consumer.

The last factor underlying the study of consumer behaviour is attitude, which is defined as the evaluation that people have and can be positive or negative (Robbins & Judge, 2012). Attitude acts as a mediator between communication and consumer behaviour, therefore, by analysing it before and after the company's intervention, it is possible to understand their purchase intentions (Dalli & Romani, 2003).

This can certainly help marketers to implement effective and tailor-made strategies with the intention of fostering positive attitudes towards their brand and product.

Regarding product characteristics, when consumers are faced with a wide range of choices, they have two different kinds of information: attributes and consequences.

The first ones represent the primary source of evaluation for the consumer and concern the tangible properties, such as quantity and quality, and intangible properties, such as price and style, of the product. Whereas, consequences account for the outcome associated with the purchase and usage of the product. They can be functional, that is related to product performance, or psychosocial, that is related to positive feelings towards oneself and others. They can also be interpreted as positive benefits or risks that the consumer could avoid (Dalli & Romani, 2003).

Starting from the variables outlined so far, several models have been created to describe, predict and control consumer behaviour, by simplifying the relationships between the various factors that influence their purchasing decisions and product perception (Bareham, 1995).

Finding a single model to describe this phenomenon is difficult, but, adopting as reference the most traditional of behaviour models created by Engel, Kollatt and Blackweel in 1968 (EKB model), it is possible to acknowledge the common phases of all the ones proposed subsequently.

As illustrated in Figure 1, it is possible to identify five basic steps that guide consumers to purchase a product and the different variables that are intertwined during the entire process.

Figure 1. ***Main stages in the EKB model***

Source: Osei & Abenyin (2016)

The first stage is the recognition of needs. Although, as mentioned above, need arises for different reasons in each individual, Engel et al. identified three factors that can influence it: individual differences, such as culture, social class, self and family influence; environmental influences, such as consumer resources, motivation, knowledge and attitudes; and information that is stored in memory.

The second stage involves information seeking. Through internal tools, such as memories or past experiences, and external tools, such as word of mouth or marketing communications, consumers evaluate all possible available purchase options.

The third stage refers to the evaluation of alternatives. There are various assumptions and theories that consider the criteria for evaluating multiple offers, but it can be summarized that each consumer evaluates all the pros and cons of each product, weighing the various criteria according to their personal judgment, which may depend on beliefs, attitudes, and intentions.

The last two respectively concern the stages of purchase and subsequent customer's evaluation or perception of product satisfaction.

Although EKB model has been criticized for being considered insufficiently complete about the relationships between the different variables and with poor predictive power, it is able to give an idea of all the stages that guide the consumer from pre- to post-purchase of a product.

Moreover, it provides the starting point for all the research models subsequently proposed, which will be outlined in the following sections.

These seek to provide a more in-depth insight into the variables that influence consumers' purchase intention with respect to specific products, with the aim of advancing knowledge and bringing out new theoretical frameworks, rather than simply providing an overview of the research area (Torraco, 2005). Understanding such factors with regard to specific product categories is very useful for both government and business in order to persuade the mindset and behaviour of consumers toward a particular phenomenon, such as sustainability (Van Birgelen et al., 2009).

1.1.1 From the Reasoned Action theory to the value-belief-norm theory

Initially, consumer behaviour used to be studied only from a rational perspective: it was considered the result of deliberate cognitive processes, where the individual acted on the basis of rational evaluation of available information and alternatives, in order to maximize his or her utility.

However, many behaviours don't completely occur through rational reasoning, since both internal factors, such as skill and knowledge, and external ones, such as resources, play a key role in shaping the likelihood of pursuing a given conduct (Lanzini, 2017).

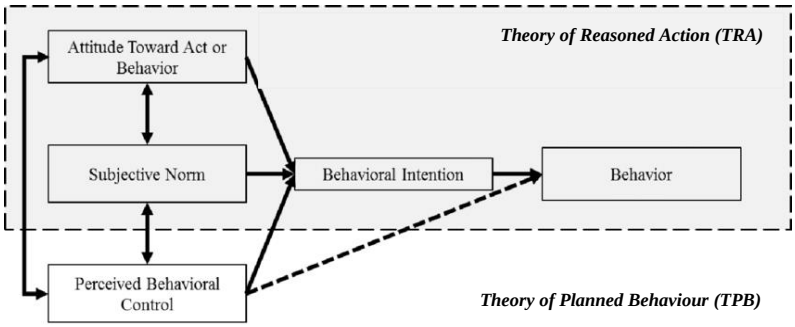
Therefore, the behavioural and cognitive perspectives were introduced, which focus on the role of external factors and information processing during decision making, respectively.

Aiming to examine the relationship between these different variables for explaining how individuals develop certain choices across a wide range of domains, attitude-behaviour research was conducted including two fundamental theories: Reasoned Actions and Planned Behaviour theories (Cooper & Schindler, 2011).

Theory of Reasoned Action and Planned Behaviour

These two theories are focused on a specific set of behavioural predictors, as shown in Figure 2.

Figure 2. ***Theory of Reasoned Action and Planned Behaviour***



Source: Ajzen (1991)

The Theory of Reasoned Action, devised by Ajzen and Fishbein in 1975, is the one that comes closest to the traditional perspective of rational choice, because it assumes that a given behaviour occurs due to a change in ideas and intentions. Therefore, in this case, it is assumed that completed actions and intentions are on equal footing and that the latter are a necessary condition in determining our conduct (Ajzen & Fishbein, 1977).

Intentions in their turn have two main predictors:

- Attitudes, which represent the positive or negative predisposition of individuals towards a certain behaviour. In other words, they are the combination of beliefs about specific activities or evaluation of a given outcome. The more positively a person evaluates a certain attitude, the greater the intention to behave as such. (Ajzen, 1991).
- Subjective norms, which indicate what an individual believes others expect of him or her, thereby reflecting social pressure. They measure how social perception encourages an individual to engage in a particular behaviour (Kim & Chung, 2011) and depends on several variables, such as ethics or education, that are transmitted to avoid acts deemed wrong or immoral.

These two variables do not always go hand in hand, as there may be an absence of positive attitudes but a presence of subjective norms, or vice versa.

For example, it may happen that an individual, while not having a positive attitude toward a certain sustainable behaviour, such as recycling, will still feel social pressure because people around him or her think differently and expect to act accordingly.

However, this theory has been exposed to several criticisms because it is considered oversimplified and it assumes that behaviours are under the control of violation. Thus, to overcome these limitations, a new model was introduced by Ajzen in 1991: the Theory of Planned Behaviour.

It extends the predictive components by adding the so-called perceived behavioural control (PBC), seen as the third antecedent of intentions.

PBC represents the perceived level of difficulty in implementing a given activity and offers the possibility of enhancing the explicative capacity of behavioural intentions (Ajzen, 1991).

Based on several studies, according to Paul et al., perceived behavioural control is the most important of the three predictors, as it has a greater influence on intention for certain behaviours and in specific contexts, i.e. in that related to the consumption of sustainable packaging (Paul et al., 2016).

Considering these two theories, it's possible to note the focus is on just three predictors that, in a certain way, represent constructs similar to instrumental and relational motivations.

However, although in the field of marketing consumer intentions and behaviours are often explained by these two models, they do not take into account moral values and motivations.

The latter assume a key role in two other strands of research: the norm-activation model and the value-belief-norm model, both of which present a clear overlap with moral motivations by focusing on personal norms and values (Assael, 2004).

Norm-activation-model and value-belief-norm theory

According to the norm-activation model, created by Schwartz in 1977, personal norms consist of a "feeling of moral obligation to perform or refrain from specific actions" and are the driving force behind behaviour (Lanzini, 2017).

This theory centers on the feeling of moral obligation: individuals tend to act responsibly when they are aware about the consequences of their actions on the environment and/or society and about the attribution of responsibility for such acts.

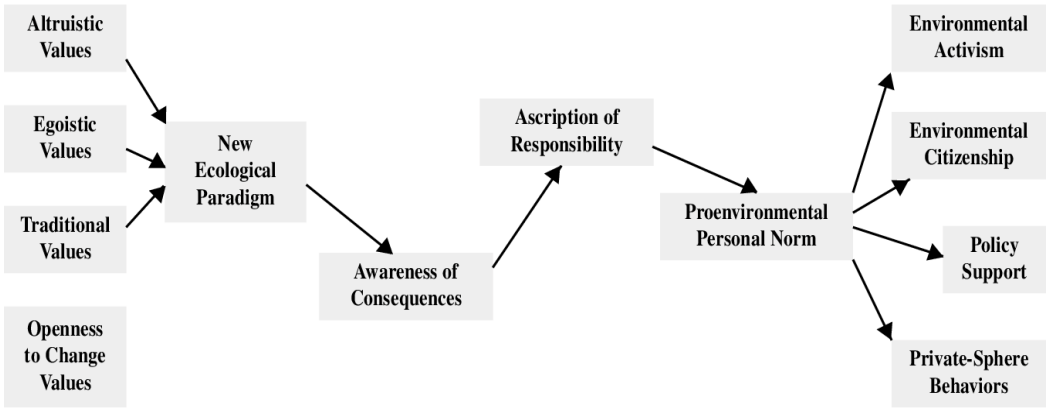
While, the values-belief-norm theory is another framework used for analysing the determinants of behaviour, particularly in sustainability-related issues.

In contrast to attitudes, which are composed by convictions about specific behaviours and objects, values and beliefs are more generic and abstract, but also more stable for their ability to influence attitudes.

As Figure 3 shows, this theory states that the predictors are linked together by a random chain of five variables: values, the New Ecological Paradigm, beliefs about the impact of a behaviour on the invader, attribution of responsibility, and personal norms.

Each variable in the chain affects not only the next but can also directly affect those positioned further away.

Figure 3. ***Value-belief-norm theory***



Source: Dietz et al., (1999)

1.1.2 The role of habits

Behaviours are the result of both a cognitive and rational process that, as just illustrated in the main theoretical frameworks, involves several key determinants.

However, for some activities, conscious and rational evaluation of available alternatives is turned off and individuals act automatically, taking actions that gradually become habitual.

This led subsequent research of rational cognitive processes to include habits, which had been neglected until then, among behavioural predictors.

Aarts and Dijksterhuis (2000) define them as "a form of automatic goal-oriented conduct". In other words, they are represented as relationships between a purpose and the functional actions to achieve it. The higher the frequency with which goal activation leads to the performance of the same action, the stronger will be the habit.

Verplanken and Aarts (1998) recognize two constituent elements in the definition of habit: automaticity of action and goal orientation. They, in fact, define it as "an automatic activation of aim-directed behaviour that limits the set of possible alternatives considered by individuals in planning their activities".

Therefore, automaticity plays a key role in the development of a habit and is what differentiates them from a past behaviour.

Although these are two very similar concepts with significant interrelationships, repetition of an action over time is a necessary but not sufficient condition for habit formation. The other two variables that allow the construct of the latter as sequences of actions become automatic over time are routine and automaticity (Triandis, 1980).

Another relevant factor is the stability of the environment: the more stable the context, the more likely habits will develop and persist over time, also impacting future behaviours. Indeed, individuals associate steady environments with the action performed in that specific situation, so that the activity can be performed automatically, with little or no conscious intention.

In contrast, if contexts change, there's a greater likelihood that individuals will consider and evaluate different alternatives to figure out how best act in the new situation.

Recently, Verplanken (2011) incorporated the three key variables of repetition, automaticity and context stability into a single definition of habit: "repeated behaviours that have become automatic in recurrent and stable contexts".

Furthermore, it has been proven that every person has his or her own inclination with respect to certain routines and habitual behaviours. Same context and repetition of identical actions can lead to the development of stronger or weaker habits at different times, depending on each individual's personality. If an individual is usually averse to change, there is a greater likelihood that he or she will develop habitual behavioural patterns in different domains.

Based on this assumption, Oreg (2003) developed the so-called resistance to change (RTC) scale, which measures whether individuals are attracted to change by recognizing sources of resistance.

The latter are derived from personality traits and are divided into six main categories:

1. Reluctance to lose control
2. Cognitive rigidity
3. Lack of psychological resilience
4. Intolerance of the adjustment period that change entails
5. Preference for low levels of stimulation and novelty
6. Reluctance to abandon old habits.

What has been described so far expresses the potential of habits to reduce conscious consideration of alternatives by triggering an automatic response to specific stimuli and stable contexts.

However, since this variable was not included among the behavioural predictors according to rational choice theories, more elaborate approaches were developed in order to integrate all these seemingly conflicting variables.

Triandis (1980) with the theory of interpersonal behaviour proposed a model in which intentions and habits interact in predicting action.

This theory includes constructs of expectation-value and normative beliefs, such as Ajzen's theory of planned behaviour. However, while the latter holds that behaviours are under control, the Triandis' theory holds that awareness decreases as the habit of performing a given conduct increases.

Therefore, this model is seen as linking rational models with those based on automatic responses to recognized situations.

With respect to a given action, the probability of performing it depends on intentions as much as on habits, both multiplied by facilitating conditions. However, when an action is repeated frequently, the force of custom impacts rational choices guided by intentions: the stronger the habit, the weaker the intention-behaviour relationship.

Another model that considers both of these two variables is the attitude-behaviour-context (abc), introduced by Guagnano et al. in 1995. This is based on the dichotomy between internal and external inputs and includes four main variables: attitudinal factors, such as values and norms; contextual forces, such as incentives and external influences; and personal capabilities and habits.

It also assumes that a stronger impact of contextual factors leads to a weaker link between attitude and behaviour (Stern, 2000).

Finally, a tool has been introduced for integrating the various proposed models: the meta-analysis. It synthesizes the results of a variety of scientific studies by analysing the role of specific variables with respect to a given phenomenon.

The results of this analysis proved that habits play a greater role than attitudes and norms, showing high correlations with both intentions and actual choices (Lanzini & Khan, 2017).

1.1.3 An innovative interpretative framework

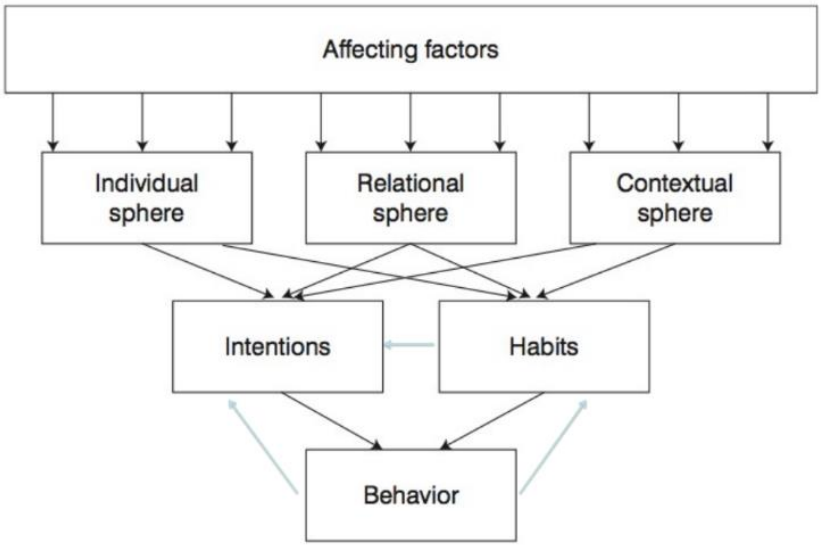
The models described up to now focus on a specific set of variables, and each appears to be more appropriate than others according to the context or situation.

While in many cases the framework of planned behaviour might be the best approach, in other situations, where environmental values and the consequences of misconduct assume particular importance, the norm-activation model might have a higher explanatory potential.

Therefore, in order to recognize the complexity and multidimensionality of all these theories, a framework has been proposed to provide a more holistic and complete view: it is based on a flexible and multi-layered representation of the determinants (predictors) and factors that shape consumer behaviour.

Predictors, as already mentioned, are defined as the building blocks of the proposed theoretical models, i.e., attitudes, norms, habits, values; while factors represent those variables and perspectives that, when considered in synergy with behavioural determinants, offer a more comprehensive picture of how the latter unfold.

Figure 4. ***A new interpretative framework***



Source: Lanzini (2017)

As Figure 4 shows, the first layer is composed by intentions and habits. These two components are respectively the result of the integration of rational cognitive processes and automatic responses to goal-oriented stimuli.

There is no hierarchy between these two determinants, as it is not feasible to say that habits are more relevant in predicting sustainable behaviours than intentions, or vice versa.

The second level consists of three categories within the sphere of behavioural determinants:

- Individual, whose predictors are those strictly linked to the personal and subjective characteristics of the individual, such as attitudes and values.
- Relational, whose predictors draw strength from the fact that individuals, as part of a community, are embedded in a multilevel network of social relationships which have the power of influencing their behaviour. One example is subjective norms, which mirror social pressure as they deal with the impact that peers' judgments have on our performing a specific activity.
- Contextual, whose predictors refer to those variables that allude neither to the subject as such nor to the community in which he or she is placed, but to a broader context in which intentions and habits have their origin.

The third and final layer at the top of the funnel structure is made up of all those factors that "filter out" important prospects in order to determine which blocks of the second layer play a dominant role in providing new keys in the analysis.

Such factors refer, for instance, to the relationship between specific predictors and all the components of responsible consciousness, such as actual knowledge, attitudes, and behaviours, or relate to the mechanisms adopted by citizens to anticipate the expected costs and benefits of a specific conduct.

In general, intentions and habits are the closest antecedents to behaviours, and in turn are affected by a few determinants that refer to subjective and non-subjective dimensions. In fact, focusing on the individual sphere, the factors antecedent to intentions are usually represented by individual's beliefs, attitudes, and values; while those antecedents to habits are, for instance, resistance to change. The same reasoning holds true for the relational and contextual sphere. Therefore, it is possible to state that this new model can be considered as a supplement to the existing models in the literature, as it offers a generic and more comprehensive analysis of the drivers of consumer buying behaviour.
However, each factor will always need to be analysed on a case-by-case according to the context, since there are some features of the funnel model that differ from those of the existing models, although the latter include the basic elements on which the former was developed.

1.2 Sustainability

1.2.1 From Brundtland report to green marketing

Several researches have shown that the theoretical frameworks described above, in particular Planned Behaviour Theory, provide a sound understanding of the market's motivations over the years to become interested in sustainable development (Scalco et al., 2017).

Since the 1970s, the environmental impact of industrial activities and the concerns attached to it began to intensify, leading to both an increase in the need to realign the opportunities of capitalism with the demands of the environment and an increase in global green movements.

In 1972, to promote greater ecological protection and sustainable use of natural resources, the United Nations Environment Programme[1] was established, which marked one of the main starting points of the study on the correlation between development and environment.

With the Brundtland Report in 1987, the concept of sustainability was introduced for the first time within legislative frameworks. It was defined as the set of all activities that aim to meet the needs of the present, while allowing for the preservation, sustaining and enhancement of resources needed for the future, thereby not compromising the ability of future generations to meet their own needs (UN, 1987).

