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Sustainable cosmetics:

the impact of packaging materials, environmental concern and subjective norm on green consumer behaviour

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Last but not least, I would like all the people who reserved some time to answer to the survey. They gave a really precious contribute to this Master's thesis research study.

The consumer's perception is our reality.

(Kate Zabriskie)

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Introduction

This research has been conducted in the framework of the Master's degree in Management at the Université Catholique de Louvain.

The research is going to be based on the influence of products with an eco-friendly packaging on consumers' behavior. The choice of the theme is related to my particular interest for the big distribution industry and its evolution on the market: how the adaptment to the evolving trends related to ecological interests can be determinant?

A research conducted by the Professor Gordy Pleyers captured my attention: packaging, shape, colour and design of a product can determine important changes in the attitude of a consumer, and not only. Furthermore, focusing on sustainability in the beauty sector could give a great input to the industry and a big contribute to the reduction of impact on Earth over time. In fact, priorities are changing for companies in terms of packaging design and materials' influence on green purchase behavior. In particular, the beauty sector is a highly innovative sector that is going through an interesting improvement of its products to build a conscious environmentally-friendly strategy. Since the beauty industry's green activities and products have a really strong effect on the planet in terms of amount sold and consumed and waste management, we decided to focus on this sector seen its great impact on Earth through consumers.

Therefore, the objective of this Master's thesis is to measure the influence of beauty products' design on consumers' purchase behavior, in particular related to cosmetic products with a sustainable packaging material. As a start, we will go through the sustainable developments and strategies in the cosmetic industry and how it changed over time by reacting to environmental issues.

After, we will go through all the different factors influencing green consumer behavior and the specific litterature related to the matter. Based on them, some studies analysed the most important drivers influencing sustainable purchase decisions.

After this prior analysis, the research will be focused on analysing consumers' perception of a sustainable packaging, in terms of material, market appeal and manufacturing technology. By

discussing the previous scientific research, we will provide an overview about the impact of an eco-friendly packaging on green purchase decisions.

The analysis will be conducted on products appartaining to the cosmetic industry with an eco-friendly packaging. It will permit us to understand the perception that a specific packaging is able to trasmit in order to be perceived as green, by comparing different kind of used materials. In the fourth chapter, we will take into specific consideration the L'Oréal case, perfect example of application of the relevance of packaging material in an eco-friendly packaging.

Our purpose it to analyse – through a quantitative study – green purchase behavior when buying beauty products with an eco-friendly packaging material and to determine the different variables having relevance in the process.

Part 1: Theoretical framework

1. Sustainable development & strategies in the cosmetic industry

The widely accepted definition of "sustainability" rises from the 1987 report entitled "Our common future". In this report is enphasized the need for a sustainable way of life. Moreover, it is defined the idea of sustainability coming from the concept of sustainable development defined as the development that is able to meet the current needs of the population without compromising the needs of the future generations (Bruntland, 1987).

Among the most relevant documents in the sustainable development movement, Agenda 21 (United Nations, 1992) put in evidence the main causes of environmental degradation: unsustainable production and consumption standards.

Later, in 1994, Elkington defined the "triple bottom line" of sustainability, integrating the economical and social dimensions to the sustainable development, aspects that are relevant to develop an economy able to be sustained by the planet.

Henceforward, being the European cosmetic market a growing economic sector, it has been valued at 79,84 billion euros in 2019 in Europe, adding on a growth of six percentage points over the precedent seven-year period.

Consequently, it makes sense that this highly innovative sector goes through an improvement of its activities and products to build a conscious environmental and social sustainability.

Of course, the concept of Green in cosmetic products is not new. Some segments of the cosmetic industry had already started participating in the Green Game. In fact the cosmetic industry experienced at least two waves of natural products: the first one being about botanicals and fruit-based formulas in the early and mid 1970s, the second a similar but stronger wave that began in the mid 1980s and still lasts today.

Caswell-Massey from America has been among the few companies carrying the message for decades, by selling cucumber based soaps and pineapple hair rinses in its shop in Lexington Avenue to a selected range of clients (Csorba and Boglea, 2011).

Therefore, picking the case of The Body Shop from Europe, this company has been seen as one of the pioneers of the second wave, using the Caswell-Massey concept to develop and sell

a complete range of bath products and fragrances in a very simple and sustainable packaging. (Csorba and Boglea, 2011).

In particular, the Italian cosmetics market is one of the largest in Europe both in terms of turnover and consumption, right after Germany and France. When considering the size of the population, the consumption per capita is even higher. Moreover, the worldwide turnover of the Italian cosmetics and personal care industry reached an estimated value of 11.9 billion euros in 2019.

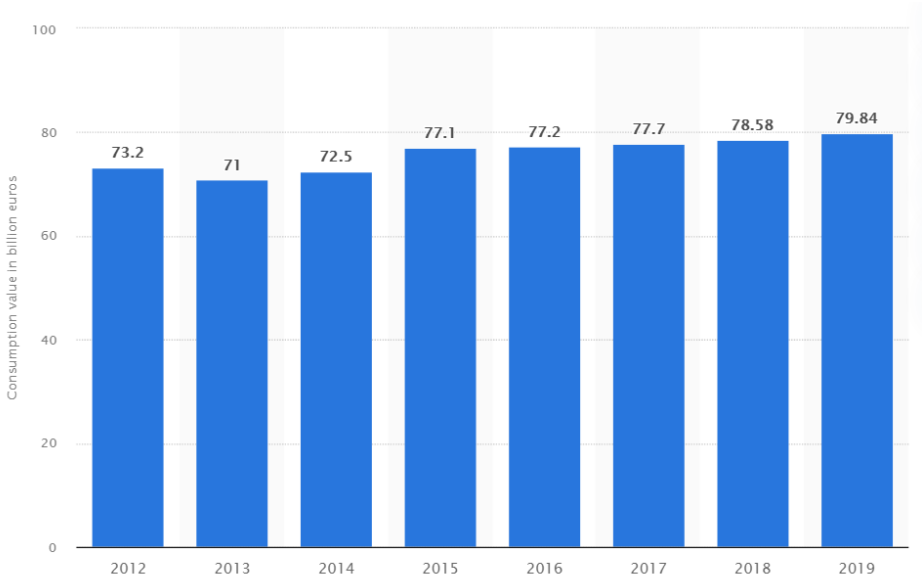

Figure 1: Consumption value in billion euros of cosmetics and personal care in Europe from 2012 to 2019 (Ridder, 2019).

In 2019, facial care and body care were the two leading segments of the cosmetics market in Italy. These two product categories represented 17.3 percent and 15.8 percent of the cosmetic products consumed in the country, respectively. By contrast, products for men accounted for a mere 1.6 percent of the cosmetics consumption. (Ridder, 2019).

Moreover, in 2018 the value of the global cosmetics market in 2018 was 507.8 billion U.S. dollars. The market is projected to value at about 758.4 billion U.S. dollars by 2025. (Ridder, 2020).

Characteristic	2016	2017	2018	2019
Facial care	16.4%	16.7%	16.9%	17.3%
Body care	16.7%	16.4%	16.6%	15.8%
Alcohol-based perfume products	12%	12.4%	12.2%	12.7%
Body hygiene	12.6%	12.5%	12.4%	11.8%
Hair and scalp care	12.6%	12.2%	11.9%	11.4%
Oral hygiene	7.8%	7.8%	7.7%	7.4%
Facial make-up	4.6%	4.9%	4.9%	5.4%
Eye make-up	4.3%	4.4%	4.4%	4.9%
Baby toileties	3.7%	3.7%	3.6%	3.3%
Lip care	3.1%	3.4%	3.6%	4.2%
Hand care	2.2%	2.1%	2.1%	2.2%
Products for men	1.9%	1.9%	1.8%	1.6%
Gift packs	1.3%	1.3%	1.4%	1.4%

Figure 2: Distribution of cosmetics consumption value in Italy from 2016 to 2019, by product category. (Ridder, 2020)

For this reasons, it is important for cosmetic companies to keep up consumers expectations, since a crescent number of people is changing mindset, looking for sustainability into their purchases.