This definition identified three different dimensions in a single model, environmental, social and governance (ESG), which must co-exist in a logic of integration and development (Bottero & Mondini, 2009). This model is known under two different names: the 3P model (Profit, Planet, People) or the 3E model (Economics, Environment, Equity).

As depicted in Figure 5, each pole represents the goal or, in some cases, the driving force that guides the model according to its own logic. More specifically, the driving force on the economic side (Profit) is about producing more for a greater number of people; the driving force on the environmental side (Planet) aims at preservation of nature and, thus, at living conditions of future generations; the driving force of social equity (People) comes from fight against poverty and equitable distribution of resources.

[1] Subsidiary body of United Nations Development programme

Figure 5. ***Triple Bottom Line***

Source: BNAC Environmental Solutions Inc.

A continuous process of receiving and adopting the concept of sustainability as a founding paradigm of new visions of development has been established since then, such that it has inspired and influenced corporate philosophy (Lafratta, 2004).

Moreover, due to population growth, the relentless process of urbanization and massive anthropogenic interventions that are increasingly exposing the environment to stresses of different catastrophes, sustainability has become increasingly important over the years, until the current attainment of global interest. The contemporary society, in particular, is faced with countless serious issues, from environmental pollution to soil consumption, from water and food shortages to the need of safeguarding biodiversity and climate change (Mondini, 2019).

From a business economics perspective, nowadays a company is considered sustainable if, in addition to earning incomes that meet members' expectations and ensure the institution's durability and development under economically viable conditions, it is able to spread innovation for the benefit of the whole society.

In other words, it must implement actions and strategies that aim at environmental and social improvement and offer products and/or services to a more conscious and responsible target of consumers and citizens.

The paradigm that inspires the sustainability concept is closely related to three different areas: charity, corporate social responsibility, and sustainability (or shared value).

Charity, or donation, occurs when a company gives an amount of resources or part of its profits to a beneficial initiative, in order to make up for certain forms of injustice or suffering (Mio, 2021). But

over the years, this paradigm has evolved in response to the continuous change in society and social responsibility practices as traditionally understood.

Thus, the second sphere of action is Corporate Social Responsibility (CSR): "a business conduct that voluntarily integrates, in addition to legislative requirements, environmental and social aspects alongside economic and financial ones in its activities and relations with different stakeholders" (Mio, 2021).

However, even this model began to be discussed as it was considered unsustainable: harmful effects on the environment are dampened, companies improve the quality of their relationship with society, but de facto the production system remains unchanged. Thus, the latter began to be replaced by a more structured model which saw, in the simultaneous fulfilment of a wider range of responsibilities by companies, an improvement in the economic and social development of the societies in which they were embedded.

Thanks to the contribution of economist Carroll, a modern view of CSR began to emerge, according to which organizations no longer had only economic and legal obligations, but also ethical and discretionary responsibilities.

This led to a widening of responsibilities to stakeholders, even to the point of conjoining the very notion of sustainable development: the company is recognized as a morally responsible entity when it takes steps to identify and respond to the economic, social, and environmental expectations of those stakeholders who influence and are influenced by company's activities.

In the vein of this new theory, Porter and Kramer introduced a radical shift in perspective with the concept of Shared Value, based on the mutually dependent relationship between corporate competitiveness and the well-being of the surrounding community. This new approach is presented as an innovative strategy for achieving economic success that can generate progress and social value through the integration of environmental issues and social needs into core business and corporate strategies (Porter & Kramer, 2011).

With this in mind, businesses must move away from that short-term and profit-only oriented view and must be able to generate value from a long-term perspective and in a continuous manner over time. However, the long-term view may vary according to certain factors, such as generation gap, culture or background and context.

Figure 6: ***The sustainability paradigm***

Source: Mio (2021)

For a company to be considered sustainable, it must include a system of corporate values representing the founding principle from which strategic decisions, organizational and process choices, and configuration of operational mechanisms and information-instrument platform are developed.

It's important to integrate these sustainable values into the other corporate structure variables, such as strategies, governance, and operational mechanisms.

Companies that consider sustainability an opportunity and interpret it as a value perspective to distinguish themselves in the relevant socio-economic context adopt a proactive strategy. It is mainly based on the spread of awareness of environmental and social issues throughout the organizational pyramid and on the creation of shared value by placing the achievement of possible solutions to environmental or social problems at the centre of corporate strategy.

According to Porter and Kramer, proactive strategy can be achieved in three ways:

- By rethinking products and services to orient them towards those that meet social needs
- By redefining productivity along the value chain, which involves resource use and the unfolding of economic combinations
- Fostering the development of the local socio-economic environment through strengthening relationships with institutions, service and infrastructure providers, suppliers, and customers (Porter & Kramer, 2011).

Moreover, the implementation of a proactive strategy requires a transversal and widespread attitude within the company, from the configuration of corporate governance[2] to operational mechanisms[3].

It is crucial, on the one hand, that corporate governance is functional in integrating sustainability into the core business, establishing rules that make managers accountable to stakeholders; on the other hand, that mechanisms incorporate sustainability goals.

Each goal should express at least two dimensions of sustainability:

- Spatial, which refers not only to traditional control mostly based on results and information within the company (inward-looking), but also to the evaluation of external aspects focused on social stakeholders (outward-looking).

[2] Intended as the set of decision-making structures and control of a company.
[3] Intended as the set of processes that guide the operation of the organizational structure itself and enable its core functions to be carried out.

- Temporal, which broadens sustainability-oriented management control not only in the short term, but also and especially in the long run.

Parallel to the increase in sustainable production, green consumption also started to become a global trend. The latter refers to a specific type of behaviour dictated by an increased propensity of consumers to make purchasing choices more conscious, valuing more sustainable products and companies committed to them (Chen et al., 2015).

Green consumption began to spread around the 1970s as consumer segments became more aware of the environmental dimension of products.

In the 1990s, social, economic, and cultural factors of society further influenced consumers' thinking and their inclination towards sustainable purchases. Specifically, the consumer's figure of these years marked the beginning of consumerism decline and the transition to a period aimed at moderation and social responsibility (Ottman, 1995).

To date, green consumption is steadily growing: each individual is increasingly aware of his or her social responsibility and, as a result, seeks to adopt eco-friendly behaviours in order to minimize his or her environmental impact (Chaudhary & Bisai, 2018).

Moreover, as shown by several international censuses, many consumers, knowing the requirements of sustainable development, consider it a very relevant element in their purchasing decisions (Nielsen, 2014).

Therefore, the green consumer is defined as an environmentally conscious consumer: the one who pays attention to the well-being of the environment and acts accordingly. He or she knows that the individual's conduct and consumption habits have negative effects on the environment and, therefore, changes his or her purchasing habits and supports companies that implement green strategies (Bhatia & Jain, 2013).

However, although sustainability is growing steadily, there seems to be substantial barriers that hold back the spread of greener consumption patterns due to the practical and motivational complexity of the latter. This could be partly explained by free-rider tendency, lack of transparency of the term green, uncertainty due to the practice of greenwashing[4], and lack of personal awareness and motivation.

Indeed, environmentally responsible behaviours must reconcile the individual's personal interests with the collective goals regarding environmental protection: in this situation, the risk is that individuals will act opportunistically as free riders, not contributing actively and efficiently to reducing the environmental impact from their consumption behaviours.

Therefore, despite the fact they firmly believe it's important adopting ethical behaviour, they rationalize unethical purchases by justifying their actions with, for example, lack of time or money.

[4] Greenwashing is intended as the process of conveying a false impression or providing misleading information about how a company's products are more environmentally sound.

In this regard, green marketing is one of the most relevant strategic levers for companies. It was defined by Mintu and Lozada (1995) as "application of marketing tools to facilitate exchanges that satisfy organizational and individual goals in such a way that the preservation, protection, and conservation of the physical environment is upheld.

More recently, the American Marketing Association (AMA) termed it as "marketing of products that are presumed to be environmentally safe" (Yazdanifard & Mercy, 2011).

In other words, it is possible to define green marketing as the set of activities that aim to establish higher sustainability standards, to provide information on products and services with less environmental impact, to share social responsibility with consumers, and, finally, to enact a new culture in support of innovation (Grant, 2007).

This shows that, now more than ever, sustainability is no longer seen as just an alternative or exclusively part of social responsibility, but as a business necessity to attract consumers and protect market share (McWilliams, Siegel & Wright, 2006).

1.2.2 Circular economy

To support sustainable development and address the challenges arising from it, a new model of production and consumption, labelled circular economy, was outlined with the aim of combining prosperity and economic growth with environmental and social respect and protection (Di Maria et al., 2018).

As the concept of sustainability emerged, the circular economy gained more and more importance over the years until its formalization in 1989 by Pearce and Turner.

The two authors, starting from their description of how the economy is affected by natural resources, which are the inputs for production and consumption and, once finished, return to nature in the form of waste, began to think about a new economic system that would adopt a circular structure, rather than the linear.

As Figure 7 shows, the linear economy represents a unidirectional system, also called take-make-waste process, in which products are made from raw materials, sold, consumed and then rejected. The ultimate goal of this model is profit maximization, which is pursued through the extreme reduction of production costs.

By contrast, the circular economy, in the face of increased volatility in the global economy and proliferating signs of resource depletion, is based on a model that aims to reduce energy input, reuse products or their components, and limit losses and waste from the design stage to the post-consumer phase.

Figure 7. ***Comparison of linear and circular economy***

Source: Economia circolare nella responsabilità sociale di impresa
https://www.rinnovabili.it

More specifically, according to the definition given by the Ellen MacArthur Foundation[5] (2012), the circular economy is defined as "a systemic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the take-make-waste linear model, a circular economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources".

This concept conveys the importance of working effectively at both global and local levels, in both large and small companies, and, finally, at both organizational and individual levels.

Therefore, the benefits expected to be achieved from its implementation are economic, social and environmental and conveniences for companies as well as individuals.

The pivot of this model is based on three principles:

1. Reduction of waste and pollution, to lead to the lowering of negative impacts of economic activities that harm natural systems and human health. This is accomplished primarily by reducing air, water, and land pollution; decreasing the release of greenhouse gases and contaminants; producing goods designed and optimized for a disassembly and reuse cycle; and finally, decreasing structural inefficiencies (Kalmykova et al., 2018).
2. Maintaining the use of products and materials, in order to encourage the re-use of assets rather than their depletion, through reusable, durable, and repairable materials that increase their longevity. For components that are difficult to repurpose, we aim to utilize organic or "nourishing" ingredients that can be safely returned to the biosphere, either directly or through consecutive uses (Moreau et al., 2017).

[5] Support institution for businesses, which works to accelerate the transition to a circular economy.

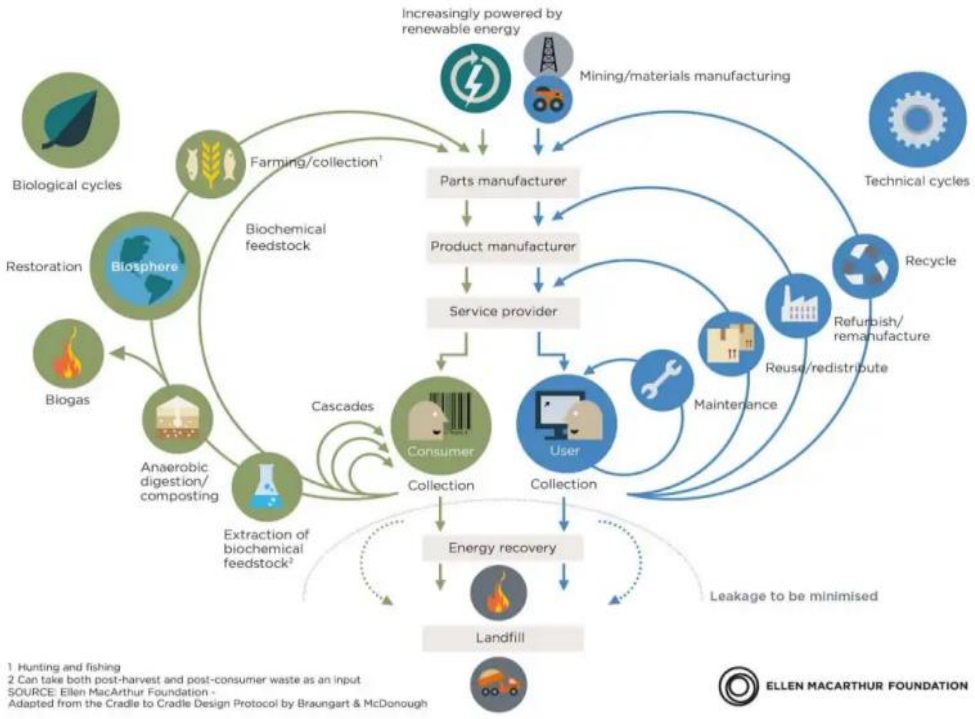
3. Use of renewable energy to power the production cycle in order to decrease resource dependence and increase the resilience of systems. In this way, the environment can be proactively improved, not only safeguarded (Morseletto, 2020).

Moreover, the Ellen MacArthur Foundation has proposed the following infographic (figure 8) to clarify how the circular economy works.

The graphic turns out to be divided into two parts, each representing a cycle: the part in green on the left, refers to the flow of biological materials, while the part in blue on the right represents the flow of technical materials.

The former are those materials that, after completing one or more cycles of use, can safely re-enter the environment, as they are biodegradable. The latter, on the other hand, are materials that, unable to return to the biosphere, must cyclically and repeatedly traverse the system in order to extract their maximum value (MacArthur, 2013).

Figure 8. ***Circular economy: an industrial system that is restorative by design***



Source: Ellen MacArthur Foundation (2021), https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular

With reference to biological material flows, it's important to focus on the expression cascades, the meaning of which is similar to the terms 'prolong' and 'reuse.' More specifically, in order to obtain the maximum yield from biological materials, they are used several times for many purposes and their quality decreases with each cascading cycle.

On the other hand, with regard to technical material flows, the latter should occur to achieve the following goals:

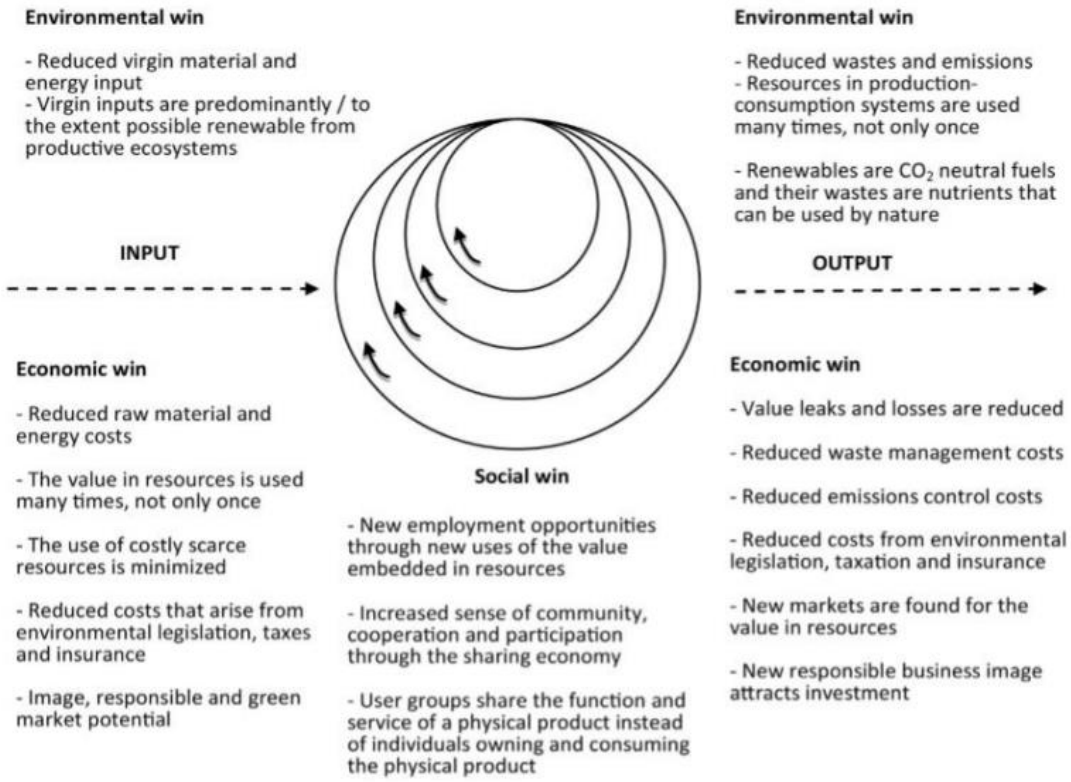
- Maintenance. The goal is to repair or redesign the material life to ensure its durability, rather than its discard.
- Reuse and redistribution. The ability to repurpose products many times, redistribute them to new users as they were originally, and share them among different users reducing the need for manufacture.
- Repair. The focus is on restoring the value of the good itself, rather than producing a new one.
- Recycling. The aim is to recover materials in such a way they can be reused in a new production stream.

In general, it can be stated that the circular economy seeks to create and maintain the value of the product, by means of its regeneration, thus reducing environmental problems and, simultaneously, encouraging the whole society to be more sustainable.

Moreover, the implementation of such model offers, as far as possible, a solution to both the impact of resource scarcity, climate change and biodiversity depletion, as well as the economic difficulties caused by unsustainable development, including, for example, rising resource prices.

In this respect, Figure 9 shows how the circular business model succeeds in matching economic prosperity with environmental well-being (Kirchherr, et al., 2017).

Figure 9. ***Circular economy***



Source: Korhonen et al., (2018)

From a business perspective, this model represents a great opportunity for innovation, because it contributes to the increase in technological development rate, the creation of a better corporate image, and the strengthening of green marketing activities. Clearly, this also contributes to an increase in competitive advantage (Niero & Hauschild, 2017).

Nevertheless, the challenges of the circular economy are not only related to improve production efficiency, but also to change consumption patterns through greater awareness about the impacts that a given purchase choice or certain behaviours cause on environment and economy (Di Maria et al., 2018).

1.2.3 The importance of sustainability in the food industry

As discussed so far, the changing climate conditions, pollution, deforestation, and loss of biodiversity are some of the major environmental challenges facing contemporary society.

The impact of the food industry on these issues is considerable, as its entire supply chain, from intensive farming to agro-industrial production, is having significant and negative consequences on human well-being, jeopardizing the functioning of the entire life-support system (WHO, 2005).

Therefore, concrete actions are being implemented in this sector to address these challenges and support sustainability as well.

Being sustainable for a food company means creating the right balance between economic aspect and

environmental and social respect. This thinking is embodied in the increasing attention and willingness to consider social responsibility practices as part of business activities and marketing strategies.

By contrast, on the demand side, an increasing number of "conscious" consumers are more informed and selective about the supply from the production side: they pay more attention on how a product is made, whether the company has violated workers' rights in its production or has contributed to environmental pollution. Therefore, the impetus to purchase is now provided by the whole value basket that the company represents and consumers must share in order to confirm their loyalty.

Therefore, as the consumer behaviour that expects "added values" from the product, such as wholesomeness, sustainability, and transparent information about the origin of raw materials, has changed, also companies have to innovate their supply chain by drawing inspiration from a circular sustainability model, on the one hand, and to implement marketing strategies that strengthen their brand equity, on the other hand(Garnett, 2013).

In this regard, one of the most relevant tools in marketing strategies is packaging.

According to a study conducted by Nomisma's FMCG Packaging Observatory, considering that most consumers are willing to choose an eco-friendly product over one with a greater environmental impact, one out of three Italians buy a food based on the information found on the label and 23 percent consider the type of material used for packaging and its features (Authentico, 2020).

Tetra Pak, a leader in food processing and packaging solutions, is an excellent example of how a company is addressing, through innovation, different environmental challenges, from the continuous optimization of processing and packaging to the offering of consumers sustainable products.

Always paying close attention to the evolution of consumer interests and the food industry trends and building strong partnerships with academia, technology companies and start-ups, Tetra pack is adopting strategies that aim to deliver packages that contribute to a low-carbon circular economy: it makes packages entirely from renewable and/or recycled materials and fully recyclable without compromising food safety requirements.

Another corporate case study on how adopting strategies aimed at shared value creation and sustainable growth has had a positive economic, environmental and social impact is Sanpellegrino, a leader in the mineral water and beverage industry.

By identifying its social need in the health and well-being of society, it has directed its initiatives towards optimizing and innovating all phases of its production and distribution process. Inspired, likewise, by a circular sustainability model, it has focused on the valorisation of water resources, environmental protection and the promotion of a water culture, going beyond the traditional approach of identifying corporate responsibility only on environmental support, regulatory compliance and energy conservation.

Based on this philosophy, Sanpellegrino has joined several projects, such as the Alliance for Water Stewardship, which promotes the sustainable management of local water resources and the protection

of territories, and the RECS (Renewable Energy Certificate System) certification, which attests to the use of alternative sources of energy in all of the group's factories.

These, like many other projects in collaboration with organizations and institutions at local and national level, represent the concrete commitment of a company that uses shared value as a modus operandi in its approach to sustainability, while at the same time generating economic value for itself (Sanpellegrino, 2018).

II CHAPTER

Consumer’s purchasing decisions towards sustainable packaging in the food industry

2.1 Packaging

2.1.1 Impact of packaging on consumer behaviour

In recent years, in an increasingly global economy with multinational companies selling products worldwide, consumer attention to packaging has grown.

This is partly due to the increasingly sophisticated concept attributed to the latter and aimed at making the use of products and packaging themselves more durable and functional; and partly due to the media directing more interest towards issues concerning the waste produced by packaging and its end-of-life management (CONAI, 2018).

Therefore, while packaging once was considered useful only for product storage and logistics, nowadays, due changes in consumers’ desires, it has taken on increasingly relevant functions, becoming one of the marketing tools that most contribute to customer satisfaction (Rudh, 2016). It acts as a direct and tangible link between producer and consumer, and it can influence attention, insight into value and perception of product functionality, with important consequences for consumer’s experience and response (Krishna et al., 2017).

Therefore, today packaging turns out to be a major object of study among manufacturers, who not only improve the features that ensure the original functions of packing, but also focus mainly on those of major influence on customer purchasing decisions.

In this regard, packaging is considered as the main tool for promoting sales, attracting customers, and conveying the product to consumers.

Several studies have stated that packaging plays a significant role in the marketing environment, showing how packaging is able to draw the buyer's attention to a specific product, consequently influencing their purchasing behaviour. They have also proven that a better packaging leaves a good product image in consumer's mind (Shah et al., 2013).

Especially in the food sector where consumers are facing a wide range of purchase options with no opportunity to try products, packaging plays a significant role, as the main driver of purchasing decisions. Among competitive products on the shelves, packaging can represent the distinctive values of each brand and act as a silent salesperson to attract customer's attention (Osborne, 2012).

Kotler and Keller (2006), based on this theory, have shown that a generous portion of purchase decisions are made on impulse, thus the creation and use of effective packaging plays a key role on consumer buying behaviour: it "attracts attention, describes product features, builds consumer trust, and gives a favourable overall impression.".

In agreement with this, Simms and Trott (2010) have also proven that for creating and marketing a new product, packaging seems to be an excellent way to create opportunities, as it can describe the product and its contents, increasing its sale.

In addition, several studies have demonstrated the importance of the visual aspects of packaging in food products as the primary vehicle of communication between producer and consumer (Wang & Chou, 2010).

Not surprisingly, in the modern marketplace, packaging design can be used for building the brand identity, since it is considered a fundamental variable in marketing strategies, which offers an adding value.

In this regard, when it comes to making the package, the target context cannot be overlooked, as all its graphic elements, such as colours, shape, label, must be studied and designed in relation to the target location (Rundh, 2016). This process certainly requires creative and technical skills, to evaluate the meanings of all these elements in the display market.

The packaging thus is the first contact the consumer has with the new product and acts as a medium to make people realize the characteristics of a product and to convey information about the social and environmental responsibility of the pack and the product itself (Badalucco, 2017).

In 2007, through an experiment with the eye-tracking tool, Clementine showed how packaging design influences consumer buying behaviours. The finding was that in-store purchase can be classified into four stages:

1. Pre-attention stage, in which consumers' attention is caught by the visual impact of packaging
2. Attention success stage, in which packaging design has an impact on consumers' minds
3. Physical action stage, which occurs when consumers take the packaging from the shelf
4. Post-purchase stage, in which the purchase decision is made.

However, other studies have found that consumers' ability to perceive the design of a package may vary: each consumer has his or her own decision criteria and interest in the kind of information and features on the package (Hawkins et al., 2004). Some consumers, for example, focus on price, while others place more importance on the appearance of the product or the ingredients and consumption instructions.

2.1.2 Definition and typologies

According to the Article 3 of Directive 94/62/EC of the European Parliament and of the Council of December 20th, 1994, on packaging and waste packaging, package is defined as "all products composed of materials of any nature, designed to contain and protect certain goods, from raw materials to finished products, to enable their handling and delivery from the producer to the consumer or user, and to ensure their display"[6].

[6] Direttiva 94/62/CE del Parlamento europeo e del Consiglio, del 20 dicembre 1994, sugli imballaggi e i rifiuti di imballaggio.

With this Directive, packaging is understood as the tool that contains, protects, preserves, and presents a product, thereby making it available in space and time to the final consumer.

This concept of packaging has accompanied human history since its origins: its role in containing, identifying, and protecting goods from the production places to the consumption places has allowed its constant presence throughout industrial, consumer and domestic activities.

Since the beginning of the 20th Century, with the increase in international production and exchange of goods in multiple markets, new challenges are continuously being generated to address problems related to transportation, protection, and especially communication. All of this against a backdrop of actors on the design front intent on changing and managing a new system development that works on regulatory, functional and communication needs.

On the latter two, marketing activities are more focused, adding further meaning to packaging: "the set of elements that package a product that, in addition to the task of preserving it and facilitating its transport, play a key role in making it more attractive in the eyes of the consumer" (Ventura, 2014).

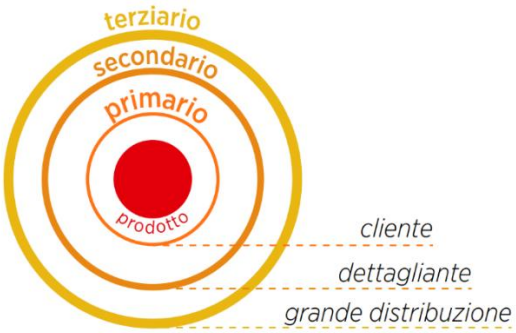
Such activities require additional studies, as they focus on the design of all the elements that make each individual product recognizable to the consumer and distinctive from that of competitors (Nouim & Sparavigna, 2020).

In this context, packaging is found to be an impulse-generating tool to lead the user to buy a particular product, as the first shape that gives image and notoriety to the product.

However, several studies consider it as part of the product, described in the form of both physical attributes, such as size, shape and components, and intangible ones. Others, on the other hand, consider it an added value and thus a marketing variable with the purpose of informing and communicating. (Rundh, 2016).

Packaging can be divided into three main categories with distinctive characteristics according to their final use. Each of them must also meet specific functional, communication and regulatory requirements depending on the application field (Nouim & Sparavigna, 2020).

Figure 10. ***Packaging typologies***



Source: Di Paolo (2020)

Primary packaging

Primary packaging represents the product unit that consumers purchase at the point of sale. It is therefore the material that covers or directly contacts the ready-to-consume product (CONAI, 2018).

Since it is purchased at the point of sale, it must meet certain requirements through a series of features necessary for the transportation of products.

Especially in food products, primary packaging is identified as an essential element that performs a dual function: structural and communicative.

On the structural side, it is a reference to the product's material container, which, being in direct contact with the product, must comply with all regulations to ensure its integrity. In fact, it increases the product's ability to last, to be transported, and extends or refines the skills needed for interaction between container and content by user and consumer.

From a communicative point of view, it takes on a varied set of functions and features that assume less or more importance according to circumstances. It contains elements of message and meaning that determine not only the identity of the product but also allow greater usability of information content conveyed by the user. This makes it possible to attract the consumer's attention and to differentiate the product and its packaging from those of competitors **(**Ciravegna, E., 2010).

Figure 10a. ***Primary packaging type***

Source: Di Paolo (2020)

Secondary packaging

Secondary packaging, also known as multiple packaging, is "packaging designed in such a way that it constitutes, at the point of sale, the grouping of a certain number of sales units, regardless of whether it is sold as such to the end user or to the consumer, or whether it serves only to facilitate shelf restocking at the point of sale. It may be removed from the product without altering its characteristics". [7]

Therefore, such packaging is not in immediate contact with the product but is used to contain the primary packaging (Hargroves and Smith, 2005).

It, as well, serves several functions, the most relevant being to protect all the primary packaging in each individual secondary container unit. Therefore, it has the task of protecting the packaging from possible mechanical stresses during handling, storage, transport, and distribution or from possible exposure to external agents, thus preventing damage to the primary unit with consequences for the product sale.

Figure 10b. ***Secondary packaging type***

Source: Di Paolo (2020)

Tertiary packaging

The last type is defined as "packaging designed to facilitate the handling and transport of goods, from raw materials to finished products, a number of sales units or multiple packages to avoid their handling and transport-related damage, excluding containers for road, rail sea and air transport."[8]

Therefore, such package is designed exclusively to simplify and facilitate the transfer of sales units at the logistical stage, avoiding or limiting transport-related damage (Ferraresi, 2003). In fact, its main function is the protection and facilitation of logistics procedures.

[7] Articolo 35, Decreto Legislativo 5 febbraio 1997, n. 22: "Attuazione delle direttive 91/156/CEE sui rifiuti, 91/689/CEE sui rifiuti pericolosi e 94/62/CE sugli imballaggi e sui rifiuti di imballaggio"

[8] Articolo 35, Decreto Legislativo 5 febbraio 1997, n. 22: "Attuazione delle direttive 91/156/CEE sui rifiuti, 91/689/CEE sui rifiuti pericolosi e 94/62/CE sugli imballaggi e sui rifiuti di imballaggio"

Figure 10c. ***Tertiary packaging type***

Source: Di Paolo (2020)

2.1.3 Functionalities

The role of packaging has changed significantly over the years to align with ongoing cultural and social changes and to better meet increasingly demanding requirements. Therefore, today packaging, which has become more sophisticated and developed, in addition to perform its original functions such as containment and protection, must fulfil other multiple interrelated functions and evaluate them simultaneously in the packaging development process.

Its attributes, that offer functionality in terms of opening, storage and preparation, are becoming increasingly attractive marketing tools (Silayoi & Speece, 2004). Understanding such functions for specific products can certainly help companies and packaging designers to develop high-performance packages that meet consumer needs.

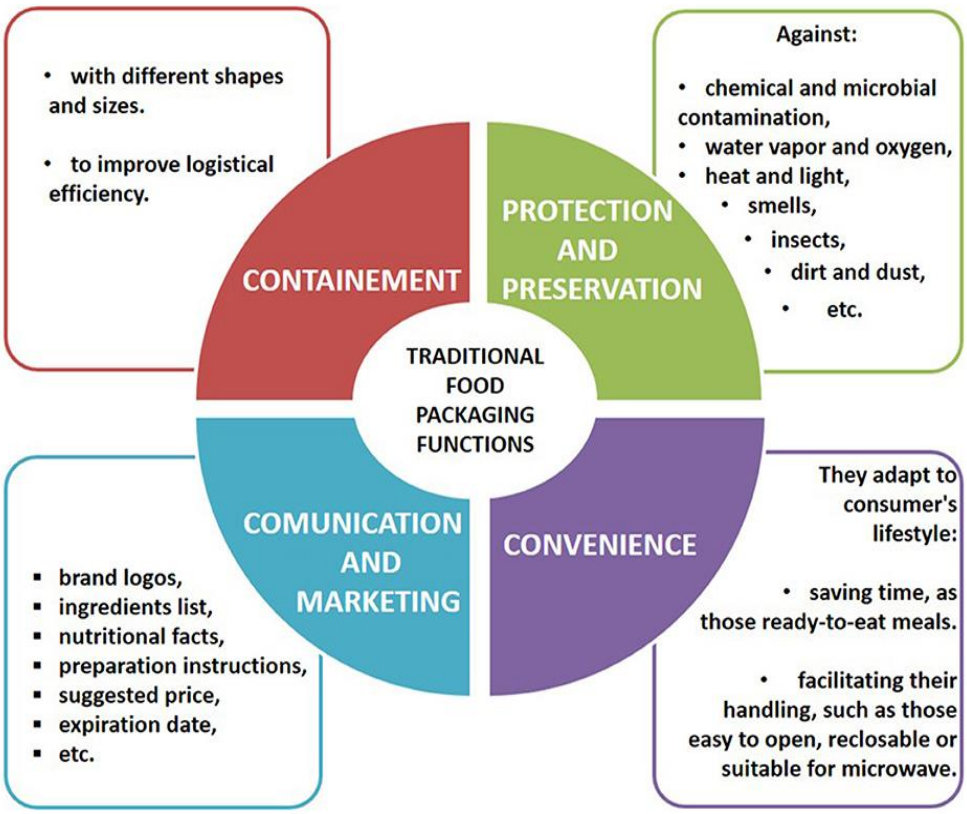
Under the given circumstances, the sector that most feels the need to safeguard the product is the food industry.

Food package enables the preservation of many product's properties during all stages of the process, from packaging to consumption. In addition to that, it allows for meeting consumers' requirements and desires while maintaining high food safety and minimizing the environmental impact due to its waste. Nowadays lifestyles have changed, and, in most cases, consumers are willing to pay more to get improvements on a food package. Therefore, confectioners and their suppliers are paying more attention on additional convenience features and tamper-evident attributes that create added value to their products with acceptable costs.

Packaging therefore appears to be the protagonist of a broad process of meaning-making, which considers it a relevant aspect to the point of impacting the ancestral relationship with food in every individual's psychology (Badalucco et al., 2017)

In general, it is possible to delimit the functions of packaging into five main categories based on the role they play and the kind of products they contain: containment, protection, preservation, communication, and logistics. Understanding each of these is crucial to make strategic packaging decisions so as to improve customer satisfaction and increase sales (Tunyarut, and Prisana 2015).

Figure 11. ***Packaging functionalities***



Source: Salgado et al. (2021)

Containment

Containment represents the original and oldest function for which packaging was introduced and, in fact, is usually identified as its primary function.

This role must ensure that the product contained in the package both remains intact until it is opened by the final consumer and prevents the dispersion of the contained product, for instance, when we are talking about fluid or powdered food products (Piergiovanni & Limbo, 2010).

Therefore, this implies that packaging must meet these requirements during the various production cycles, storage, transport, and sale, including those products that already have a form suitable for handling but which, for transport requirements, must still be contained within packaging.

Protection

In addition to containment, protection is also a function of great importance. In this sense, packaging should be considered a protective wall placed between the contents and the surrounding environment that prevents deterioration, contamination, and/or rupture of the products.

In most cases, the protection offered by packaging is an essential part of the preservation process, as it plays the role of protecting and preserving the product from external agents.

In food products, this function is essential to ensure the process of preservation and integrity of the product throughout the supply chain, thus ensuring its quality, hygiene, and safety (Robertson, 2016).

In fact, thanks to packaging, perishable foods have a longer shelf life, which leads to a decrease in waste and the use of preservatives (Nouim & Sparavigna, 2020).

Preservation

Preservation aims to ensure to conserve the product throughout the process between packaging, marketing, and consumption.

Therefore, this function is particularly relevant in food products, as it allows them to last longer, preserving their quality characteristics, nutritional values, sensory properties and multiplying their edibility and usability.

This packaging function certainly also has a positive impact on sustainability in that, by delaying the natural biological degradation of products, it makes it possible to reduce the amount of food thrown away without being consumed, thus preventing food waste.

Communication

Now more than ever, communication represents a value as powerful as necessary in any form of packaging, since it reinforces the elements of message and meaning present in the latter to diversify products, inform and build buyer loyalty.

The communicative function is a rather complex issue because various laws, regulations, and international standards are applied with the aim of providing uniformity, as well as the main practices for indications and display of information.

Nevertheless, this function assigned to packaging allows it to be defined as a silent salesperson, fulfilling two main roles: on the one hand, to communicate and promote the characteristics and advantages of the offered items to buyers; and on the other hand, to put consumers in a position of knowing all the information related to both the product itself and the packaging.

Packaging ensures the transmission of information through the design features given to it, such as shape, colour, and label, which must present themselves clearly and easily understood in order to depict its contents and make them visible and recognizable. It also enables the consumer to improve his or her ability to use and handle the packaging, from the moment of purchase to waste.

In this sense, the communicative function no longer focuses its attention only on the relationship between container and content, but rather focuses on the relationship between product and consumer. In fact, if previously the communicative concept was related only to the commercial aspects to ensure the success of the product, now it has expanded to the point of conveying useful information to the consumer, such as nutritional values, ingredients, recommendations for use, and current regulations respected by the product (Nouim & Sparavigna, 2020).

In addition, the presence of slogans or short phrases, that reside in the package design, expose information related to the brand, category, and name, which are essential for consumer to identify brand and product as well.

This communicative-display function enables the product to differentiate itself from competitors. That is why packaging is identified as the key to the brand having, as its first objective the achievement of a strong visual impact and representing an essential point of contact that binds the producer with the potential buyer (Ventura, 2014).

In the food sector in particular, competition is playing an increasingly important role: shelf space management has led to fierce competition among brands, greatly increasing the need for differentiation (Rundh, 2016).

This leads to both positive and negative consequences stemming from the evolution of packaging, that focuses more on communication with the buyer. While protective and technological functions lead, through innovations, to useful economic and safety benefits; communicative functions are often perceived "as unnecessary restyling and visual hooks to better and more subtly target the consumer" (Ventura, 2014).