It should be considered that each phase of a product life cycle will affect its sustainability. Concerning cosmetics, it's critical to address the sustainability of those products to the design process, and therefore, to the raw materials selection (Cosmetics Europe, The Personal Care Association, 2012b, 2018b). This highlights the fact that for each product a specific life cycle assessment strategy should be designed (Glew and Lovett, 2014).

One of the most important drivers of sustainability in the cosmetics industry is the awareness of consumers about environmental and social issues that is pushing the cosmetics industry to become "greener". (Fernando and Hennayake, 2017).

Another relevant driver in the process that is leading the cosmetics industry to a more sustainable path is the availability of more sustainable raw materials, like the ones presented by Evonik during in-cosmetics 2018 (Krauter, 2018).

Last but not least, regulations and laws are playing a relevant role as drivers of sustainability.

In the European Union some countries banned the use of microplastics in rinse-off cosmetics after the recommendation of Cosmetics Europe (Xanthos and Walker, 2017). In fact, the presence of plastic microbeads in personal care products decreased in the amount 97,6 % between 2012 and 2017, consequently eliminating 4250 tons of plastic (Cosmetics Europe – The Personal Care Association, 2018a).

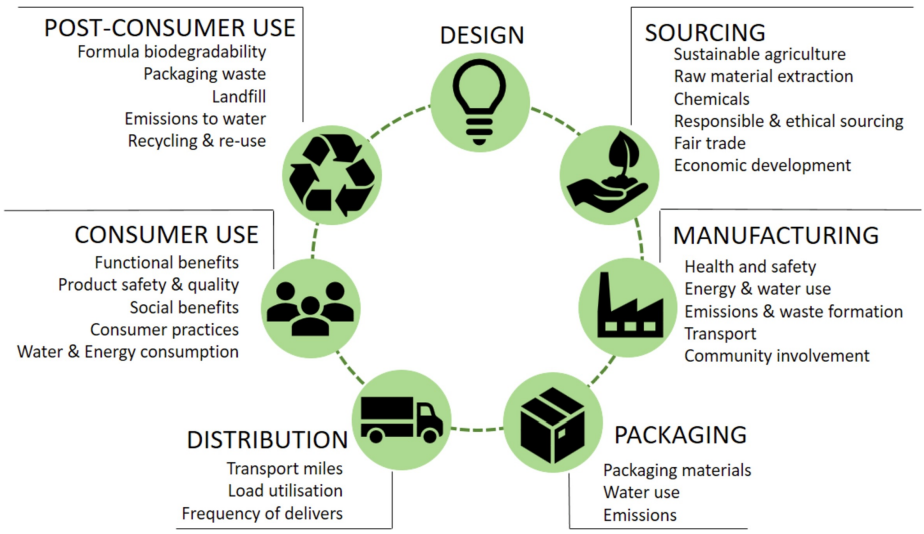

Figure 3: Cosmetic product life cycle with a sustainable approach – Life Cycle Thinking (LCT) (Bom et al., 2019).

A significant part of the environmental impact of a cosmetic product is defined in its initial phase, during the design process and the selection of raw materials (Cosmetics Europe – The Personal Care Association, 2012b, 2018b).

As far as the manifacturing phase is concerned, Good Manifacturing Practices (GMP) (ISO 22716:2007) give some guidelines regarding production, control, storage and shipment of cosmetic products. These guidelines cover the quality aspects of the product, even if as a whole they do not cover specific aspects of environment preservation.

Two examples of companies well known for their sustainable manifacturing strategies are Aveda and Amore Pacific, bringing an effort to reduce the environmental impact of their practices (Amorepacific Group, 2017; Aveda, n. d.; Feng, 2016).

Considering packaging, its choice has a big relevance in the decision process. It has the role to protect the cosmetic product and in many cases to guarantee the correct application of the product. Cosmetic packaging has a very negative effect on the environment, contributing to

land and marine pollution and influencing biodiversity.

The most important concerns related to packaging are the excess layers, meaning the primary and secondary layers, and the materials used, like glass, paper and paperboard, aluminium, wood, plastic/polymeric materials and hybrid constructs.

Plastic is the most used material for packaging due to its flexibility and light weight, but it is not biodegradable and it has a negative influence on pollution.

Another determining driver of sustainability in the cosmetics industry is the transportation of ingredients, materials, packaging and final products. During the distribution phase, the most important factor influencing sustainability is the amount of fuel used, given the fact that the combustion of fossil fuels releases CO2 in the athmosphere, a greenhouse gas that causes global warming. To prevent the excessive emissions of fuel during transportation, it can be determinant to consider the adequate choice of the type of fuel to be used. However, also having a route planning, cutting down unnecessary wheen load, managing the aerodynamics of the load, correctly mantaining the vehicle fleet and the tire pressure can be applied to improve fuel economy (Cosmetics Europe, The Personal Care Association, 2012b).

The consumer use phase of a cosmetic product can be also a determinant factor influencing sustainability in the beauty industry, verying with the kind of product (Cosmetics Europe, The Personal Care Association, 2012b).

For cleansing products such as shampoos, soaps and hand washes, the impact on the environment is mainly related to the use of water used to rinse off the product and the energy consumed for heating the water, as well as the level of discharge of the product down the drain and their impact on the aquatic environment. For rinse off products, it is also relevant the presence of microparticles that would enter the aquatic habitats and cause contamination (Coombs Obrien et al., 2017, Rochman et al., 2015). For a leave-on product it should be provided to consumers the dosing of the correct amount suggested for the purpose and its frequency (Cosmetics Europe, The Personal Care Association, 2012b). Even if it could seem out of producers' responsibilities, the way consumers interact with a product mainly depends on product design and marketing (Mahler et al., 2012).

Last but not least, in the post consumer use phase formulas biodegradability can be improved by minimizing the ingredients that are damaging the environment. Moreover, the packaging

waste could be avoided with techniques like reutilization, recycling, incinerating with energy recovery or composting (Cosmetics Europe, The Personal Care Association, 2012b). The brand should have a clear idea on how consumers use the product to make them more informed about the correct use through commercials and the product's packaging itself. Besides this, some companies adopt specific campaigns to improve the consumers' perception of the brand and the brand's image related to sustainability. One of them is M.A.C. using a program called "Back to M.A.C.", according to which every 6 empty primary packagings returned, customers receive a free lipstick of their own choice (Feng, 2016; M.A.C. n.d.).

Other brands like Shu Uemura, INGLOT, Tarte and DHC are adopting refilling policies (Feng, 2016; Inglot). These companies provide different design of eye shadow cases for customers who choose to refill or add any new eye shadow in a chosen case. Moreover, the Ydentik perfumer brand adopted as well a refilling strategy. They have an experience store in a bar format where they create "perfumes cocktails". Consumers at their first purchase get a free perfume packaging and whenever they come back to the store they just ask to refill the package (Ydentik, n.d.). This kind of system has few interesting benefits like increasing customer loyalty, increased perception of added value and reduced costs of the packaging. It should be anyway be kept in mind that refillable packagings need to be convenient both for the brand and the consumer (Lofthouse et al., 2009). Also, another strategy could be to give the product or packaging a second life for multi-purpose use. The Naruko cosmetic company, adopted this concept of reusing the cosmetic packaging and won the International Package Design Awards (IPDA) in 2014 (Feng, 2016).