However, it is crucial that packaging speaks to consumers in order to attract and induce them to choose a particular product placed together with multiple competing products. In fact, it allows physical contact to be made through various visual, linguistic, and tangible stimuli in order to convey the brand's core values.

Finally, packaging must clearly be done in a consistent way with the brand image, using those expressive features that are in line with the brand's usual communication strategy for making it easily identifiable (Ventura, 2014).

Logistics

Another important function is logistics. Convenience in transportation enables the management of the product flow and, thereby, aims to facilitate product transport operations from wholesale to consumer, without damaging or altering the contents and, with them, the economic value they represent.

In this context, the shape and size of packaging play a key role, so much so that they are designed to consider the amount of space they occupy in warehouses, on vehicles and within stores (Ventura, 2014).

In food companies more attention is paid to these packaging purposes. Indeed, the economies that can be derived from optimizing the logistical aspect of packaging, whether primary, secondary or tertiary, are enormous and justify continued investment, aimed at finding convenient and practical methods for the various operations of distribution, display, sale, opening-closing, use, reuse, recycling and disposal (Piergiovanni & Limbo, 2010).

Finally, today, additional characteristics that good packaging should have been contemporary and forward-looking: package graphics, symbols, and shapes must be able to convey messages that help to express the culture of society and its values.

Continuous research and innovation are also required to make changes in packaging design that have not only short-term benefits as their sole objective, but also long-term design choices.
Therefore, since packaging holds a central role in everyone's daily life regardless of the economic value and commodity scope of the product, it also has the task of educating consumer, leading him or her to virtuous behaviour and increasing the end user's skills, such as on reuse, recycling and/or disposal of the packaging itself.

2.2 Packaging sustainability in food products

2.2.1 Packaging as a sustainable marketing tool

Nowadays we are witnessing the gradual rise of environmental threats and, as a result, the growing concern for the environment globally.

In fact, many companies have noticed an increased sensitivity to environmental issues on the part of consumers, which is reflected in their interest in sustainability (Polonsky, et al., 1998).

This leads to the constant launch of new challenges in the field of marketing in terms of content design and forms of communication. In particular, sustainability is perceived as a key factor, which is reflected in the concept of sustainable marketing (Armstrong & Kotler, 2015).

The latter deals with all those activities aimed at social responsibility, which are based on the efficient collaboration of consumers and businesses for the sake of the environment, to meet the needs of current consumers and preserve those of future generations.

It has been found that this ecological trend can foster numerous benefits in marketing activities through efficient packaging communication, as the latter is able to influence consumer attitude and purchasing behaviour (Atkinson & Rosenthal, 2014).

Therefore, the design of packaging with eco-friendly design and content can be a key component in achieving product and brand competitive advantage.

According to the criteria specified by SPC (Sustainable Packaging Coalition) in 2005, packaging is defined as sustainable if it reflects the following criteria:

- beneficial and safe for individuals and communities throughout its life cycle;
- fulfils market criteria in terms of both performance and cost;
- is sourced, produced, transported and recycled using renewable energy;
- optimizes the use of materials of renewable or recycled sources;
- is produced using best practices and clean production technologies;
- is made from healthy materials throughout its life cycle;
- is physically designed to optimize materials and energy;
- is effectively recovered and used in closed-loop biological or industrial cycles.

Several organizations have proposed models and guidelines on packaging, focusing more on environmental sustainability aspects rather than the social and economic ones.

The impact that packaging has on the environment represents the starting point for most of the documents in line with the EU Directive on Packaging and Waste from Packaging[9].

These papers are focused on the packaging material, its recycling, and the reduction of negative effects from the use of water, energy, or materials.

[9] Directive E. 94/62/EC on packaging and packaging waste (1994)

In general, there is a delicate trade-off between the minimum amount of material that can be used to maintain desired functionality and the ways to ensure that total resource use will not increase due to excessive material used in packaging.
However, in the food industry this trade-off, calculated for different products, must always be contextualized (Verghese & Lewis, 2007).

In the food sector, more specifically, packaging has a great potential in supporting sustainable development.
While initially it was only considered in the early stages of a product's life cycle or used to convey the product's properties in the purchasing decision-making process, now packaging is the main target from an environmental perspective. In fact, brands are focusing more on which functions and features of packaging can contribute to sustainable development in a more innovative way (Lindh et al., 2016).
Therefore, the environmental footprint of food products depends not only on the product itself, but also on its packaging, referred to intrinsic and extrinsic attributes, respectively.
It is important to consider that the intrinsic product sustainability must be "thought about" early in its life cycle and can only be communicated by labels and logos.
In this respect, packaging is perceived as an effective means of reducing the environmental footprint, such as by greener materials.
However, it is important to ask how consumers react to such changes and, more importantly, whether they may affect the perception of product quality.
By quality is meant the superiority of its "performance" over that offered by competing brands, for which individuals are usually willing to pay more to obtain higher quality product (Van Doorn & Verhoef, 2011).
It thus represents a major factor in the food sector on both the demand and supply side.
On the demand side, during the buying decision-making process many consumers look for goods of a certain quality, trying to maintain the right price-quality ratio (Mugge & Schoormans, 2012).
On the supply side, however, quality is perceived by companies as an important competitive driver, which can increase their brand reputation and, consequently, their market share and profitability (Dawar & Parker, 1994).
Today, many companies, such as Tesco, Walmart, and McDonald's, try to independently define the attributes that characterize packaging so that it can be considered sustainable and can positively impact on consumer perceptions (Unilever, 2012).
These individual attempts, nevertheless, tend to create more and more misunderstandings among consumers, who are unable to differentiate and recognize sustainable packaging.
Moreover, since packaging has always been regarded as an unnecessary product addition and an unneeded cost to be minimized, the important functions of packaging are still not known or fully understood (Simms & Trott, 2010).

Wever and Vogtländer (2013) emphasize the importance of not only looking at negative effects of packaging and focusing only on minimizing packaging materials and recycling of it; rather, we need to broaden our perspectives to obtain a more holistic view of the packaging role in contributing to sustainable development. Therefore, the starting point in examining this is the features and functions of packaging.

In this respect, it's clear that there is a lack of a common terminology of packaging functions and attributes for all stakeholders to know, understand and accept.

Its multi-faceted nature involves many different professionals during the packaging development process, such as specialists, product developers, logisticians, and marketing experts. Hence, the use of common language and knowledge is essential in this interdisciplinary communication to ensure the comprehension by all stakeholders and to improve production capabilities from a sustainable development perspective (Lockrey, 2015).

Finally, a shared terminology can further facilitate mutual understanding and communication between companies and consumers about what packaging can actually do to contribute to the environment.

A further problem lies in the limited knowledge of the environmental effects of packaging by consumers who, despite considering environmental issues as important, mainly make decisions based on the direct dimensions of packaging, such as materials, manufacturing facilities, and recycling. While indirect effects for value-added services are not commonly considered, although they have a rather considerable and very often higher negative impact on environment compared to direct dimensions (Büsser & Jungbluth, 2009).

The last issue concerns consumers' failure to understand the variety of environmental labeling and messages on packaging, which can confuse them during the decisional process.

Given their inability to verify whether the environmental messages and symbols used on packaging are true, the trust and credibility of the message are crucial factors in their purchase intentions.

The consistent and responsible use of specific ecological messages generates trust and positive attitudes among consumers toward such products.

Therefore, packaging characterized by minimalist design that succeeds in providing an understandable and reliable message is becoming increasingly important. Based on the ecological symbols and messages, the customer should be able to verify the sustainable attributes of product and packaging.

The effectiveness of sustainable packaging in decision making can be enhanced by a content and form of communication that can promote positive attitudes among consumers and influence their purchase intentions.

However, the reception of this information depends on several factors, which will be further explored in Section 2.3 through a literature review.

2.2.2. From traditional to innovative packaging

As mentioned earlier, packaging is a crucial element in the modern food industry due to the many contributions it makes to products (Ghaani et al., 2016).

For several decades, the most commonly used material for food packaging has undoubtedly been plastic, because of its advantageous features that make it cheap, functional, and versatile.

Since plastic packaging can be rigid, thermoformed, or flexible, for many years it has replaced other traditional materials, such as glass, metals and paper, until recently accounting for 37 percent of food packaging materials (Food Packaging Forum, 2015).

However, its heavy use has generated serious environmental problems worldwide, as most of these materials, deriving from petroleum, are non-degradable and consequently their production and disposal are polluting (Salgado, 2021).

So, thanks to the increased attention to environmental issues on the part of consumers and companies, globalization, which has led to sharp changes in manufacturing and sales practices and changing consumer lifestyles that favour safer and longer-keeping foods, there has been an advance in improved food preservation techniques to extend shelf life and maintain quality. The development of these new green and innovative packaging formats centers on the use of biodegradable and renewable materials, which provide a great alternative to safeguard the environment and the economic value of underused products and industrial waste materials (Cazón et al., 2017).

Hence, bioplastics have become increasingly important.

As per the European Bioplastics Organization, they are defined as plastic materials that can be biobased or biodegradable or have both properties. Biobased refers to all those materials or products that are derived from biomass and are suitable for material recycling and energy recovery. While "biodegradable" refers to materials that can be biologically downgraded to their basic elements, such as water, carbon dioxide, and methane, and are intended for organic recycling (Goswami and O'Haire, 2016).

Figure 12 shows the evolution of the number of publications over the past 10 years regarding these materials in food packaging, demonstrating a strong increase in interest in the area and in the preference of biodegradable materials for this application.

Figure 12. ***Evolution of interest in biodegradable materials***

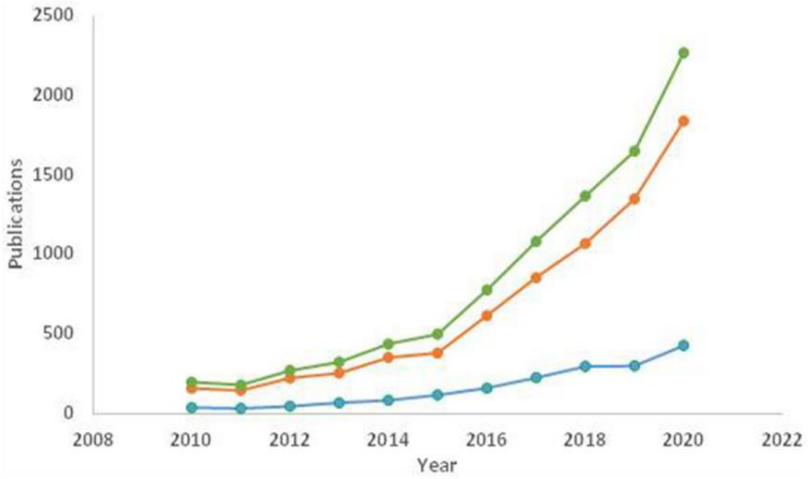


FIGURE | Evolution of the number of publications during the last 10 years (2010–2020) with the terms "smart food packaging" (■), "active" (■), and "intelligent" (■), as title and/or topic

Source: Salgado et al., (2021)

In this context, new packaging concepts have been introduced to try to deal with environmental pollution problems and to meet new market needs. They are divided into active and smart packaging, which not only interact with food but also establish communication with consumer (Biji et al., 2015).

The introduction of these new packaging technologies focuses on a safer and more efficient food supply chain, reducing food waste and avoiding unnecessary transportation at an early stage (Salgado et al., 2021).

Therefore, these new packaging offer an alternative solution to traditional ones: on the one hand, with smart packaging, they track changes in the product and the environment, extending communication and marketing function of traditional packaging; on the other hand, with active packaging, they take action on these changes, bringing an extension of the protection and preservation function of traditional packaging (Janjarasskul and Suppakul, 2018).

Active packaging

Active packaging is one of the most innovative technologies used for food preservation.

It modifies the condition of wrapped products with the aim of increasing their shelf life, improving their sensory properties and maintaining their quality.

Its mechanism is based on the polymer's own properties or on those unique to the additives included in the packaging systems (Mellinas et al, 2016). More specifically, they are intentionally designed to incorporate, on their surface or within some of the elements associated with the packaging, active compounds, rather than applying them directly to the food.

These active agents are added to release or absorb substances to or from the packaged food and the surrounding environment, or to modify the composition and sensory characteristics of the food, as long as these modifications comply with applicable regulations (Ortiz et al., 2014).

This allows the intended goal to be achieved with lower concentrations, hence limiting undesirable flavours and odours in food (Kapetanakou and Skandamis, 2016).

Smart packaging

Smart packaging can detect, monitor, track, and provide information on food quality to facilitate decision making, extend shelf life, and improve safety (Schaefer & Cheung, 2018).

The Framework Regulation on Food Contact Materials 1935/2004 and 450/2009 identifies them as those tools that can check the state and condition of packaged foods and their surroundings, but cannot interact with the product (Biji et al., 2015).

They can come in the form of labels or be incorporated directly on the packaging material to provide the ability to monitor product quality, track any critical elements, and provide more detailed information along the entire food supply chain (Lee et al., 2015).

Whereas active packaging works to prolong product shelf-life, smart packaging is designed to convey food quality information to manufacturers, retailers and consumers, thus fostering a unique interplay between product, packaging and the environment (Fang et al., 2017).

Finally, smart packaging can be categorized into three main categories (Müller and Schmid, 2019):

1. Indicators, which provide instant information about the food through a colour shift or through the diffusion of a dye (Kerry et al, 2006).
2. Sensors, which are devices used to detect, locate, or quantify energy or material by sending a detection signal of a physical or chemical property captured by the device.
3. Data carriers, which are contraptions that provide information or control the flow of products.

2.3 Literature review

Although a rising number of food manufacturers are increasingly more careful in adopting sustainable and/or environmentally friendly packaging for food products, it's still unclear which factors are driving consumers to purchase food in such packaging. Therefore, persuading them to choose sustainable packaged products is a challenge.

To fill this gap, several research studies have been conducted in the last decades.

From the earliest studies, research evidence has showed that only one theory has been used to explain consumer buying behaviours: Theory of Planned Behaviour (Ajzen & Fishbein, 1980). As already underlined, this analysis found that positive attitude, concern for the environment and functionality appeared to be the main factors predicting consumers to purchase food in sustainable packaging (Dilkes-Hoffman et al., 2019).

However, because such studies focus on consumers' general inclination to purchase and dispose of sustainable packaging, they often lack detailed information on how specific packaging design elements may influence their behaviour.

Nowadays, more in-depth research and many other theories have been included to offer a more comprehensive and holistic explanation of this topic (Barber, 2010). Each of them centers on the overall concept of packaging, considering the relationship between its individual features (Magnier & Crie, 2015).

Orth and Malkewitz (2018) state that "the overall effect of packaging does not come from a single element, rather from the gestalt of all elements working together as a holistic design".

Therefore, it's important understanding how consumers interpret and convey the meaning of sustainable packaging, by firstly, analysing how structural, graphic, and verbal elements of packaging design influence consumer choice and, by secondly, examining how knowledge about sustainable issues and consumer attitudes influence consumer purchasing behaviour (Nordin & Selke, 2010).

A systematic review of the literature will be conducted in this section to provide a clear overview that can be useful both to researchers, who want to contribute to the knowledge of consumer's pro-environmental actions, and to food producers, in order to better meet the consumer's needs and with more sustainable implications for our planet.

This research is based on all studies covering the period 1994-2019 and it is focused on the purchase of foods in eco-friendly packaging for answering the following question: Which factors influence consumers' decisions to purchase foods in eco-friendly packaging?

Based on the research conducted, it is possible to divide the antecedents that explain individual motivations for consumers to purchase food in green packaging in three main categories: internal factors (i.e., motivation, environmental knowledge, awareness), external factors (i.e., economic, social, cultural factors) and demographic factors.

This framework offers many more explanations than Ajzen's theory. Specifically, as the following literature review shows, factors such as knowledge and awareness are important predictors of consumer buying behaviour, as well as cultural differences.

2.3.1 Internal factors

The literature review has shown the effects of eco-friendly packaging visual design on consumer perceptions and the importance of spread knowledge about the sustainable themes in order to stimulate consumers' choice towards these packages (Popovic et al., 2019).

These aspects can be identified as internal factors, including both the packaging design elements related to its appearance, and to packaging "antecedents" able to drive consumer of buying food in friendly environmental packaging.

Introducing sustainable packages seems to be a logical company strategy, as the growing interest on sustainability-related issues among consumers (Olsen et al., 2014). Therefore, it is assumed that the latter's evaluations of ecological packages which contains elements communicating its eco-friendliness will be mostly positive (Schoormans & Robben, 1997).

However, it is important to understand which are the different design elements that consumers consider as being representative of more environmentally-friendly packaging (Lindh et al., 2016).

In addition, it is acknowledged that packaging elements enable inferences-making, that is the process of "filling in" missing product or brand information (Bloch, 1995). In particular, shapes and colours convey brand meaning and serve as cues for consumers to evaluate the brands (Orth & Malkewitz, 2008).

A priori, packaging style elements (i.e., shape, materials, and graphics) are not directly related to product content. However, when consumers lack the information needed to evaluate a product before purchase, they "use" information connoted by packaging attributes to shape expectations for subsequent product impressions (Becker et al. 2011).

Packaging attributes

Several studies showed that the attractiveness of the packaging drives consumer's purchasing decision. Most of them has focused on how packaging design elements, such as colour, shape, material, influence consumers' intention to buy food in environmentally-friendly packaging and their evaluation on products and brand (Koenig-Lewis et al., 2014).

Through an empirical analysis based on a sample of 207 participants from a Dutch consumer panel, Magnier and Schoormans (2017) tested how the material, the colour used, and the presence of an environmental claim affect the evaluation of sustainable packaging, the evaluation of the social responsibility of the brand as well as the inferences about product environment-friendliness.

Specifically, what emerged is that material appears to be a relevant factor in suggesting environmental-friendliness, proving that the packaging made of fiber-based material is perceived as more sustainable

than plastic one. This confirms what had been shown by Lindh et al. (2016): paper-based packaging is certainly considered to have less environmental impact than plastic one.

Magnier and Schoomans also validated how packaging material has a strong influence both in informing consumers about its ecological performance, and in triggering positive inferences about brand and product.

Such perceptions are heightened when environmental claims are included on the packaging. Indeed, it has been found that the latter have a positive influence on sustainability perceptions, even when they are not issued by a third-party organization.

In the case of inferences of a brand social responsibility, consumers evaluate a packaging more sustainable when environmental claims are present.

As showed by these studies, the presence of the environmental claim has a powerful effect on the evaluation of the green pack and, to some extent, also on the assessment of the social aspect of the product.

By considering these two elements of packaging, material and environmental claim, it was also demonstrated that the claim on the package made of fiber-based material is significantly more credible than the claims made on plastic package.

Finally, the study show that packaging colour plays a key role in influencing the perception of packaging eco-friendliness. More specifically, the results proves that red colours have a negative influence on the perception of packaging sustainability (Hoyer, 1984).

These results further elaborated on the previous study conducted by Huang and Lu (2015), who showed that packaging colour has a strong impact on consumers' perceptions of intrinsic product attributes. The experimental research involved a sample of 40 South American participants to assess their taste perception of 12 food products contained in different painted packaging: red, blue, and green.