2. Consumers' reaction related to sustainable products

The reasons leading a consumer to a certain buying decision are multiple.

One might arguably consider that when talking about FMCG, as observed in Smurfit Kappa desk research (2014), the average shopping trip takes about 20 minutes, 17 of which to walk around and the 3 minutes left to search and select. In particular, since people make about 15 purchase per visit, the decision at the point of purchase is on average taken in 12 seconds. (Smurfit Kappa desk research, 2014). Consequently, the kind of factors leading to the buying decision play an important role.

Green purchasing behaviour is a result of multiple and complex factors related to various aspects of consumers' purchasing decisions.

Zhang and Dong (2020) divided those factors influencing green purchase behavior into three macro-areas: *individual factors, product attributes and marketing and social influence.* Based on those dimensions, in this chapter we are going to analyse the findings about how consumers' reactions to green products are influenced by various types of factors through the lens of the *Theory of Planned Behavior.*

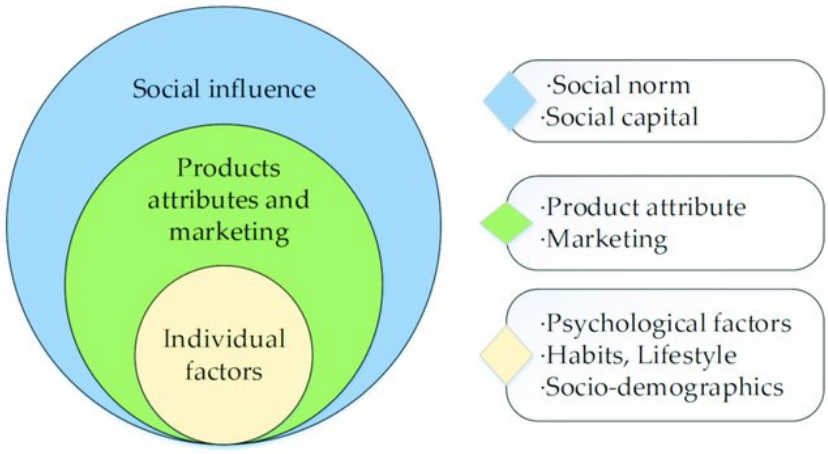

Figure 4: Classification of determinants of green purchase (Zhang & Dong, 2020).

In fact, TPB's effectiveness for behavior interpretation has been confirmed by numerous empirical studies, and it has become the main theory used to study green purchase behavior (Yadav et al.,2016; Mathieson, 1991; Moser, 2015). Moreover, Rezai et al. (2012) studied Malaysian consumers' purchase behavior of green food using TPB, and the results showed

that attitude, subjective norms, and perceived behavioral control are the main variables contributing to purchase behavior.

Therefore, with the aim of developing a conceptual framework, we mainly referred to the Theory of Planned Behavior at individual level finding its application concerning products attributes and marketing in Rokka and Uusitalo's (2008) study about preference for green packaging in consumer product choices. All the research was conducted with the input of socio-demographic factors.

In fact, a considerable amount of research has been conducted to identify the willingness of consumers to buy eco-friendly products. A research conducted by Makeower (2009) on demographics and environmental behavior showed that the willingness of consumers to buy environmentally friendly products is highly correlated with demographics.

2.1 Individual factors

Karsaklian (2008), observed that the consumer has his/her own personality and, for this reason, every person identifies and understands the world in different ways (perception), by reacting authomatically to the context through his/her senses.

Briefly, according to Haney and Christensen (1999), marketing needs to refer to Behavioural sciences in order to understand consumers and their behaviour.

Kotler (2000), by the way, highlights that this is not sufficient for a brand to survive in a competitive market. The challenge is to understand clients and their purchase behaviour, that is to say knowing how the purchase decision process works, to develop strategies that influence the decisional process through the creation of differentials (Almeida, 2000).

Among the individual factors influencing green purchase behavior, we can find the most relevant ones being *psychological factors, habits and lifestyle, and socio-demographics.* (Zhang and Dong, 2020).

2.1.1 Psychological factors

Kotler and Armstrong (1993) highlighted the key drivers influencing the decisional process of consumers: motivations, personality and perceptions.

When making a purchase, buyers need a *motivation* that could be linked both to fisiological

needs like going hungry, feeling cold, being thirsty or tired and also could be linked to psychological needs, like recognition, self-esteem etc. For example, when talking about cosmetic products, consumers are pushed in the purchase behavior by the need of hygiene, of self-esteem (f.i. feeling younger thanks to a creme), and last but not least, self gratification, all factors strictly correlated as well with consumers' *personality*. *Perception*, the third factor influencing behavioral intention, is a process where a consumer collects information about a product and interprets them to have a meaningful image about that specific product. After having seen an advertisement, a promotion, social media advertisements relating to a product, the client develops his/her own impression about it. So the perception influences a lot the buying decision. The buyer chooses to buy green packagings when he/she has a significant perception of the impact they have on the planet (Rokka and Uusitalo, 2008). This perception will be measured within this Master's thesis, in relationship with the purchase of beauty products with an eco-friendly packaging material.

If this does not happen, that is to say when consumers do not perceive the connection between their puchase and the environmental positive consequence, they stay indifferent to the issue and could be not able to distinguish, between their alternatives, green packagings as well, and not finalise the purchase (Rokka and Uusitalo, 2008).

Attitude towards environment

Basically, psychological factors have a profound guiding effect on green consumer behavior. In particular, attitude has been the most studied within consumers behavior theories in relation with green purchase behavior (Knoll, Sharma et al., 2019; Laureti et al., 2017).

Many authors found that the decision to consume green products is strongly driven by consumers' environmental awareness. Iosifidi (2016) found out that individuals who are environmentally concerned, for example those ones who associate environmental damage with the production of goods, tend to consume less products characterized by an high environmental impact.

Attitude itself is influenced by the net perceived utility perceived from the eco-friendly product. Nguyen et al. affirm that: "Environmental attitude relates to the concern exhibited towards the probable causal effects of environmental deterioration being measured upon individuals' behavioral commitment" (2020). This affirmation finds a confirmation in previous studies, that demonstrated a positive correlation between environmental attitude and

environmental behavior (Straughan and Roberts, 1999; Kolmuss and Agyeman, 2002). In fact, people with an higher environmental attitude or higher NEP (New environmental paradigm) showed an higher utility towards green product consumption (Hirschman, 1980; Bei and Simpson 1995; Straughan and Roberts, 1999; Laroche et al. 2001; Lin and Huang, 2012).

The degree of environmental concern, which denotes an individual's general orientation toward safeguarding the environment, may have a direct impact on green consumer behaviour as observed in previous studies (Paço et al., 2013, Chan, 1996).

Kinnear et al.'s (1974) studies on ecological marketing identified two dimensions of consumers' ecological consciousness: attitudes that express concern for ecology; and purchasing behavior that is consistent with conservation of the environment. This conception is inconsistent with a range of models of consumer behavior (e.g. Theory of Planned behavior) which suggest that consumer attitudes lead to behaviors (Ajzen, 1985). Some prior studies also confirm the attitude-behavior relationship in the context of environmentally conscious consumer behavior (ECCB) (e.g. Flamm, 2009; Oreg and Katz-Gerro, 2006; Polonsky et al., 2012), although other researchers suggested that sometimes there is also an attitude-behavior gap (e.g. Boulstridge and Carrigan, 2000; Leire and Thidell, 2005).

ECCB will be further analysed in this Master's thesis, as an output deriving from attitude towards environment, subjective norms and perceived behavioral control (TPB), with the mediation of behavioral intention and the input of socio-demographic data. ECCB will be applied in the context of purchase behavior towards beauty products with an eco-friendly packaging material.

A relevant condition for eco-innovations to have success in the market is consumers' awareness of eco-friendly purchase behavior as a means of environmental protection, human health and a sustainable allocation of resources. (Chao et al., 2012; Crabbé et al., 2013; Gleim et al., 2013; Grimmer and Bingham, 2013; Kanchanapibul et al., 2014).

In fact, global consumers are more and more concerned about the negative environmental impacts of packaging waste. Thanks to previous studies, it has been demonstrated the growing consumer concern about packaging and its effects on the environment (e.g. Fernqvist et al., 2015; Lewis and Stanley, 2012; Lindh et al., 2016a; Magnier and Criè, 2015; Mishra et al., 2017; Prakash and Pathak, 2017; Rokka and Uusitalo, 2008; Taylor and Villas-Boas, 2016).

Numerous studies explored consumers' choice in terms of eco-friendly packaging (e.g. Barber, 2010; Koenig-Lewis et al., 2014; Laforet, 2011; Rokka and Uusitalo, 2008; Steenis et al., 2017,2018). In particular, Koenig-Lewis et al. (2014), went into consumers' perception of eco-friendly packaging and the result showed how purchase intention is significantly affected by consumers' concerns for the environment. Also, a Deloitte study in the USA found that the more aware consumers are about environmental issues, the more they demand for eco-friendly products.

While, on one hand, environmental concern positively influences purchase intention for eco-friendly packaging (e.g. Barber, 2010; Davies and Gutshe, 2016; Koenig-Lewis et al., 2014; Laforet, 2011; Rokka and Uusitalo, 2008; Van Birgelen et al. 2009), on the other hand price may negatively affect consumer willingness to buy products with an eco-friendly packaging (Martinho et al., 2015; Pícha and Navratil, 2019).

However, we will further discuss about consumers' perception towards eco-friendly packaging in the following chapter of this Master's thesis.

Perceived Behavioural Control (PBC)

The concept of Perceived Behavioural Control (PBC) refers to people's perception of their own ability to perform a given behaviour and reflects beliefs concerning factors or circumstances that may facilitate or complicate that behaviour (Ajzen, 2006).

PBC is influenced by the presence of adequate resources and ability to control barriers to behaviors. The more resources and fewer obstacles individuals perceive, the greater their perceived behavioral control and the stronger their intention to perform behaviors (Ajzen et al., 1986).

However, perceived consumer effectiveness (PCE) measures the subject's judgment of the influence of individual consumers on environmental problems (Antil, 1984). Findings are conclusive that high PCE results in greater levels of green consumerism (Roberts, 1996; Straughan and Roberts, 1999). Various studies have identified PCE as the most predictive factor of green consumer behavior (Berger and Corbin, 1992; Kim and Choi, 2005; Roberts, 1996; Straughan and Roberts, 1999; Wiener and Doescher, 1991). Individuals with a strong belief that their green consumer behavior will result in positive outcomes are more likely to engage in such behavior.

For this reason, as previously described in the socio-demographic section, usually the best-educated individuals appear to be also more worried about environmental issues, since they have an higher level of PBC. (Aertsens et al., 2009, Gracia and de Magistris, 2007, Grunert and Kristensen, 1990, Cunningham, 2002)

Moreover, one of the "perceived personal-abilities" that lead to the consumption of green products may be the tendency of consumers to read product labels in order to obtain information concerning the product characteristics (Kikuchi-Uehara et al., 2016, Koos, 2011).

For the above mentioned reasons it is important to give the right information to the potential buyer so that he/she is perfectly able to make an evaluation about a green product and decide if to give or not his/her trust to the brand (Magnier and Criè, 2015). Moreover, the actors let themselves be easily influenced by the other consumers' purchase behaviour, that is why it is important to conduct targeted actions towards those actors who are more doubtful and less informed, to encourage them to collaborate (Rokka and Uusitalo, 2008).

2.1.2 Habits and lifestyle

Lifestyle variables are also considered in our framework. It was observed that the purchase of green product can be motivated by health concerns (Gracia and de Magistris, 2007, Chinnici et al., 2002, Zanoli and Naspetti, 2002); in fact, smoking negatively affects green purchasing behaviour (Brécard et al., 2009).

Moreover, a study conducted by Florenthal and Airling in 2011 on the influence of lifestyle on green purchase behavior found out that attitudes toward green product attributes are also influenced by a green lifestyle.

A green lifestyle involves eco-friendly friendly consumption and usage patterns (Fraj and Martinez 2007; Chan 1999). Thus, it is reasonable to assume that individuals who value general green behavior (consumption and usage) also tend to practice it.

2.1.3 Socio-demographic factors

Socio-demographics factors concerning the differences in gender, age, education and work cause consumers different levels of demand for green products. At the same time demand for green products is influenced by habits and lifestyle, being status consciousness, level of health status, level of healthy lifestyle and so on (Zhang and Dong, 2020).

Roberts (1996) as well, summarizing research about demographics and environmentally friendly behaviors, found that green purchasing behavior is affected by age, education and income. Results varied from study to study and he stated that further research on demographics was needed.

Since socio-demographic factors are objective, they are used as classification variables to compare green purchase behaviors.

Gender

Several studies have been conducted to examine gender influence in various green purchase behavior and variables. However, the empirical results of the effect of gender on environmental behavior are contradictory.

Some studies found out womens to be more likely to have an environmentally coscious behavior as well as higher intentions to have higher green purchase intentions (Zelezny & Schultz, 2000; Rezai et al. 2011).

In particular, Zelezny and Schultz (2000) conducted an international survey among fourteen different countries regarding gender influence in proenvironmental attitudes. Their findings show a significant difference between the genders, where women are more consistently showing a major proenvironmental attitude compared to men.

Moreover, a study conducted by Liobikiene, G., & Bernatoniene, J. (2017) found that women are more keen to care about other people's lives and this positively influences their willing to buy green products compared to men, since green products are perceived not only as sustainable products, but also as healthy products. (Liobikiene, G., & Bernatoniene, J., 2017).

In addition to this, results deriving from a research conducted by Awan U. and Amer Raza M. analysing consumer behavior towards green energy, showed that Swedish female consumers are more environmentally conscous and have interest in paying more for green energy instead of traditional energy when compared to men.

This kind of analysis has been supported by the willingness to pay variable, showing a pro-environmental attitude. This kind of variable will be better analysed in the third chapter, in relation with market appeal as one of the influencing factors of consumers' perception of an eco-friendly packaging. For this reason, it will be one of the relevant variables in this study.

Despite many researchers have demonstrated that women are more likely to act in a more environmental friendly way, final results are contradictory.

In fact, Diamantopoulos et al. (2003), after having reviewed a large quantity of studies from 1969 to 1998, found out that numerous authors stated that men have more environmental knowledge than women.

For this reason, he ended up with the conclusion that, because of many inconsistencies, further studies about the relationships between demographics and all aspects of environmental consciousness (knowledge, attitude, behavior) were needed.

Tan and Lau (2010), however, found no significant difference between men and women toward green products when conducting a study among undergraduate students in main private universities in Malaysia.