This study aimed to examine how package colour as an external clue and marketing tool impacts consumers' perceptions of hedonic value as well as cognitive judgment of their product taste perception.

The results showed that package tint can influence the cognitive judgment of food taste perception. Specifically, red packaging was associated with a less healthy perception than green and blue ones, which are often associated with a sense of a healthier and more sustainable product.

Shape also turns out to be a particularly relevant element both on the consumer's side, as it influences their purchasing decisions and can affect the perception of the product itself, and on the corporate side, as it is perceived as a mean to differentiate their brand.

Raghubir and Greenleaf (2006) showed that the rectangular shape is the one that most influences consumers' purchase intentions and choices. However, in a deeper exploratory investigation, they also found that the impact of this relationship on consumers strongly depends on the context in which the product will be used.

Other factors particularly impactful on consumer purchasing behaviour are those related to convenience. These factors include all aspects of packaging related to protection, ease of opening, "reseal ability," dimension, ease of transport and finally disposal.

Based on a sample of Swedish consumers, Lindh et al. (2016) showed that less than 10 percent of respondents considers environmental aspects relevant in their purchasing decisions. Instead, of greater importance appear to be the ease of opening, mentioned by more than 25 percent of respondents, the ability to "reseal" a package, considered important by 27 percent of consumers, and finally the size of the package, mentioned by 24 percent.

These findings were also confirmed by Jinkarn and Suwannaporn on a 600-buyers sample of food and beverage products in Bangkok. The analysis considered packaging attributes, such as its structure, opening mechanism, reclosing functions, and tamper-resistant features, even with respect to their price increase.

What emerged is that the opening and tamper-resistant features of the packaging seem to be the most relevant aspects in influencing consumers' purchasing decisions for food and beverage products. By contrast, the price factor doesn't appear to be important, which accounted for only 10-19%. Therefore, it is possible to say that most consumers are willing to give up a slight price increase in exchange for convenience or for the tampering features of a package (Jinkarn & Suwannaporn, 2015).

Individual pro-environmental behaviour

Following Ajzen's Theory of Planned Behaviour (Ajzen, 1991), several studies have shown that consumer attitude plays an important role in influencing consumers' decision to purchase food in green packaging. Such attitudes are driven by consumers' environmental awareness, their habits as well as by their perceptions and intentions.

Growing consciousness of environmental damage is certainly increasing consumers' attention to the ecological impact of their consumption, including packaging footprint (Scott & Vigar-Ellis, 2014). Therefore, it's essential for manufacturers to address packaging decisions that weigh different and often conflicting criteria, incorporating the perspectives of different stakeholders (Magnier et al., 2016).

As demonstrated by Hartmann and Apaolaza (2012), consumers' environmental concern motivates them to adopt pro-environmental behaviour. This attitude will certainly have a positive impact on consumers' intention to purchase sustainable packaged goods, as demonstrated by Prakash and Pathak (2016).

Martinho et al. (2015) conducted a more in-depth analysis with the aim of identifying and evaluating factors that may influence consumer purchasing behaviour.

The study was conducted on a sample of 215 individuals in Portugal and focused on comparing two groups of customers according to the importance they attached to sustainable packaging at the time of

purchase: the first group MIEFP (More Importance on Environmentally Friendly Packaging) and the second one LIEFP (Less Importance on Environmentally Friendly Packaging).
The factors studied concerned the environmental awareness, purchasing behaviours and attitudes, and finally satisfaction for the packaging attributes.
The results obtained highlighted the importance of environmental awareness and sustainability issues. In fact, it turns out to be the trigger for the purchasing behaviour of the green consumer, therefore of all those who are part of the MIEFP group. If a consumer is environmentally conscious, he or she will look for strategies to achieve green status, taking an interest in products and brands with the matching profile (Smith & Brower, 2012).
To change the attitude of LIEFP group members in such a way that they commit to pro-environmental behaviour at the moment of purchase and of waste disposal/recycling, it is necessary to improve their environmental knowledge. Therefore, information disclosure tools should be used to reach consumers belonging to the LIEFP group at large retail outlets.
Regarding the attitudinal component, the results show that consumers with positive attitudes toward ecology and environmental protection have an increased burden in purchasing products with sustainable packaging.
Another study related to consumer attitudes was addressed by Dilkes-Hoffman et al. (2019) on a sample of 2518 Australian consumers and with a focus on plastic packaging.
What emerged is that the public views plastic as a serious environmental problem. About 80 percent of consumers said they were interested in reducing the use of plastic and considered paper and glass as more environmentally friendly solutions than plastic. However, at the same time, the study showed that there is a large gap between consumers' aspirations and their actual behavior with respect to reducing the use of plastic packaging. Many Australian consumers place the responsibility for reducing plastic use on industry and government.

2.3.2 External factors

The growing globalization of the world economy has created both opportunities and challenges for companies wishing to penetrate international markets. For this reason, it is increasingly important for these businesses to understand how to package their products for different markets in order to maximize their supply.
Moreover, considering that environmentally friendly packaging often carries a higher product price, it is useful to understand the level of importance that consumers as well as legislative bodies around the world place on packaging, in order to gauge their willingness to pay for it.
Therefore, several research, rather than focusing on the attributes of the packaging itself and its ability to drive consumer purchasing behaviour, have placed more attention on the external aspects of packaging, such as those related to cultural differences and consumers' willingness to pay.

Cultural differences

The choice of one package over another may be related to an economic decision or may be influenced by cultural acceptance. Therefore, it is crucial to identify consumers' perceptions of packaging in different countries and the factors that determine their choice (Silayoi & Speece, M., 2004).

Several studies have investigated whether and how a particular package design is perceived differently in various cultural contexts.

Based on a sample of 232 people geographically distributed in different regions, both in developed and developing countries, and from various cultures, both individualist and collectivist, Chandra R. et al. (2015) examined cultural attitudes and values regarding packaging by probing consumer perceptions.

Their findings show both that cultural differences can manifest themselves in packaging design, in terms of materials used, size and type, and how a particular culture perceives package in terms of convenience and environmental impact.

These results showed that cultural factors, along with socio-economic variables, can influence purchase choices. Consumers in developing and collectivist-oriented countries appear to be more likely to purchase packaging oriented towards functionality and meeting basic needs. Consumers in developed and individualist-oriented countries, on the other hand, appear to be more inclined to purchase products whose packaging is more aspirational in nature, and which also offer character and convenience.

In only two aspects respondents from all countries appear to agree: the cap-lock packaging system, due to its almost universal familiarity and user friendliness, and glass as an environmentally friendly material, due to its position as a mainstream packaging system and its association with a high level of trust.

In another study, conducted on a sample of 161 Polish and French students by Jerzyk (2016), while making no distinction between the two consumer groups, confirmed that the level of economic development and market maturity can significantly influence customers' needs for communication about sustainable packaging.

Willingness to pay

A significant stream of studies has analysed the impact of sustainable packaging on consumers' purchasing behaviour, focusing on their willingness to pay as it serves as a proxy for their actual actions.

However, conflicting results have emerged: on one hand, some studies show that a slightly higher price has no effect on purchasing behaviour, even in developing countries; on the other, some research shows that the higher price of products with environmentally friendly packaging affects consumers' purchase, especially if they have lower levels of education and low-income jobs.

Lindh et al. (2016) found that 86 percent of Swedish respondents were willing to pay 6 percent more for food products with environmentally friendly packaging.

In addition, Prakash and Pathak (2017) observed that in a less developed economy, such as India, young consumers are willing to pay more for environmentally friendly products and that they prefer to buy products from companies that behave in an environmentally responsible manner.

In a linked study, Martinho et al. (2015) showed that price is an important predictor in purchasing products within sustainable packaging, however that study found that 30 percent of consumers were unwilling to pay more for products with eco-friendly packaging, while 70 percent were willing to pay only one to five percent more.

Similar results were obtained in a global survey conducted by McKinsey in several countries, correlating consumers' inconsistencies in their attitudes and behaviours with their willingness to pay. What they found was that 53 percent of consumers were concerned about environmental issues but were unwilling to act in their purchasing decisions, while another 13 percent were willing to pay more but did not at the time (World Business Council for Sustainable Development, 2008).

Singh & Pandey (2018) analysed the determinants that influence shoppers' willingness to pay a price premium for sustainable packaging, to understand the extent to which the latter may act as a barrier to purchase.

The research result revealed several factors, such as epistemic, functional, and economic value, are those that most influence consumers' willingness to pay.

These findings also confirm and deepen what was analysed by Mishra et al. (2017): "concern for the environment," knowledge of green packaging as well as beliefs about the positive consequences of using green packaging induce consumers to pay a price premium.

2.3.3 Demographical factors

Considering key demographic characteristics, such as age, gender, and educational level, is particularly relevant to meet customers' expectations in relation to all packaging attributes. By identifying such characteristics, it can make companies easier to make strategic and effective decisions about the packaging attributes and to increase their potential contribution as a marketing tool able to influence the target consumer.

Therefore, several studies have focused on analysing the demographic aspects of consumers who purchase food in environmentally friendly packaging.

Based on a sample of Indian consumers, Prakash and Pathak (2017) found that young people care more about environmental protection and have a greater awareness of sustainability issues than older consumers.

Moreover, for young people, personal norms appear to be the main predictor of their intention to purchase sustainable packaged goods. In comparison, for older people, price, safety, packaging size, and recyclability appear to be the most important characteristics at the time of purchase (Duizer & Robertson, 2009).

Tüzemen and Kuru (2018), on the other hand, found an important relationship between educational level and income: a lower level of education is associated with a greater focus on product price rather than packaging; in contrast, consumers with higher levels of education and income place more importance on packaging and have greater environmental awareness.

Regarding gender, the results obtained are conflicting.

Peters Texeira and Badrie (2005) showed that gender has no impact on consumer perception of packaging However, more recent studies have suggested that gender differences play a significant role in the selection of food products in eco-friendly packaging, showing that women, as more emotional, are more environmentally conscious.

In addition, Arslanagić et al. (2014) studied the influence of healthy and sustainable information on food packages, analysing their relationship with advertising messages and opinions about the trustworthiness of packaging as a source of information. What emerged is that men are significantly and positively influenced by both advertising and credibility of information on packaging. For women, on the other hand, the latter does not play any significant role in their perception of sustainability, but what influences them the most is advertising.

CHAPTER III

Empirical analysis

3.1 Research design

As indicated several times during the writing of this paper, companies are progressively adopting strategies aimed at creating a greener system through new packaging proposals that comply with the founding criteria of sustainable development at both the production and design levels.

To date, in fact, 56 percent of companies have already implemented actions designed to decrease their environmental impact and 13 percent have made investments in circular economy processes (Manuelli, 2020).

In addition to the economic benefits of implementing this systemic change, packaging is also an excellent way to communicate the sustainable contribution of the brand, increasing its value and enticing consumers to purchase (ANSA Editorial, 2019).

In this context, the food sector appears to be one of the most involved due to the increasing number of companies that are adopting the paradigms laid down by the circular economy, on the one hand, and to the growth in demand towards green products, on the other hand (Cimmarusti, 2019).

In Italy, in particular, the trend towards goods with an eco-pack seems to be increasingly significant.

36 percent of Italian consumers state that environmental friendliness is a relevant element when buying and purchases of foods with tangible references to sustainability is growing more than the market average (Manuelli, 2020). In fact, the share of buyers who consider the material and ecological characteristics of the packaging has increased, because they favour those biodegradable, recyclable or easily reusable (Ronchetti, 2020). Specifically, nearly 50 percent of Italians say they no longer buy products characterized by over-packaging and 22 percent have significantly decreased their purchase of goods with plastic packages.

However, what consumers declare does not always translate into an actual willingness to take concrete sustainable action.

This set the stage for the exploratory investigation that will be presented in this chapter: to examine which of the internal, external, and demographic factors, described at length in section 2.3, are most impactful in driving Italian consumers' choices about purchasing food products in sustainable packaging.

The purpose of this study is descriptive: starting from an observation of reality, the aim is to investigate the specificity of the phenomenon under interest. In particular, the research design and sample will first be presented in details, and then the collected data will be analysed and some considerations will be reported.

This type of investigation directed at examining and understanding the drivers of consumers' choices turns out to be of great importance for companies to better meet their needs and involve them more in taking part in sustainability-oriented change.

3.1.1 Structure of the survey

The quantitative survey tool used to collect the data object of the analysis was the self-completed questionnaire. This form, which guaranteed the respondents' anonymity, was designed and implemented through the Qualtrics platform, a software employed to design, launch and analyse online surveys. It is the commonly adopted method for collecting feedback on a large scale, whether it is a simple questionnaire or a more detailed study to obtain feedback from customers and employees as part of a structured experience management program.

The survey was disseminated in the period between August 12th, 20and September 2nd, 2022, and administration was via WhatsApp.

Before official dissemination, it was tested: since exhaustiveness of views and neutrality of questions were targeted, a small number of individuals were involved to test the goodness of the instrument. The pre-test thus allowed the questionnaire to be calibrated, simplifying its terminology and clarifying some concepts.

The questionnaire includes only closed-ended or semi-closed-ended questions. This type was chosen because it is favourable to the work of both the researcher and the respondents: on the one hand, closed-ended questions, being standardized, are easy to code; on the other hand, they facilitate the comprehension of the query itself and stimulate recall about behaviours, memories, and events.

Almost the totality of the questions allowed only one option of answer, but there were also a couple of questions with multiple answers.

Finally, in order to investigate opinions, attitudes, and biases regarding the drivers of consumer purchasing decisions and the elements of green packaging that influence them, the five-point Likert scale was used for some questions. The choice was made to use the Likert scale with an odd number of positions to give respondents the opportunity to express their neutrality; de facto, an even number of answer choices forces individuals to take a position, but this could be a stretch of reality (Caselli, 2005).

- 1 = strongly disagree / not at all;
- 2 = disagree / a little;
- 3 = neutral / moderately;
- 4 = agree / a lot;
- 5 = strongly agree / very much

After a quick introduction including the topic presentation, the informational objectives of the survey and a brief explanation concerning the processing of personal data, the questionnaire was organized into three macro sections:

1. The first section aims to analyse respondents' purchasing habits for food products. Specifically, questions are posed to investigate:
    - the buying frequency at grocery stores
    - the influence of specific factors on the purchase decision, such as price, quality, healthiness, organic provenience, product calories, brand reputation, packaging attractiveness, and product life cycle management
    - the importance attached by respondents to sustainability in their shopping decisions
    - the meaning associated with the concept of sustainable development.
2. The second section gets to the heart of the analysis, focusing on green packaging. It aims to study both which features and functions of sustainable packaging are considered most important by respondents and the key attitudinal predictors that drive them to act responsibly. Specifically, the questions are geared towards understanding:
    - whether respondents are used to purchase food products in environmental-friendly packaging
    - the influence of sustainability on perceptions of product taste and quality
    - the weight given by respondents to certain variables on their consideration of green packaging. Specifically, these variables refer both to package design elements related to its appearance, such as material, colour, shape, sustainable labelling, design, functionality, recycling, and production process; and to consumers' attitudes towards sustainable action driven by such factors as intentions, habits, degree of information and knowledge regarding environmental issues, concern about climate change, and attention to recycling.
    - the willingness to pay a premium price to acquire food products made with sustainable packaging.
3. The third, and final, section contains concluding socio-demographic questions to delineate the sample under analysis.

3.1.2 Description of the sample

The results of the present survey are based on the responses given by a sample of 206 Italian consumers. It, as shown in Table 1, consists of 59.2 percent females and 40.8 percent males.

Tab. 1: Absolute and relative frequencies of the variable *gender*

	Absolute frequency	Relative frequency (%)
Females	122	59,2%
Males	84	40,8%
TOTAL	206	100,0%

Graph 1: Distribution of sample by *gender*

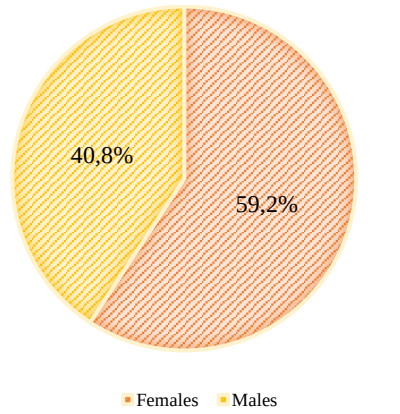
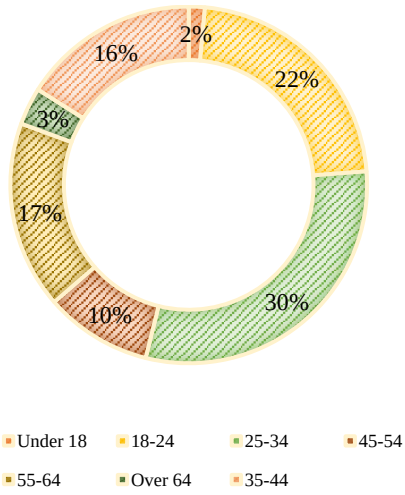


Table 2 presents the breakdown of the sample by age group. As noted, the majority of those involved in the survey belong to the Millennial Generation, age range 25-34.

Tab. 2: Absolute and relative frequencies of the variable *age*

	Absolute frequency	Relative frequency (%)
Under 18	3	1,1%
18 - 24	46	22,3%
25 - 34	62	30,1%
35 - 44	33	16,0%
45 - 54	20	9,7%
55 - 64	35	17,0%
Over 64	7	3,4%
TOTAL	206	100,0%

Graph 2: Distribution of sample by *age*



Regarding the region of residence, Table 3 highlights quite clearly that the majority of statistical units live in Veneto, followed by Lombardy and Tuscany.

Tab. 3: Absolute and relative frequencies of the variable *residence*

	Absolute frequency	**Relative frequency (%)**
Abruzzo	1	0,5%
Emilia Romagna	7	3,4%
Friuli-Venezia Giulia	2	1,0%
Lazio	6	2,9%
Lombardia	20	9,7%
Marche	2	1,0%
Veneto	146	70,9%
Puglia	3	1,5%
Toscana	19	9,2%
TOTAL	206	100,0%

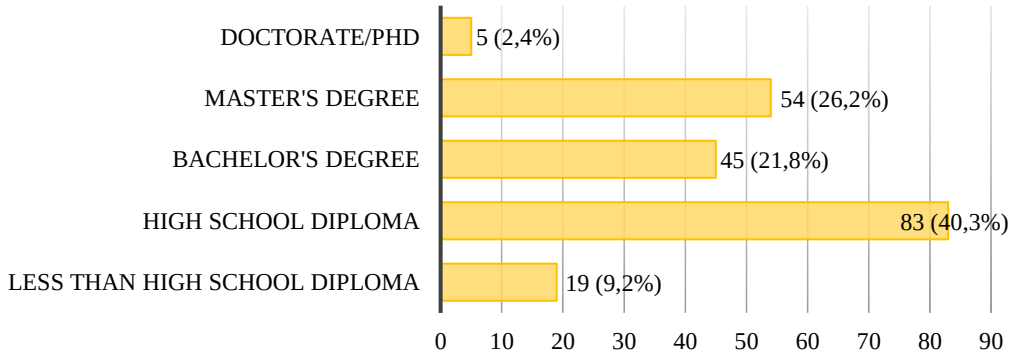
Graph 3: Distribution of sample by *residence*

As seen in Tables 4 and 5, with respect to the variables "level of education" and " employment", most respondents have lower-middle educational qualifications and are workers. Specifically, 40.3% holds high school diploma and 58.3% has full-time job.