Age

Results of studies comparing age groups were very mixed. Two of them found that younger people were more likely to show eco-friendly behavior; four found that older people were more willing to purchase green products; and four studies had no significant results.

A study in US conducted with a survey using a random cluster sample (Roberts, 1996) put in evidence that age had an impact on ecologically conscious consumer behavior (ECCB), showing evidence with older consumers more willing to buy environmentally friendly products. In this study, ECCB was measured using a scale of 22 behavioral items. In the study, all demographics combined showed only 6 per cent of the variation in the sample; when attitudinal variables where added, the percentage of variance rose to 45 per cent.

In the same year, a study on buying behavior of Canadian and Hong Kong female supermarket shoppers (Chan, 1996) found that younger consumers were more likely to buy environmentally friendly products. For the study 10 statements related to purchase behavior were used. Those statements focused on reducing usage, reusability and recyclability of products.

Another study interested in studying green consumer behavior in the new millennium (Straughan, R.D. and Roberts, J.A., 1996) used a sample of college students, showing that age was significantly correlated with green consumer behavior. This study took in consideration

students' purchases of goods with a more positive impact on the environment.

On the other side, a survey by ICOM Information and Communication (2008) highlighted that consumers with older than 55 were the most willing to buy eco-friendly products in the United States. (Nastu, 2008). In particular, females in the range 55-59 were twice as likely as the average to buy green products, while males from 65 to 69 years old were more than 1.7 times as likely to buy and use green products if compared to the average American.

A study conducted by Do Paço et al. (2009) on Portuguese consumers, analysed three clusters of consumers based on demographics and measures of concern, affect, knowledge, environmentally friendly buying behavior and other dimensions. Among the three clusters, one was identified as the most environmentally concerned and defined as "the green activists". This cluster included the age segments of 25-34 and 45-54.

Education

The most consistent results were found with education level influencing green purchase behaviour.

In fact, some studies show that the higher the education level, the more consumers are willing to buy green products

A study conducted by Chekima et al. (2016) suggested that cultural values and environmental advertising are the main influences in building green purchase intentions, while environmental knowledge is not significantly related. Results also showed that education level and gender have a significant positive moderation effect, while income did not.

The previously mentioned study conducted by Chan (1996) on buying behavior of Canadian and Hong Kong consumers, took in consideration under age, showed that more educated consumers were more willing to buy more environmentally friendly products.

Roberts' study (1996), also described under age above, found out witha nationwide survey the positive impact of education on ECCB. However, when adding attitudinal variables in the study, the educational impact resulted as non-significant.

The study conducted by Do Paço et al. (2009), described as well related to age above, also found that those ones in the cluster who demonstrated the highest level of concern about the

environment had high education levels.

Moreover, in a study on green purchase behavior among young urban Indian consumers through the lens of Theory of Planned Behavior, Taufique and Vaithianathan (2018) demonstrated that well-educated & young people seem to be more concerned about environment (Liere and Dunlap, 1980), and 65% of Indian population are millennial (born after 1980) (Goldman Sachs, 3026).

Goldman and Sachs (2016) also demonstrated that Indian‘Educated Urban Mass’ (people having at least an undergraduate degree) constitute the most important group of spending consumers in India. Consequently, understanding green consumer behavior of educated young generation is crucial to develop sustainable marketing strategies for the target group (Hume, 2010; Kanchanapibul et al., 2014).

In this cases, the two variables of age and education are strictly correlated due to the crescent evolution of the country. In fact, the majority of educated population is young. It would be interesting to see if this changes when analysing green consumer behavior influenced by those variables in another country context.

In contrast, Fleith de Medeiros et al. (2016) found that the education level had no significance over consumers green purchase behavior. Probably, this finding is related to the thresold education level of green consumption of consumers having already being reached, leading to a scarce signficance of the education level variable.

Income

The International Institute for Sustainable Development (Elgar, 2006) found that consumers' environmentally friendly actions are related to the level of income; the more consumers earn, the more likely they perform environmentally friendly actions. Their study found that usage of green products depends on the level of income.

The above mentioned study by do Paço et al. (2009) found out that Portuguese consumers with higher income levels were more likely to show ECCB.

Moreover, Meyer and Liebe (2010) conducted a research about the willingness to pay more taxes for environmental protectionand to pay for a device aiming to reduce CO2 emissions or fuel producing less CO2. The study demonstrated that Switzerland population with an higher

income were more willing to pay for those environmentally friendly products and services.

On the other side, Roberts (1996) in his study – described under age - determined that people with lower income level were more likely to exhibit ECCB.

Since a lot of people who will be asked to complete the survey are students, only age, education and gender variables will be included as an input for dividing into clusters. In fact, including the income variable could be misleading for the results to be significant. Based on previous findings, including this variable is highly recommended for future studies on green consumer behavior.

2.2 Social influence and subjective norms

Consumers are incredibely influenced by the social environment. In fact, when purchasing green products, behavior may also be influenced by subjective norms, which can be defined as perceived social pressure for a person to perform a behaviour or not (Thøgersen, 2010).

A study conducted by Zhao et al. (2014) about green purchasing behaviour among Chinese population, shows that people who declare to have a positive attitude towards buying organic products also have energy saving behaviours, such as recycling paper, glass and plastic and no using of disposable tableware (Zhao et al., 2014). Other studies show a positive correlation between the environmental, social and ethical values of consumers and their purchase behaviour toward green products (Chen and Chai, 2010, Peattie, 2010, Arvola et al., 2008, Thøgersen and Olander, 2006).

Consumers, as social people, are influenced by the people and groups around them when making behavior decisions. Indeed, consumers with a more collectivistic way of thinking are more like to buy sustainable products, when compared to people with a more individualistic way of thinking. Not a surprise that Chinese people, who give more importance to collective interests than personal interests, make greener purchase choices than American people, who have a society based on individualistic values (Zhang and Dong, 2020).

However, subjective norms are demonstrated to effective in pro-environmental consumer behavior (Biswas and Roy, 2015b, Yadav and Pathak, 2016). For instance, Biswas and Roy (2015b) found that the most significant influence of pro-environmental consumption behavior comes from peer influence and social recognition. In a another study conducted in India, Verma and Chandra (2018) found out that subjective norm has a significantly positive

influence on green hotel visit intention among local consumers.

2.3 Product attributes and marketing

A packaging should be able to attract the attention of the consumer since the client takes a decision after having lived a multisensorial approach principally based on a visual and touch experience.

Indeed, the first phase of the purchase, consisting in capturing the attention of the consumer and starting the stimulus to the brain, is mainly affected by the packaging effect (Romani and Dalli, 2012).

This is the reasons why a relevant packaging is important for the brands: it captures the attention of the consumer and it can influence the purchase intention and decision. In fact, the ninety per cent of the consumers takes the buying decision based on the product's packaging. Shape, colour, typography, dimension, material and graphic essentially contibute to the purchasing experience. (Kauppinen- Räisänen, 2014).

Moreover, to facilitate the communication with the final consumer it is necessary to include in the packaging an informative part about the product. Every single word is important to try to reach the end user, reason why the messague must be the clearest possible relatively to the available space.

Moreover, an eco-label and a green packaging material are the most intuitive way to show product attributes related to sustainability, since they directly provide information, like the production cycle, origin and environmental footprint of the product (Zhang and Dong, 2020). Also, it has been demonstrated that circular eco-labels stimulate consumers' purchase desire more (Xu et al., 2012).

Figure 5: Image of some examples of circular eco-labels (Xu et al., 2012).

Another way to stimulate purchase desire is advertising. The advertising appeals of green products can be with an abstract or concrete appeal. The publicity effect of the abstract appeal is demonstrated to be better than that of concrete appeal. (Yang et al., 2015). Thereby, brands should concentrate more on an astract appeal of advertising. By the way, the brands should be careful to stay in the line of transparency by not overcoming and making the "greenwashing effect happen". (Zhang et al., 2018). The impact of greenwashing, indeed, can have very negative consequences and have an impact on the trust in the brand and the product. (Jager et al., 2020).

While this chapter outlined various factors that can influence consumers' reaction towards sustainable products, the next chapter will focus on how sustainability-related reactions may be conveyed by a specific factor of great importance, namely the packaging.

3. Consumers' perception towards green packaging

3.1 Impact of packaging

The packaging represents the first touch between consumer and product. Kotler (2015) describes it as "the set of activities aimed at designing and realising the container or envelope of the product".

In logistical terms the packaging can be classified in three different levels:

- Primary packaging, or *sales package:* it represents the single packaging sold in the store (Golfarelliand Rizzi, 2011). It contains and keep the product intact up to the final consumption (ex. Bottles, cans)
- Secondary packaging, or *multiple packaging,* covers the sales package in order to preserve the product. It supports mobility (Ferraresi, 2003), storage and distribution within the store (Golfarelliand Rizzi, 2011)
- Tertiary packaging, or *transport packaging,* envelops the primary and secondary packaging and includes the packages needed to transport the good bought from the store to the place of consumption (f.i shopping bag).

The objective is to facilitate logistics, transportation and movement (Colombo, 2005), by keeping in mind that those action risk to alter the product due to the fact that it is exposed to air, humidity, variations of temperature, dust, insects, vibrations, bumps, if not correctly protected (Azzi, 2012). The majority of products is covered from packages of all the three types: for this reason it is important for them to be integrated with each other by being covered with the same graphics, colours, and harmonised shapes, with the objective of giving a sense of continuity (Ferraresi, 2003).

The packaging – however – doesn't just contain and preserve the product since after the materials evolution and transformation of printing and packaging technologies and after the development of the production and distribution system, it became an essential instrument is the strategic planning of the good sold.

The expansion of the concurrence, of the self-service sale and the abundance of products on the shelves of the stores have led to a strong attention toward the consumer (Kotler 2015). The packaging has to guarantee practicity, protection and an easy opening (i.e. can's tear opening), that can be re-closed (e.g. vacuum bags for food) and that could contain and protect

the product assuring the basic qualities. In addition, the packaging has the function to facilitate the storage to create a new competitive advantage (e.g. dimensions of detergents containers for washing machines). (Caruso, 2005). Moreover, it has to identify, represent, differentiate from the others, giving evidence to its image and quality. It is relevant for the packaging to give informations about usage, deadline and place of production that need to be coherent and reflect the real characteristics of the product in order to inspire the conclusion of the sale (Kotler, 2015).

This is how a fidelized relationship between product and consumer is built, that continues in time thanks to the product's characteristics but also to the sensations that the packaging is able to communicate (Morelli, 2002).

3.2 Sustainable packaging: a definition

Green packaging started to gain a crescent importance associated with product quality and due to health, ethical reasons and mostly to raise awareness about environmental issues. Consumers are every day more oriented to a sustainable life characterized by the perception of pollution as an issue, by the use of alternative sources of energy and by a more informed approach towards household waste and divert wastes (Magnier and Criè, 2015). In particular, concerning divert wastes, the primary packaging is often matched with the secondary and tertiary ones, generally created with different materials. This means that in the lavoration numerous resources are deployed, causing an high quantity of wastes and consequently an high environmental impact (Zhang and Zhao, 2012). For those reasons consumers are putting their efforts in ordert to be play an active role in the resolution of such environmental issues, by choosing sustaibable products and related packagings, always trying to keep their preferences and purchase attitudes (Rokka and Uusitalo, 2008).

For one thing a sustainable packaging involves three principal aspects, being the company itself, the economy and the enviroment. The company permits to ease the recycling operations though symbols and simplifying labels, to give the adquate information, to adapt the packaging to the different consumers' needs, to garantuee quality and trust, to preserve workers and their safeness in workplaces. The economical aspect refers to costs and revenues: companies try to differentiate of packagings if compared to other products, with the objective to increase sales and reduce costs packaging-related (García-Arca et al., 2017). The last aspect, the environment has a relevant importance, having the attention related to packaging

acquired a crescent demand for attention through the years. In fact, when choosing the right packaging, it is important to consider the whole life cycle of a product since the environmental impact starts with the rendering and ends with the final disposal (García-Arca et al., 2017).

The *life cycle analysis (LCA)* permits to evaluate using international standards the impact of a product on its whole lifestyle (Lewis, Verghese and Fitzpatrick, 2010). It includes a range of procedures for the compilation and analysis of the production inputs, that is to say raw materials and energy deployed and for the outputs, that is to say all the environmental impacts related to wastes directly associated with a product's and its packaging fonctionning for its whole life cycle. This way, an immediate classification of the function that the product will have (Azzi & al., 2012). A score is assigned to each product, based on its environmental impact on the greenhouse effect, on ozone depletion, on ocean acidification. Based on these kind of evaluations, the first decisions on feasibility and project realization are taken (Kalisvaart and van der Horst, 1995).

Moreover, in valuing the environmental performances of a product and its packaging it must be considered the net material (quantity of material that is not going to be recycled), the gas emissions for the greenhouse effect, the use of natural sources of energy. A good planification has to be made in order to ensure an energy saving and a use of raw materials causing the less environmental impact possible. During a sustainable project it has to be considered also the context of sustainability in which to perform, starting from the definition of the way to the evaluation of those actions and their put into action with related results and feedback (Svanes, 2010).

The green packaging is estetically defined through its structure, that includes used materials, related characteristics, a graphic reported with specific colours, images, logo, the product information needed. A sustainable packaging is convenient, healthy for single users and for the community, effective if it complies with the aim for which it has been created, safe if it can satisfy the market needs in terms of price and performance and if it can minimize the risks for the health of people and ecosystems (Magnier & Criè, 2015).

The focus is then on a packaging with the lowest possible quantity of material, to result thin and light, so that can be reused to reduce the volume of wastes, it doesn't cause any pollution for the user and the environment during its entire life cycle and it's the most innovative

possible. The attempt is also to try to increase sales of packaging made of raw recycled materials, choosing for example biodegradable paper packagings (rather than plastic) that contain the minimum quantity of dangerous substances (Zhang & Zhao, 2012).

In the past years a lot of suppliers and retailers invested in the development of eco-friendly products (Crabbé et al., 2013; Gleim et al., 2013; Lin et al., 2011). These eco-friendly products are considered as eco-innovations, so innovative products which are more sustainable than conventional alternatives (Jansson, 2011). Eco-innovations have different good aspects. In fact, besides the environmental benefits and cost-savings because of less resources being used, they help the company improve its differentiation strategy conducting to competitive advantage (Crabbé et al., 2013; Lin, Chung et al., 2013; Guendelman, Medeiros et al., 2014). For this reason, it is important to identify the target groups that are interested in eco-innovations since it has to be understood how to build specific strategies to address these segments using the right marketing instruments.

3.3 Consumer's perception of an eco-friendly packaging

The seventy per cent of purchase decisions are taken in the store even if consumers leave their home with the idea of buying a certain type of product (Kauppinen- Räisänen, 2014).