Tab. 4: Absolute and relative frequencies of the variable *level of education*

	Absolute frequency	**Relative frequency (%)**
Less than high school diploma	19	9,2%
High school diploma	83	40,3%,
Bachelor's Degree	45	21,8%
Master's Degree	54	26,2%
Doctorate/PHD	5	2,4%
TOTAL	206	100,0%

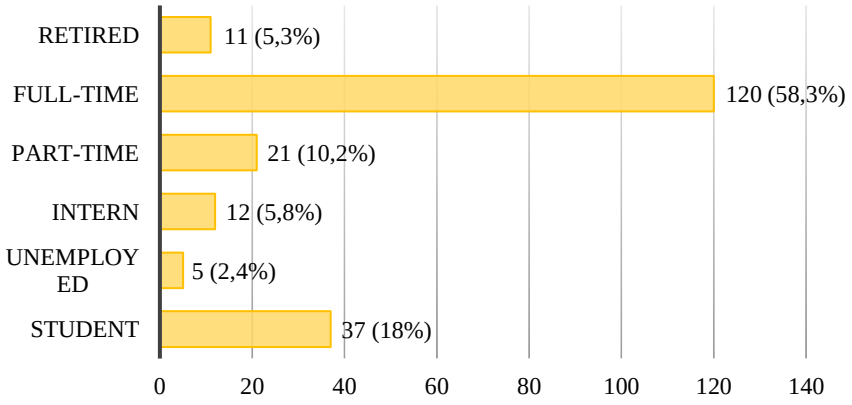
Graph 4: Distribution of sample by *level of education*



Tab. 5: Absolute and relative frequencies of the variable *occupation*

	Absolute frequency	**Relative frequency (%)**
Student	37	18,0%
Unemployed	5	2,4%
Intern	12	5,8%
Part-time	21	10,2%
Full-time	120	58,3%
Retired	11	5,3%
TOTAL	206	100,0%

Graph 5: Distribution of sample by *occupation*

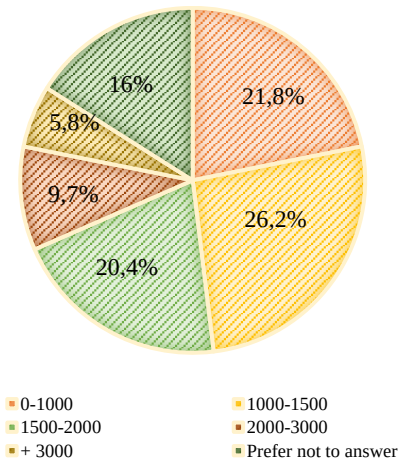


The result obtained about the monthly income received by each respondent, as reported in Table 6, is that the majority of individuals earns a maximum of Euro 2,000 per month. Specifically, 21.8% earns a maximum of Euro 1,000, 26.2% earns 1,000 to Euro 1,500, and 20.4% earns from Euro 1,500 to 2,000.

Tab. 6: Absolute and relative frequencies of the variable *monthly income*

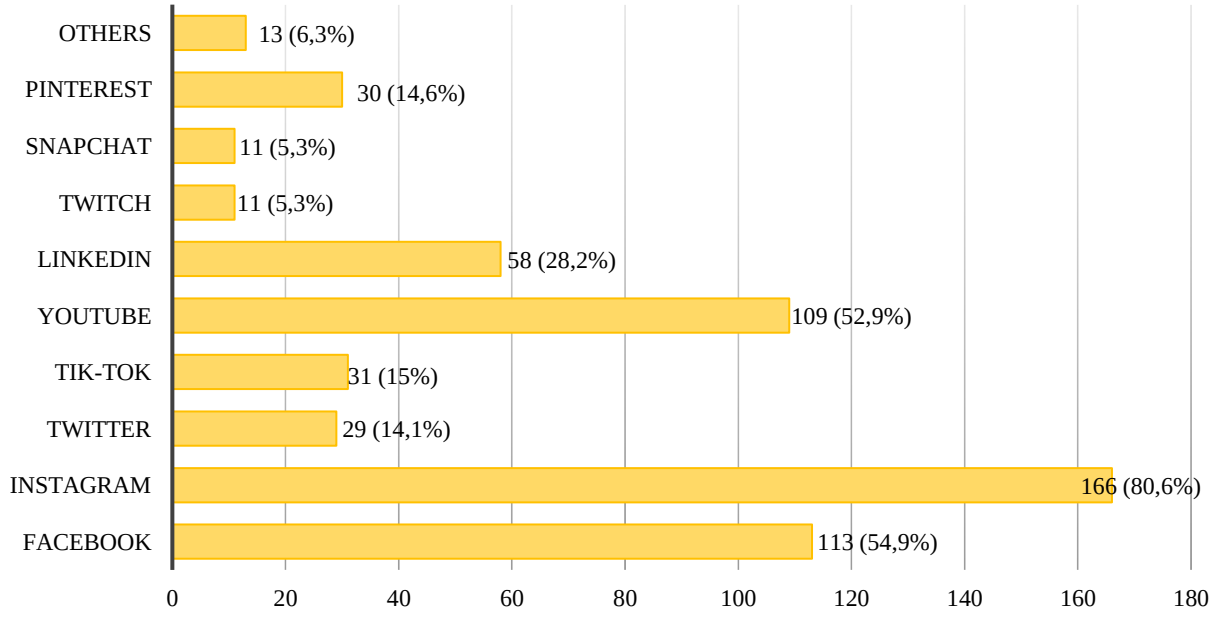
	Absolute frequency	**Relative frequency (%)**
0 - 1000	45	21,8%
1000 - 1500	54	26,2%
1500 - 2000	42	20,4%
2000 - 3000	20	9,7%
+ 3000	12	5,8%
Prefer not to answer	33	16,0%
TOTAL	206	100,0%

Graph 6: Distribution of sample by *monthly income*



Finally, the last demographic variable concerns the use of social media, whose results show that most respondents use Instagram, Facebook and YouTube.

Graph 7: Distribution of sample by *social media*



3.2 Results

3.2.1 Consumers' attitude in the food industry

After the sample presentation, the following study provides a univariate analysis of the responses obtained for each question.

This will give the cue for further observations and considerations on the most relevant variables for better understanding what drives sample respondents to purchase food products wrapped in sustainable packaging.

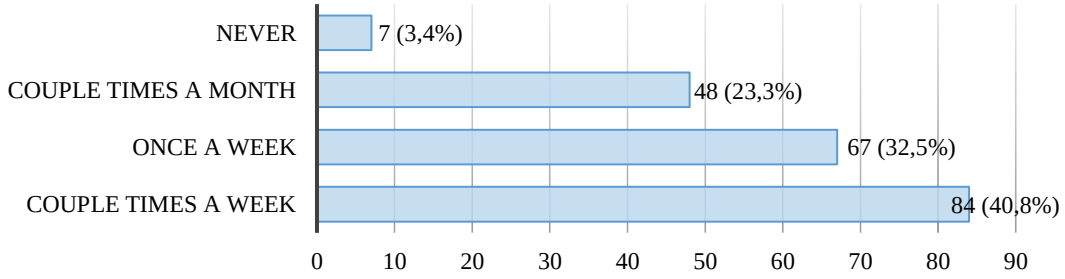
I section: consumers' habits with respect to food products

Q1: How often do you go grocery shopping?

- Couple times a week
- Once a week
- Couple times a month
- Never

As shown in Graph 8, the largest majority of respondents go to a grocery store one to several times a week. Specifically, 40.8 percent reports going to a food store many times, while 32.5 percent only once.

Graph 8: Distribution of sample by *buying frequency at grocery stores*



Q2: How much do the following affect your decision when buying food products? (1=not at all, 2=a little, 3=moderately, 4=a lot, 5=extremely)

- Price
- Quality
- Healthiness
- Bio provenience
- Calories
- Brand reputation
- Packaging attractiveness
- Sustainable production process

Among the eight factors listed above, product quality and healthiness seem to be the most influential and, as a result, represent what the respondents pay most attention to at the purchasing stage.

To confirm this, Tables 9a and 9b show that 53.4 percent and 46.6 percent give much weight to product quality and healthiness, respectively. The average rating assigned by respondents to the influence of these parameters is 4.1 to quality and 3.9 to healthiness on the Likert scale, where score 5 represents the most frequently recorded.

The other factors that moderately influence respondents' purchase choices are price, packaging attractiveness and brand reputation.

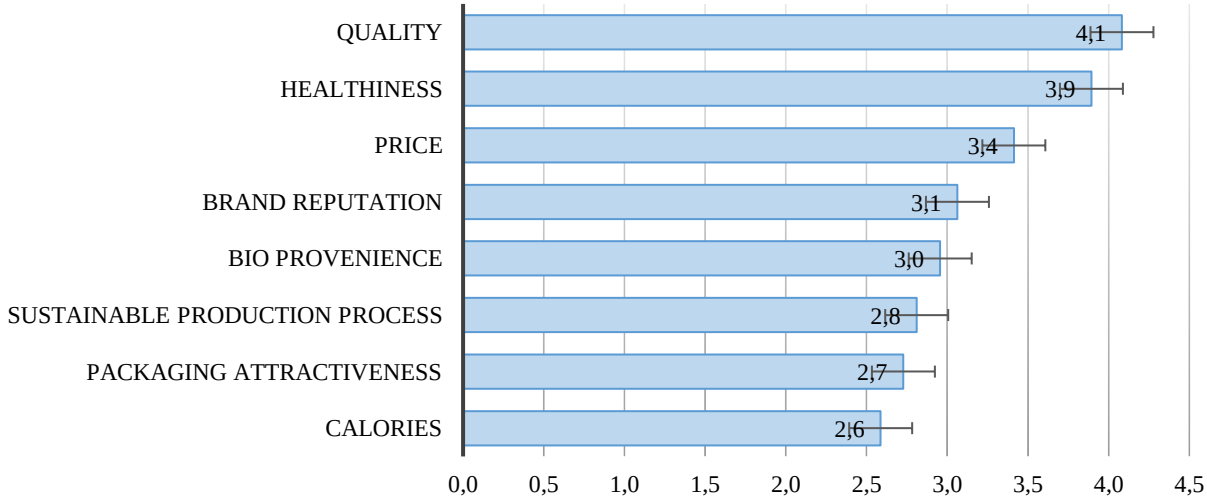
Tab 9a: Absolute and relative frequencies of the variable *influencing factors on the purchase decision*

		Not at all	*A little*	*Moderately*	*A lot*	*Extremely*	***TOTAL***
Price	**Absolute frequency**	4	19	95	64	24	206
	Relative frequency (%)	1,9%	9,2%	46,1%	31,1%	11,7%	100%
Quality	**Absolute frequency**	1	5	30	110	60	206
	Relative frequency (%)	0,5%	2,4%	14,6%	53,4%	29,1%	100%
Healthiness	**Absolute frequency**	6	10	39	96	55	206
	Relative frequency (%)	2,9%	4,9%	18,9%	46,6%	26,7%	100,0%
Organic provenience	**Absolute frequency**	21	46	77	45	17	206
	Relative frequency (%)	10,2%	22,3%	37,4%	21,8%	8,3%	100,0%
Calories	**Absolute frequency**	48	44	69	35	10	206
	Relative frequency (%)	23,3%	21,4%	33,5%	17,0%	4,9%	100,0%
Brand reputation	**Absolute frequency**	18	37	82	52	17	206
	Relative frequency (%)	8,7%	18,0%	39,8%	25,2%	8,3%	100,0%
Packaging attractiveness	**Absolute frequency**	28	54	83	28	13	206
	Relative frequency (%)	13,6%	26,2%	40,3%	13,6%	6,3%	100,0%
Sustainable production process	**Absolute frequency**	28	56	60	51	11	206
	Relative frequency (%)	13,6%	27,2%	29,1%	24,8%	5,3%	100,0%

Tab 9b: Average and Standard Deviation of the variable *influencing factors on the purchase decision*

	Price	*Quality*	*Healthiness*	*Organic provenience*	*Calories*	*Brand reputation*	*Packaging attractiveness*	*Sustainable Production Process*
Average	3,4	4,1	3,9	3,0	2,6	3,1	2,7	2,8
Standard Deviation	0,9	0,8	1,0	1,1	1,2	1,1	1,1	1,1

Graph 9: Distribution of sample by *influencing factors on the purchase decision* (Average +/- Std. Dev.)

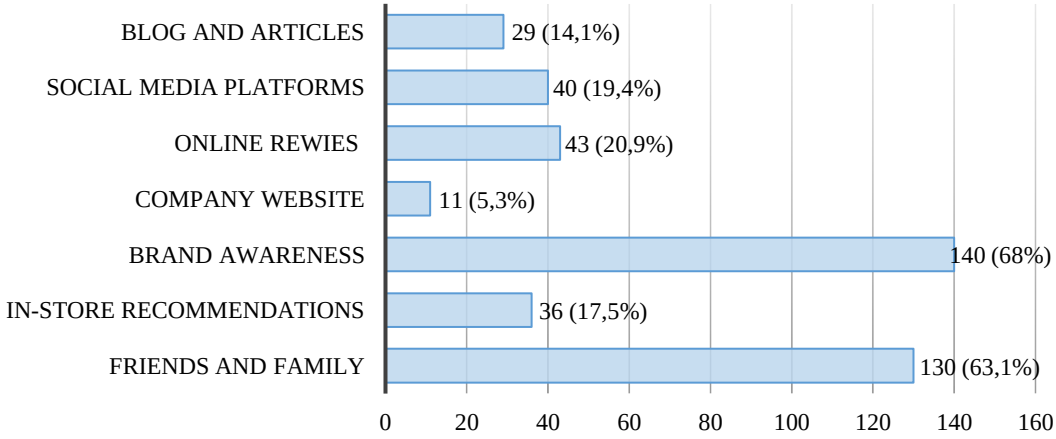


Q3: What is your main source of information when buying a food products?

- Friends and family
- In-store recommendations
- Brand awareness
- Company website
- Online reviews
- Social media platforms
- Blog and articles

The main sources of information when purchasing food products are definitely brand knowledge and recommendations received from acquaintances. In fact, as shown in Graph 10, 68 percent and 63.1 percent of respondents claims to inform themselves through the brand or via recommendations from friends and family, respectively.

Graph 10: Distribution of sample by *source of information*



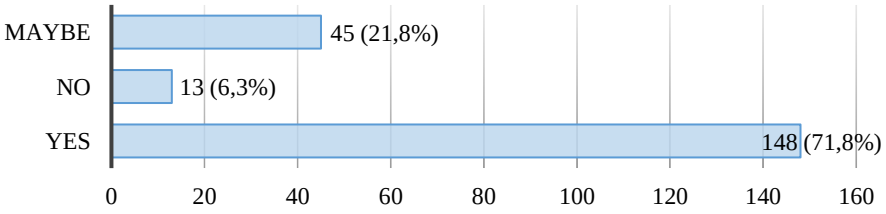
Q4: Do you consider sustainability an important factor when buying food?

- Yes
- No
- Maybe

Graph 11 illustrates that 71.8 percent of the sample considers sustainability as a relevant factor when buying a product.

This is in line with the findings from the various studies presented in the literature review of the previous chapter: the majority of consumers believes that achieving sustainability can be accomplished from habitual behaviours such as purchasing choices. Therefore, in order to reach the goal of environmental fallout minimization, those involved in household spending are willing to change their habits and this attitude is reflected in consumers' continuing orientation towards more conscious spending, which is attentive to the environment, and to people's health and well-being as well.

Graph 11: Distribution of sample by *importance attributed to sustainability*



Q5: Please indicate your level of agreement on each of the following statements (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree).

- I think food product is sustainable if sold in sustainable packaging
- I think food product is sustainable if it's local (0 kilometre)
- I think food product is sustainable if it has a green life cycle
- I think food product is sustainable if it’s healthy

This question was asked in order to explore the meaning the sample attached to the concept of sustainability. As Tables 12a and 12b illustrate, what came out is that a clear predominance of respondents believe a product is sustainable if its entire life cycle is so as well. Specifically, 48.5 percent and 30.6 percent respectively agree and strongly agree with such thinking.

Since the origin of the product and its packaging also appear to be quite relevant in the notion of sustainability, it could be assumed that these two factors are considered an integral part of the production life cycle: from the initial stage with the use of the raw materials that compose the product and its packaging to the final stage of distribution (in local goods, logistics is practically nil and therefore has little impact on the environment).

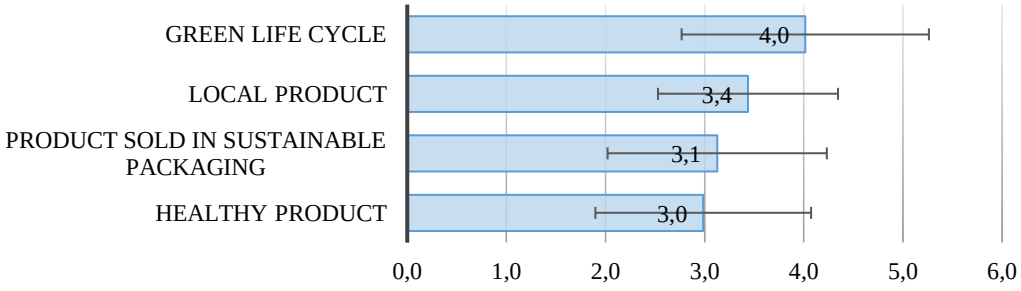
Tab 12a: Absolute and relative frequencies of the variable *meaning associated with the concept of sustainability*

		Strongly disagree	*Disagree*	*Neutral*	*Agree*	*Strongly agree*	***TOTAL***
Product sold in sustainable packaging	**Absolute frequency**	15	46	62	64	19	206
	Relative frequency (%)	7,3%	22,3%	30,1%	31,1%	9,2%	100,0%
Local product	**Absolute frequency**	14	28	48	86	30	206
	Relative frequency (%)	6,8%	13,6%	23,3%	41,7%	14,6%	100,0%
Green life-cycle	**Absolute frequency**	6	5	32	100	63	206
	Relative frequency (%)	2,9%	2,4%	15,5%	48,5%	30,6%	100,0%
Healthy product	**Absolute frequency**	31	38	70	37	30	206
	Relative frequency (%)	15,0%	18,4%	34,0%	18,0%	14,6%	100,0%

Tab 12b: Average and Standard Deviation of the variable *meaning associated with the concept of sustainability*

	Product sold in sustainable packaging	*Local product*	*Green life cycle*	*Healthy product*
Average	3,1	3,4	4,0	3,0
Standard deviation	1,1	1,1	0,9	1,2

Graph 12: Distribution of sample by *meaning associated with the concept of sustainability*



II section: food products in sustainable packaging

Q6: Do you buy food in sustainable packaging?

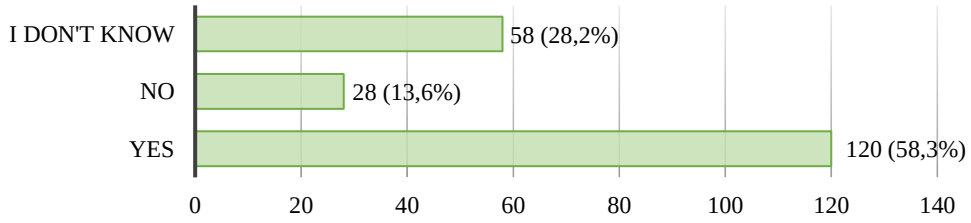
- Yes
- No
- I don't know

As shown in Graph 13, more than half of the respondents (58.3 percent) buy food in sustainable packaging, while the remaining portion state they are not used to or don't pay attention to the latter at the time of purchase, 13.6 percent and 28.2 percent, respectively.

This figure is particularly interesting for some subsequent correlations with other variables in order to further investigate this study: to understand whether the reasons that lead the minority not to buy products with sustainable packaging is related to non-interest in sustainability or simply lack of attention to the latter at the time of purchase.

Insight into this aspect is crucial for a proper marketing and packaging design strategy to guide a change in consumer behaviour.

Graph 13: Distribution of sample by *habit to purchase food in sustainable packaging*

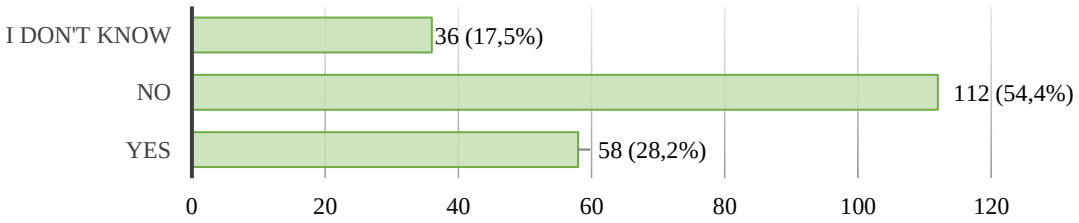


Q7: Does sustainable packaging influence your taste perception of food?

- Yes
- No
- I don’t know

Some studies presented in the literature review have shown the influence of some packaging attributes on the taste perception of foods. However, what obtained in the present study, as shown in Graph 14, is that 54.4 percent of respondents believes that packages do not affect their sense of taste perception.

Graph 14: Distribution of sample by *influence of sustainable packaging on food taste*



Q8: Please indicate the level of influence that the following factors have on your consideration of sustainable packaging (1=not at all, 2=a little, 3=moderately,4=a lot, 5=extremely).

- Material
- Colour
- Shape
- Sustainable label
- Design
- Function
- Recycling
- Production process

In the absence of product information, consumers rely on the visual aspect of packaging and their purchase follows the impulse of the moment. Therefore, this question was posed to identify which features of the latter evoke positive evaluations and guide to buy.

In accordance with the literature review, the results obtained show the importance of including some visual elements on the packaging in order to convey its sustainable properties.

The introduction of such elements as recycling information, material, and production process appear to be the ones that most communicate packaging eco-friendliness.

Specifically, as shown Tab. 15a and 15b, the most relevant element is definitely recycling. 58.7 percent states they considered it an extremely important attribute. Material and production process also seem to be significant elements for more than half of the respondents: the average rating assigned to these parameters by respondents is 3.8 and 3.7, respectively.

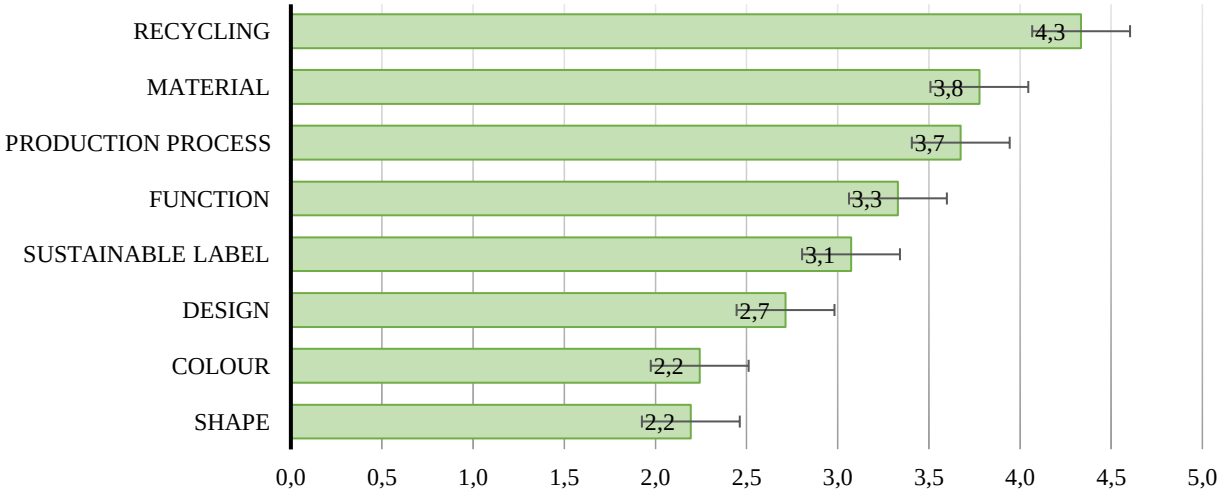
Tab 15a: Absolute and relative frequencies of the variable *weight given to design elements of green packaging*

		Not at all	*A little*	*Moderately*	*A lot*	*Extremely*	***TOTAL***
Material	**Absolute frequency**	8	12	54	76	56	206
	Relative frequency (%)	3,9%	5,8%	26,2%	36,9%	27,2%	100%
Colour	**Absolute frequency**	63	55	71	9	8	206
	Relative frequency (%)	30,6%	26,7%	34,5%	4,4%	3,9%	100%
Shape	**Absolute frequency**	62	66	56	20	2	206
	Relative frequency (%)	30,1%	32,0%	27,2%	9,7%	1,0%	100,0%
Sustainable label	**Absolute frequency**	25	40	64	49	28	206
	Relative frequency (%)	12,1%	19,4%	31,1%	23,8%	13,6%	100,0%
Design	**Absolute frequency**	36	51	69	36	14	206
	Relative frequency (%)	17,5%	24,8%	33,5%	17,5%	6,8%	100,0%
Function	**Absolute frequency**	15	33	62	61	35	206
	Relative frequency (%)	7,3%	16,0%	30,1%	29,6%	17,0%	100,0%
Recycling	**Absolute frequency**	6	6	22	51	121	206
	Relative frequency (%)	2,9%	2,9%	10,7%	24,8%	58,7%	100,0%
Production process	**Absolute frequency**	8	52	56	51	65	206
	Relative frequency (%)	3,9%	25,2%	27,2%	24,8%	31,6%	100,0%

Tab 15b: Average and Standard Deviation of the variable *weight given to design elements of green packaging*

	Material	*Colour*	*Shape*	*Sustainable label*	*Design*	*Function*	*Recycling*	*Production process*
Average	3,8	2,2	2,2	3,1	2,7	3,3	4,3	3,7
Standard Deviation	1,0	1,1	1,0	1,2	1,1	1,2	1,0	1,2

Graph 15: Distribution of sample by *weight given to design elements of green packaging*



Q9: Please indicate the level of influence that the following behaviour predictors have on your consideration of sustainable packaging (1=not at all, 2=a little, 3=moderately,4=a lot, 5=extremely).

- Environmental attitude (your predisposition to act in a sustainable way)
- Concern over climate change
- Pro-environmental habits
- Wealth of knowledge on environmental sustainability issues
- Intentions in taking care and respecting environment
- Attention to recycling

This question was also asked based on what has been stated and demonstrated in previous studies: consumer attitudes play an important role in shaping decisions to buy food in sustainable packaging. Tables 16a and 16b reveal that among the above attitudes, those that most influence respondents are definitely attention to recycling, concerns towards climate change, intentions in taking care of environment, and pro-environmental habits.

The average rating attributed to the influence of these variables is 4.2 for attention to recycling, proving to be perfectly aligned with the results found in the previous question; 4.0 to both concerns over climate change and pro-environmental habits and 3.9 for intentions in taking care of environment, confirming the relevance of the latter on influencing consumers' intentions and behaviours as reiterated so far.

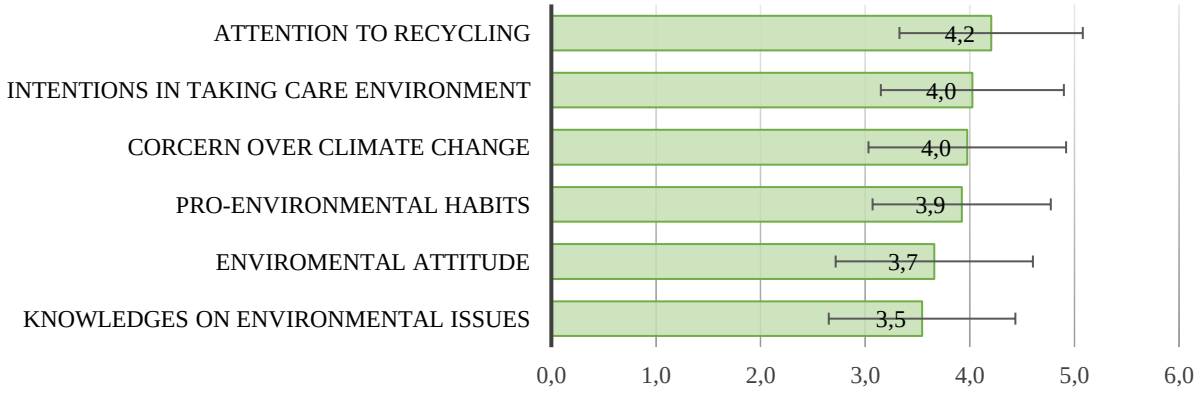
Tab 16a: Absolute and relative frequencies of the variable *weight of consumer's attitude*

		Not at all	*A little*	*Moderately*	*A lot*	*Extremely*	***TOTAL***
Environmental attitude	**Absolute frequency**	3	15	75	69	44	206
	Relative frequency (%)	1,5%	7,3%	36,4%	33,5%	21,4%	100,0%
Concern over climate change	**Absolute frequency**	4	12	34	91	65	206
	Relative frequency (%)	1,9%	5,8%	16,5%	44,2%	31,6%	100,0%
Pro-environmental habits	**Absolute frequency**	2	9	44	99	52	206
	Relative frequency (%)	1,0%	4,4%	21,4%	48,1%	25,2%	100,0%
Knowledges on environmental issues	**Absolute frequency**	5	13	81	79	28	206
	Relative frequency (%)	2,4%	6,3%	39,3%	38,3%	13,6%	100,0%
Intentions in taking care of environment	**Absolute frequency**	4	5	37	96	64	206
	Relative frequency (%)	1,9%	2,4%	18,0%	46,6%	31,1%	100,0%
Attention to recycling	**Absolute frequency**	4	4	26	84	88	206
	Relative frequency (%)	1,9%	1,9%	12,6%	40,8%	42,7%	100,0%

Tab 16b: Absolute and relative frequencies of the variable *weight of consumer's attitude*

	Environmental attitude	*Concern over climate change*	*Pro-env. habits*	*Knowledge on env. issues*	*Intentions in taking care of env.*	*Attention to recycling*
Average	3,7	4,0	3,9	3,5	4,0	4,2
Standard Deviation	0,9	0,9	0,9	0,9	0,9	0,9

Graph 16: Distribution of sample by *weight of consumer's attitude*



Q10: Are you willing to pay more for buying food products in sustainable packaging?

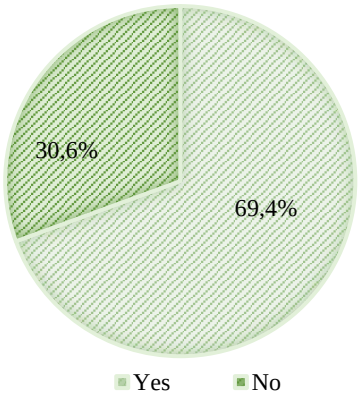
- Yes
- No

Finally, the last aspect wanted to analyse concerns one of the external factors mentioned in section 2.3: willingness to pay. It appears to be particularly relevant in the cost-benefit analysis that consumers

make when faced with a product.

Despite the conflicting results presented in the literature review, more than half of the respondents in this study are willing to pay a higher price for a product with sustainable packaging. This implies, as shown in Graph 17, that 69.4 percent considers the latter to be an added value for the product.

Graph 17: Distribution of sample by *willingness to pay*



3.2.2 Relationships among the variables

By taking consciousness of what was obtained in the univariate analysis described above, which considers the answers and results of the proposed questions in the research questionnaire, it is possible to state that the tendency of the Italians included in the sample believes that:

- recycling, material and production process are the product attributes that most influence their perception of packaging sustainability;
- attention to recycling, concern for climate change, intentions and habits to take care of the environment are the main predictors that drive their decisions to purchase food in sustainable packaging.

Following this analysis, an additional bivariate survey was conducted to highlight possible correlations between random variables.

Since the degree of dependence between variables is only "statistical," it is not guaranteed that every time it is noted there is also a cause-and-effect relationship between them. Therefore, due to the categorical nature of the variables under consideration, the statistical chi-square (χ 2) test was conducted for each relationship, as it allows testing the independence of the two variables under consideration by verifying that observed frequencies fit the expected ones. This test is based on a hypothesis test in which the null hypothesis H0, assumes that the chi-square is zero and thus the variables are independent of each other; conversely, the alternative hypothesis contemplates that the chi-square is non-zero and thus there is a significant dependence relationship between the two variables. In the event that the test results allow the null hypothesis to be rejected, then it can be proven that a relationship exists between the two variables.

Both the relationships that were found to be most significant and those found to be of interest for this study are presented below.

Importance attributed to sustainability - habit to purchase food in sustainable packaging

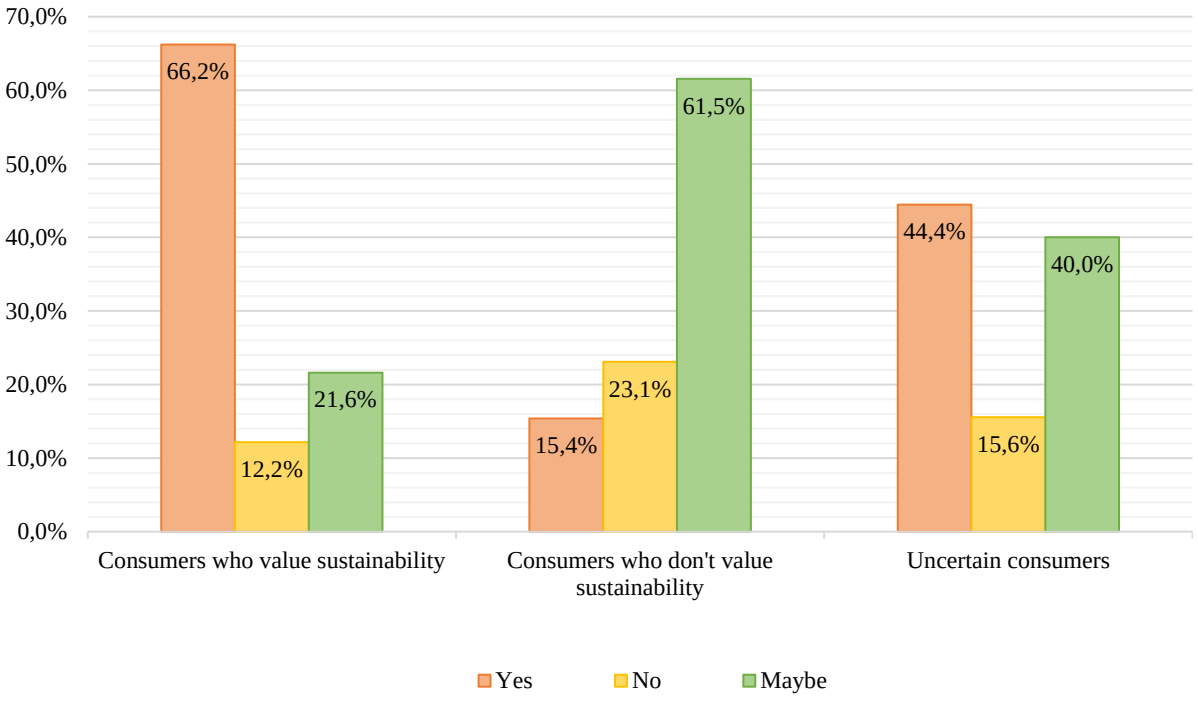
As reported in the literature review in the research conducted by Prakash and Pathak (2016) and as demonstrated in the present study, consumer attitudes certainly have a positive impact on the importance consumers place on sustainability and, consequently, on their intention to purchase products in green packaging.

Specifically, the univariate analysis of the questionnaire showed that 71.8 percent of respondents considers sustainability an important element at the time of purchasing foods and 58.3 percent is used to buy the latter within environmentally-friendly packaging.

So, from this assumption, in order to understand who actually acts sustainably, it was interesting to investigate who is used to buy food products in green packaging among those who consider sustainability an important element.

Graph 18: Relationship between *importance attributed to sustainability* and *habit to purchase food in sustainable packaging*

***X-AXIS**: Q4 - IMPORTANCE ATTRIBUTED TO SUSTAINABILITY*
***Y-AXIS**: Q6 - HABIT TO PURCHASE FOOD IN SUSTAINABLE PACKAGING*



As shown in Graph 18, 66.2 percent of those considering sustainability as a relevant factor is used to buy products in eco-friendly packaging, while only 12.2 percent of those not considering it as important is used to purchase products in green packaging.

This difference in distribution was also confirmed by the chi-square test, which shows the existence of a dependence between the two variables. Within the three different categories indicating the importance given to sustainability, the distribution of responses on purchasing habits is almost flipped: those who value sustainability also demonstrate it with facts, while those who do not give importance to it are less likely to buy sustainable packaging.