The material's quality has a meaningful role in the brand experience: it would not be a good image for the brand if, for example, an expencive jewel should be put into a paper box. On the contrary, Tiffany builds a strong perception of it product by packing them into small blue boxes recalling emotions, memories, and quality perception (Dejan, 2017). It is important for companies the meaning behind it, that leaves a message through its packaging. Indeed, they bet everything on the packaging to embellish the product, that is used to build an experience to amaze the consumer.

In general, when buying sustainable products, consumers decide basing on the perceptions they have. A study conducted by Nguyen et al. (2020) analysed the three main dimensions of consumers' perception of an eco-friendly packaging.

3.3.1 Packaging material

Concept

The first and most relevant dimension of eco-friendly packaging is related to packaging

material.

In this Master's thesis, packaging material has a central role in defining consumers' reactions to cosmetic products with an eco-friendly packaging material. This is supported by Lindh et al. (2016b) who discovered that sustainable packaging development begins with packaging materials.

In fact, previous studies found out that consumers principally build their opinion on products' eco-friendliness based on material cues. The concept of packaging material is strongly related to the idea of the 3 R's: reduce, reuse, recycle. This kind of concept is not new and has been demonstrated by previous studies, like Lewis and Stanley's (2012) study in the UK that brought to the attention that consumers' perception and desire related to packaging go together with the characteristics of biodegradability, recyclability and reusability. Also Magnier and Crié (2015) found that the majority of consumers associate eco-friendly packaging with the concept of recyclability and biodegradability.

Application

Every material is different and for this reason, when choosing the right one, it has to be considered its resistence level and protection, the concurrents ones, preferences of consumers based on the related characteristics. (Zielinski, 2016).

Companies should try to undertake or intensify the use of regulated and certified materials and, if possible, choosing recycled ones, like paper, cardboard, plastic, glass or, on the contrary, to use the other materials consciously and responsibly by respecting the tolerated quantity for the emissions and recycling technologies, by avoiding the use of raw materials that could lead to serious consequences for the personal health and for the environment, like lead, mercury and tin (Azzi & others, 2012). By reducing packing costs and by grouping products in package units on a large scale, like container or pallet, the movement, storage and transport are made quicker instead of using single indipendent packagings. In line with this objective they should try to creare the smallest possible primary packaging the most durable it can be.

Different materials are usually put together with glue or other kind of sealants: in a green perspective, those kind of substances should be avoided and substituted with natural or vegetal adhesives to favor a better separation and a more efficient recycle of the used

materials. Companies could also create a system to give an incentive to those ones who will return back the packaging, with incentives like discount coupons or a free product (Zhang and Zhao, 2012). The company has to transmit credible, relevant and effective messages: it must be the first in believing in what is being offered so that to engage even the consumers who are less open to cooperate for the environment, like the previously mentioned MAC Cosmetics Company does.

Environmental impact

Consumers have specific preferences concerning the kind of adopted material, that needs to be in line with its impact on the environment. It is not the case of aluminium and chlorine, materials that can be toxic, aggressive, difficult to discard and that require an high amount of energy for the realization. On the contrary, a study conducted by Lange and Wyser (2003) showed that consumers positively evaluate plastic since it is a recyclable material, that hinders the oxidation, the resists to the chemical agents and warmth and for its characteristics of cost effectiveness,agility, versatility, resistence, chemical inertia and security.

Moreover, the Intergovernmental Panel on Climate Change report (2016) highlighted that global energy consumption and associated emissions can be substantially reduced thanks to changes in consumption patterns, by using energy savings measures, with dietary change, by reducing food wastes. Consequently, to reduce environmental degradation a modification in consumption behavior is needed, through a better understanding of the factors affecting individual's actions towards ecologically conscious consumption behavior (ECCB).

Further on, 2020 Global Buying Green Report drawn up by Trivium Packaging, showed that environmentally friendly packaging is important for more than two out of three consumers on average. In particular, the fiftly-nine per cent of consumers say that they are less likely to buy a product in a harmful packaging and the fourty-seven per cent of consumers won’t buy products in packaging that is harmful to the environment. The seventy-four per cent of consumers said they would pay more for sustainable packaging and the twenty-five per cent are willing to pay an additional ten percent or more.

Transparency

Modern buyer is becoming increasingly more careful and demanding both from the practical point of view and from the environmental perspective.

If, on one hand, a fully paper-made pasta packaging is easier to be recycled, on the other hand, packaging *transparency* has the quality of combining the product's visibility with a message of good preserving characteristics. This happens to be complicated to create with metal or aluminium revested products, while it is easier for polymers, that is to say substances coming from oil or plastic materials. The characteristic of high transparency exposes the product to numerous heat filtrations and to remedy to the issue it is suggested to use little transparent windows in which it is showed the most relevant part of the product instead of offering packaging with a completely visible content.

By using a papermade packaging material with a little transparent window made in plastic, first of all the product is preserved because it mantains its original characteristics and properties over time, and the consumer is more pushed to buy it to find it out in its integrity.

An example is the Barilla company, with its famous packaging in cardboard with a little transparent window on the front, so that their packagings are easier to recycle, if compared to some totally transparent other brand's pasta packagings. (Sanchez, 2020). Sometimes, when the brand raises over time a very big awareness, it can take the decision to eliminate that little window to make a 100% sustainable packaging, that is what Barilla decided to do, by creating a new packaging with no window on the front and knowing that this won't affect sales negatively. Istead, the prediction is that sales will grow (see Figure 6 below).

Figure 6: Image of some examples of Barilla new eco-friendly packagings (Sanchez, 2020).

Fiber-based and glass-made packagings

Following the companies' example, consumers can obtain a lot of trust and clarity about the environmental sustainability and start to have a new purchase mentality and environmental respect that comes to be applied to the choice of functional and green packagings. In fact, the growing attention towards environmental issues and the desire to protect the planet made it possible to find alternative solutions to plastic, mainly using fiber-based (vegetal and organic) and glass-made packagings.

Natural materials like fiber-based materials, are associated with animals and plants and environmentally friendly products. They usually transmit a unique identity, coming from the natural imperfection of in surface or shape resulting from this kind of material. Consequently, the idea of nature transmits the idea of sustainable and biodegradable, strenghtening value for natural materials, thing that usually brands do when they want to transmit eco-friendliness (Karana, 2012). Fiber can generate multiple natural materials. The most used in the pacakging industry, deriving from fiber, are: *paper and cardboard, wood, canapa, bamboo.* This kind of packagings value the environmental sustainability because of their recyclability and biodegradability. Those kind of materials are constantly adjourned (Bucchetti, 2015) thanks to their versatility, making it possible to easily fold it, being able to create new shapes to adapt to the different needs and tastes of each client.

Deriving from wood, wood-polymer composites (WPCs) are a group of eco-innovative materials with the potential to contribute to a more efficient resource allocation (Teuber et al., 2016). Those composites had a worldwide market growth in the last decade, that is probably going to increase in the next few years (Carus et al., 2008; Eder and Carus, 2013). Despite this, WPCs are mostly unknown to many customers and the consumer acceptance is nearly unexplored (Haider and Eder, 2010; Weinfurter and Eder, 2009). This kind of material has been studied from Osburg et al. (2015) in relation to two traditional materials. On one side *solid wood*, more expensive than WPCs and resource consuming in mass consumption; on the other side, *traditional full plastics*, a cheap but environmentally dangerous material if based on fossil fuels. Osburg et al. (2015) demonstrated in their study on consumers acceptance of WPCs with a focus on innovative and environmentally friendly concerned consumers, consumers have a clear preference for WPCs over plastics. They also found out that the higher the environmental concern and the innovativeness of consumers, the more WPCs were accepted.