Habit to purchase food in sustainable packaging – willingness to pay

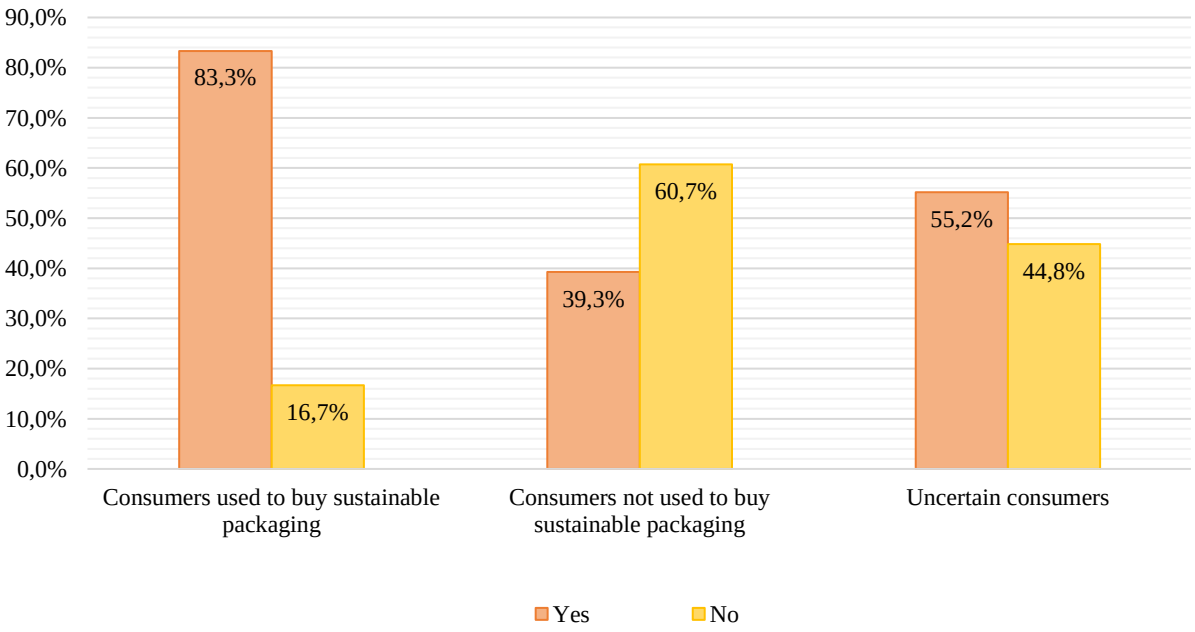
Another interesting relation concerns trends and spending preferences related to food purchase: since environmentally-friendly products usually have a higher price, it is helpful to assess consumers' willingness to pay for such products.

Therefore, considering the importance attached by respondents to sustainability, the following report aims to understand who, among the respondents used to buy food products in green packaging, is actually willing to pay a premium price.

In line with the results obtained in the questionnaire for which 69.4 percent is willing to pay more for purchasing products in sustainable packaging, the relationship is significant: as shown in Graph 19, among those who are used to purchase products in environmentally-friendly packaging, 83,3 percent is willing to pay more, while 16.7 percent is not; on the contrary, among those who are not used to buying products in green packaging, only 39.9 percent would be willing to pay more, while 60.7 percent wouldn't.

Graph 19: Relationship between *habit to purchase food in sustainable packaging* and *willingness to pay*

***X-AXIS**: Q4 - HABIT TO PURCHASE FOOD IN SUSTAINABLE PACKAGING*
***Y-AXIS**: Q6 - WILLIGNESS TO PAY*



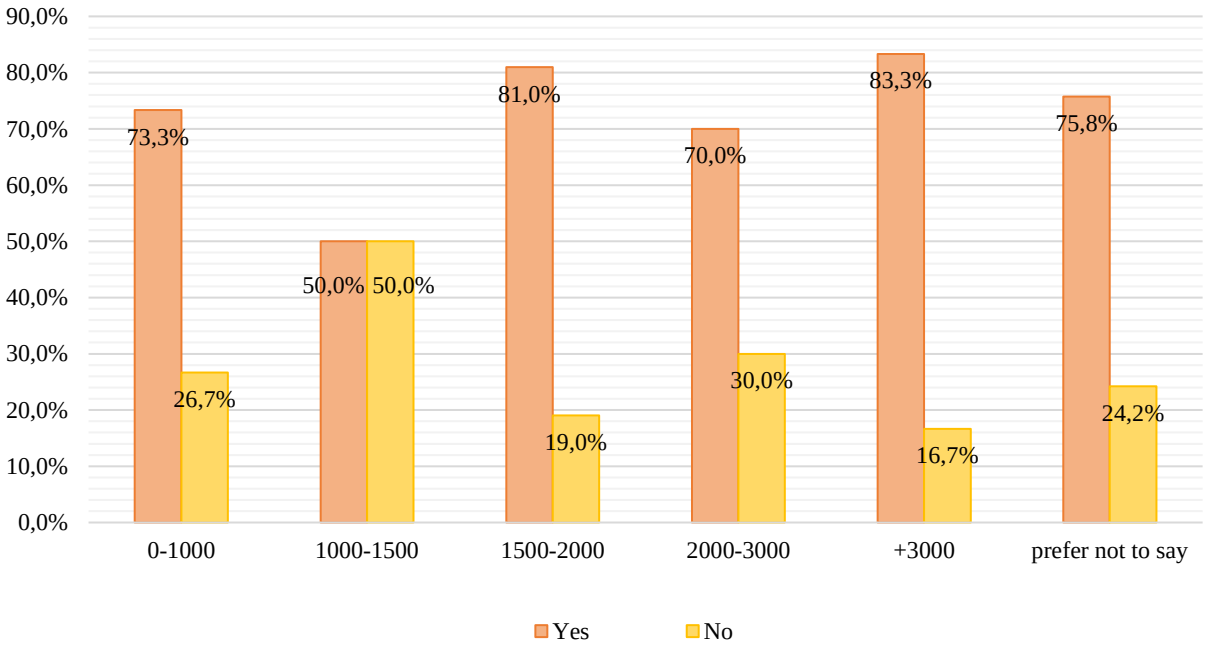
Willingness to pay – monthly income

Considering the several studies on the variables covered in this analysis and looking at the rather homogeneous distribution of the sample based on salary, it seemed interesting to check whether there was a dependency relationship between willingness to pay and monthly income.

Graph 20 shows that in most income categories the trend is similar: except for the Euro 1,000-1,500 range, where there is the same percentage between those who are willing to pay more (50 percent) and those who are not (50 percent), in all other groups there is an abundant majority of respondents who are willing to pay a premium price, and this dependence relationship has been proven to be significant.

Graph 20: Relationship between *monthly income* and *willingness to pay*

X-AXIS: *MONTHLY INCOME*
Y-AXIS: Q6 - *WILLIGNESS TO PAY*



Willingness to pay – level of education

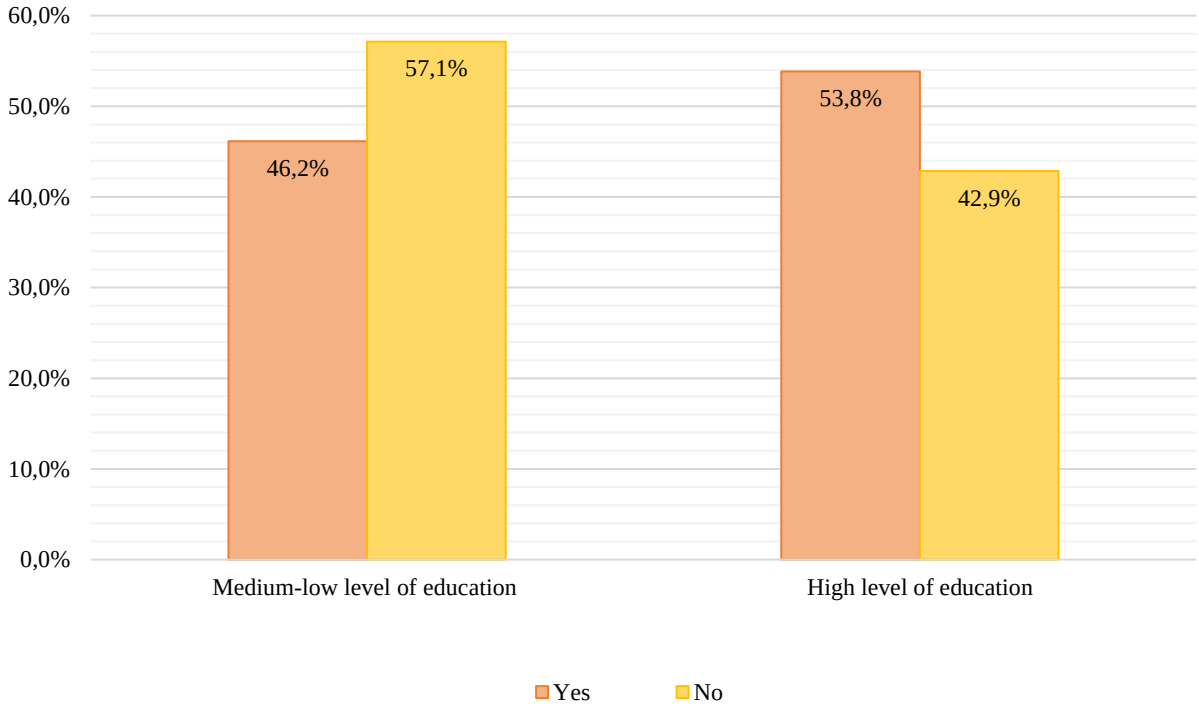
According to the study conducted by Prakash and Pathak, presented in the literature review, younger and with higher levels of education have greater awareness of sustainability issues.

Also another study presented in the literature review, conducted by Tüzemen and Kuru, showed that consumers with higher levels of education and higher incomes have more consciousness and inclination towards environmental protection.

Considering that, in the sample of the present study, 52.4 percent of the respondents is aged between 18 and 34 years and 48 percent holds a bachelor's or master's degree, it was assumed that they would be among those who were willing to pay a premium price for buying environmentally friendly products and packaging. Therefore, it was decided to study the relationship between willingness to pay and level of education.

Graph 21: Relationship between *willingness to pay* and *level of education*

X-AXIS: *LEVEL OF EDUCATION*
Y-AXIS: *Q6 - WILLIGNESS TO PAY*



Nevertheless, what obtained shows that the only significant difference is among respondents who have a master's degree, as there is a greater difference between those who are willing to pay more (29.4 percent) and those who are not (19 percent). However, on the whole, as Graph 21 shows dividing categories between medium-low and high level of education, the chi-square was not significant: since there is little difference in willingness to pay, no dependent relationship can be stated to exist between the two variables.

Willingness to pay – gender

The last demographic variable that was considered interesting to study concerns gender.

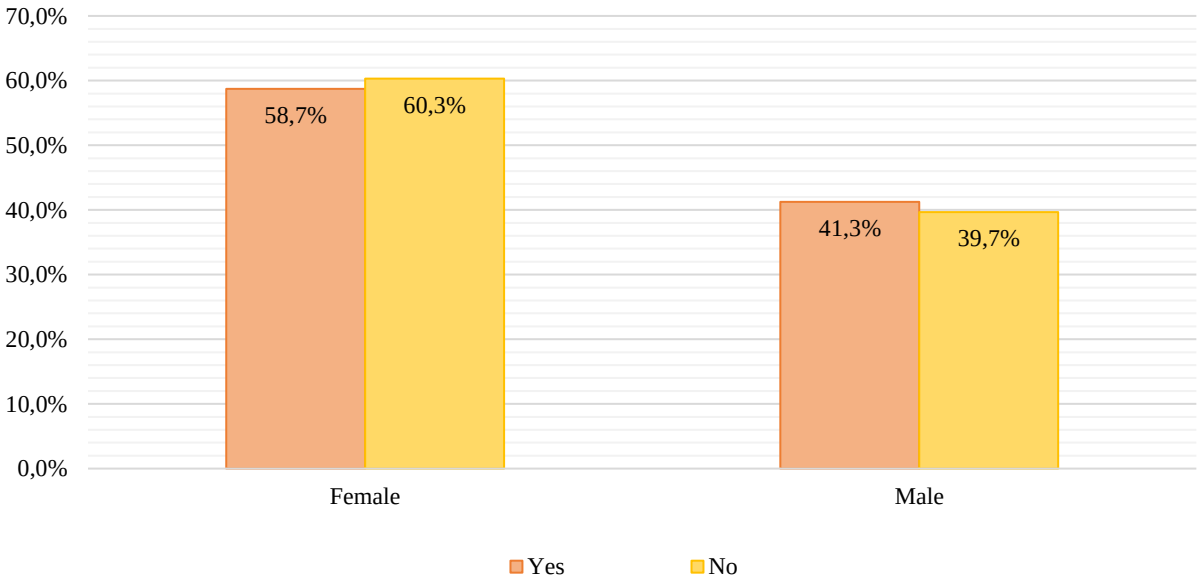
In several studies, it has been proven how the latter influenced the purchase decision of food products with sustainable packaging. Specifically, as demonstrated by Arslanagić et al. in the literature review, depending on the way packaging information on product healthfulness and sustainability was shared, women and men were affected differently at the purchase stage and, consequently, also in their willingness to pay.

However, what Peters Texeira and Badrie demonstrated in the literature review is in agreement with what was obtained in the present study: gender has no impact on consumers' packaging perception and consequent willingness to pay.

Indeed, Graph 22 shows that there is no dependent relationship between the two variables, since there is for both genders no difference between those who are willing to pay more and those who are not.

Graph 22: Relationship between *willingness to pay* and *gender*

***X-AXIS**: GENDER*
***Y-AXIS**: Q6 -WILLIGNESS TO PAY*



CONCLUSION

Sustainability is undoubtedly a topic that is increasingly gaining a foothold not only in businesses and politics, but also among consumers. Since its popularity makes it virtually impossible to overlook, a systemic change is gradually taking place in which both companies and consumers are enablers.
In this context, packaging proves to be one of the most authentic objects of common use that acquires instrumental and communicative values: in addition to the function of product storage and logistics, it can promote features and advantages of the offered items and provide consumers any and all the information related to both product and packaging.
Therefore, it is one of the strongest marketing tools for companies to communicate sustainable values through its attributes and properties, catching consumers' attention and influencing their purchasing decisions.
Specifically, this thesis focused on analysing these topics in the food industry where packaging has a large environmental impact and, due to the wide range of offered products, plays an increasingly crucial role in persuading potential buyers.
Starting from an initial theoretical analysis of its characteristics, such as types and functionalities, and their impact on consumer behaviour, the purpose of this work was empirically identifying the way food packaging communicates with its users and influences their purchasing decisions.
The study, conducted through an online questionnaire and proposed to the Italian population, led to both results consistent with the hypotheses made in previous research and results contrary to the latter. Therefore, at this point of the analysis, it’s important to draw conclusions and to have an overview on what emerged during this work.

Based on the sample observation, it is possible to state that the average respondent is a female living in Veneto, aged between 25 and 34. She holds high school diploma and has a full-time job, her monthly income ranges from Euro 1,000 to 1,500.

Focusing on understanding respondents' habits about the purchase of food products, an initial significant result is the importance they place on certain factors: product quality and healthiness are those to which respondents pay most attention, followed by price, packaging attractiveness, and brand reputation.
This provides companies valuable insights not only in the production phase, but also in the sales strategies design.

As discussed many times during the work, sustainability in food products is considered by consumers a highly relevant factor and this trend was confirmed also in the questionnaire, as most respondents consider it of highly conditioning while purchasing.
This result is an excellent indicator for firms in the food industry: to meet consumers' needs and remain competitive in the market, they must consider sustainability in their business strategies. And, in this

context, packaging acquires a strong value, being the first touch point with the consumer not having the possibility to test the product before the final purchase.
This trend was tested through two questions on respondents' habit to buy eco-friendly package and their willingness to pay for it. Both found that a good majority buy products in green packaging and are willing to pay a premium price for them.
Furthermore, based on these results, the existence of a dependency relationship among these variables was demonstrated: those who consider sustainability important are likely to buy foods in green packaging, and those who are likely to buy foods in green packaging are willing to pay more. Therefore, these relationships prove that people who value sustainability demonstrate it also with concrete facts.

Finally, with the aim of going deeper and answering the research question, the questionnaire sought to identify which factors related to packaging and sustainability most impact on consumers' choices. Hence, respondents were asked to assign each attribute's level of importance and influence when purchasing food products.
What emerged is that the trend of Italians included in the sample consider recycling, material, and production process among the most influential attributes on their perception of sustainable packaging. This suggests that, in order to win over a potential Italian consumer, visual and aesthetic appearance of product is not what matters most, but rather its life cycle. In fact, these three attributes are all included in the latter, from the use of materials, going through its entire production process, until the moment of product waste or reuse.
Continuing with the analysis, the main attitudes that definitely have a positive impact on the emphasis consumers place on sustainability and, consequently, on their intention to purchase foods in green packaging are attention to recycling, concern about climate change, and intentions and habits of taking care of the environment.
This indicates that for organizations it's critical to increase consumers' awareness and meeting their needs. Only in this way, do applicants for environmentally friendly packaging make their purchasing choices also based on the companies' sustainable and environmental values.

Overall, this study, although of limited value due to the small number of participants, confirms the growing interest in the subject matter and the importance of innovating according to social, environmental, and economic criteria.
The many technological, economic, and political advancements make possible several alternatives aimed at meeting and satisfying an increasingly interested customer demand.
Therefore, a right package design involves the study of the whole meaning system: a modern packaging must be sustainable and donor of environmental values bound to its essential requirements, such as functional, communicative, and regulatory.

In that way, consumers' intent to protect the environment by purchasing environmentally-friendly packaging would be translated into consistent buying choices.

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ACKNOWLEDGEMENTS

Un sentito grazie alla professoressa Mauracher, per avermi guidato e supportato in quest'ultima e importante fase del mio percorso accademico.

Ai miei genitori, al loro costante sostegno e ai loro insegnamenti senza i quali oggi non sarei ciò che sono. È soprattutto grazie a voi e ai vostri sacrifici se sono riuscita a raggiungere questo traguardo.
A te mamma, per esserci sempre e sostenermi in ogni mia scelta; a te papà, per essere così forte e per avermi insegnato cosa conta davvero nella vita.
A mio fratello Federico, per aver sempre creduto in me e continuare a spronarmi a dare il meglio.
A mia nonna Alice, che ricordo con tanto affetto e che sarebbe fiera di me.

Ai miei amici di una vita che, nonostante stiamo intraprendendo strade diverse, mi dimostrate sempre di poter contare su di voi. Grazie per avermi fatto vivere i momenti più belli, ma soprattutto grazie per avermi fatto scoprire quanto è buona l'acqua la domenica mattina!
Ai compagni che ho incontrato nel mio percorso di studio e che in poco tempo sono diventati degli amici veri. Grazie per i cappuccini condivisi, i bacari e tutti i "tv, sorrisi e ca(n)zoni".
Agli amici che ho incontrato nel corso degli anni e che, ognuno a modo suo, mi rende felice e grata alla vita. Grazie per tutte le serate da Macca, le nottate al Chiosco e per farmi spingere sempre.
E infine, a Giulia per avermi sopportato in questi mesi e averli resi decisamente meno pesanti. Grazie perché da subito mi hai fatto sentire a casa e mi hai dimostrato di essere un'amica vera. Ma ti ringrazio soprattutto per l'ufficio sempre aperto diventato ormai una garanzia!

Mi sento fortuna ad avere una famiglia e degli amici così; è ad ognuno di voi che dedico questo importante traguardo. Grazie!