This kind of material is composed of wood, plastics and additives (Caufield et al., 2005). The

wood component influences not only the physical and mechanical properties of the material, but also the visual characteristics (Carus et al., 2008). At the same time, durability is important and WPCs provide this kind of necessity without requiring additional maintenance, thanks to the presence of plastics and additives Solid wood is generally considered to be more eco-friendly that WPCs but it does not have the durability and other characteristics given my plastics and additives in WPCs. (Caufield et al., 2005). Despite this, research about consumer acceptance of wood-based products principally concerns solid wood and not WPCs. However, WPCs composition has a good eco-friendliness and it can be considered a fully environmentally conscious material if all the components have an high eco-friendliness (Teuber et al., 2016).

When they have to choose between solid wood and plastics, consumers are expected to choose solid wood. (Anderson and Hansen, 2004; Cai and Aguilar, 2013a; Jonsson et al., 2008). In Anderson and Hansen (2004) study on the impact of environmental certification on preferences for wood furniture, a key finding was that willingness to pay more for certified forest products (CFPs) was highest among those who placed the greatest importance on environmental certification. In addition to this, Cai and Aguilar's study on consumers' purchasing preference and CSR in wood products industry showed that consumers were more likely to choose products from manufacturing companies with a higher level of CSR rating and expressed higher interest in wood products made of solid wood compared with composites. Moreover, Jonsson et al. (2008), in their study on consumers perception and preferences on solid wood, wood-based panels and composites demostrated that – when comparing 19 core categories reflecting samples - preferred core categories were the wood categories with their naturalness, wood-likeness, smoothness, living impression, and value. The least liked core categories were processed, hard, and high weight.

This happens too when consumers have to choose between solid wood and wood-based products that are composites Therefore, since WPCs have natural and synthetic components, they will be placed in the middle between solid wood and plastic packaging products, in consumers' preference. However, the drivers of green consumer behavior and their willingness to pay vary between different product categories and also within the same category (Essoussi and Linton, 2010; Krystallis and Chryssoidis, 2005; Luchs et al., 2010; Yue et al., 2009). Hence, there is a reason to think that maybe consumer behavior could vary for instance concerning cosmetic products, since in this category of products durability of materials and functionality of packaging is more relevant, being the product inside easily

alterable. For the same reason, even the brands theirselves could prefer WPC materials over solid wood for their cosmetic eco-friendly products.

Furthermore, Glass is considered like the material representing the characteristics of sustainability and transparency, health and safeness, preservation of the taste. Glass amber bottles are very good at protecting from the light; consumers prefer them even because they permit to see the product inside of it. Glass is also a great insulating material and good at keeping the product colder if compared to other materials (Zielinski, 2016).

Glass packaging can also be kept for a longer time than the one necessary for the product utilization, strenghtening the relation between brand and consumers (Cristini, D'Onofrio & Fornari 2008). This material can be also used to represent specific luxury cathegories by using bottles with thick base and few decorations with a unique combination of colours, graphic and style to make the product result handmade, sophisticated, natural and authentic (Zielinski, 2016). Even so, it is not always preferred by the clients: some of them prefer plastic containers because of an eventual lower price, lower weight and risk of breaking (Lange and Wyser, 2003).

To amaze, involve, excite the consumer it is possible to combine one of the above mentioned materials with some special effects like a soft touch material, or with voluminous folds (Dejan, 2017).

3.3.2 Market appeal

The second key dimension of an eco-friendly packaging as stated by Nguyen et al. (2020) study, is *market appeal.* Market appeal is "the ability of a packaged product to attract consumers' attention at the point of purchase". It is defined by three traits: *visual presentation, functional performance* and *price.*

Visual Presentation

Most participants in the study of Nguyen et al. (2020) said that whether or not the packaging is eco-friendly, it should be attractively designed and affordable. Most of them affirmed that, in the past, they had made purchase decisions often based on the attractive appearance of the packaging. By the way, this affirmation is in contraddiction with Martinho et al. (2015) who found that packaging design is not as important as a low price to consumers. However, other studies demonstrate that aesthetically appealing packaging increases the desire of purchase

(Norman, 2005), encourages to pay a price premium (Bloch et al., 2003), causes preference over well-known brands (Reimann et al., 2010).

Besides, in Nguyen et al. (2020) study, a lot of participants affirmed that eco-friendly packaging was not aesthetically pleasing, because most of consumers' perception is that eco-friendly packaging, either biodegradable or paper-based, has a lower quality when compared to plastic. It can be supported by Magnier and Crie's (2015) study, who reported that sustainable packaging is perceived like less appealing by consumers due its simplicity and lack of colours. It can be deduced that non-sustainable packaging is often associated with a nice and coloured packaging in plastic, as also stated by the participants in Nguyen's study.

Not surprisingly, brands took care of launching very interesting campaigns to spread the message that an eco-friendly packaging can be very coloured and nice and at the same time be made of plastic 100% sustainable and recyclable. Among them, a very famous campaign is linked L'Oréal's company launch of a new natural and sustainable range of products, from the Garnier division. As you can see from the following image, the company took care not only of creating an eco-friendly packaging with natural ingredients, but also of its graphic, which is both coloured and elaborated, suggesting an high quality of the product inside.

Figure 7: Fructis hair food, sustainable and natural new line appartaining to Garnier division.

Moreover, on the label we can notice the presence of information about the nature of the product: vegan, recyclable, without sylicons. This kind of attitude from the brand is due to the previously mentioned need for epistemic value from consumers, meaning the net perceived utility derived to satisfy the want of knowledge and seeking novelty in information (Hirschman, 1980; Sheth et al., 1991; Laroche et al., 2001) In fact, lack of essential product

information often causes a gap between actual consumer's environmental attitude and actual buying behavior (Ginsberg and Bloom, 2004).

Impact of coherence between graphic and verbal sustainability cues

As anticipated before, among the product attributes just like among the visual presentation of an eco-friendly product, the label plays a big role in defining clearly the characteristics of the product through its informative part.

Companies use labels to describe some details about the product to identify, classify and promote the product and the brand and interact with the buyer (Kotler & Keller, 2015). The label has to define clearly and transparently the characteristics of the product represented. The accomplishment that the buyer is looking for can be satisfied by the information reported on the label, so it can be determinant for the purchase decision. Based on this, consumers judge the product after the consumption to understand their level of satisfaction and the eventual intention of re-purchase (Van der Colff et al., 2016).

The value of the information is different for each consumer because it depends on the attention they invest based on the personal interest. It can be noticed that the purchase of products with an high engagement is the result of an accurate evaluation made by the consumer. On the contrary, it has been noticed that if the products with little engagement are bought, it happens without giving too much attention to the information written on the package.

In particular, when referring to sustainable products, the coherence between graphics and verbal sustainability claims is very important. Indeed, the credibility of the product is highly influenced by coherence. In fact, a Study made by Magnier and Schoormans (2015) on consumers reactions to sustainable packagings, analyses the interplay of visual appearance, verbal claim and environmental concern. The results indicate that consumers with low environmental concern evaluate a product with a conventional package with a verbal sustainability claim more negatively. This result could be linked to the high skepticism among consumers with low environmental concern (Mohr et al., 1998). Indeed, some consumers may interpret the incoherence between the package aspect of a product and the verbal claim as a method of *greenwashing*. Despite the limited number of studies on greenwashing, it has been demonstrated that green talking could particularly damage brands. *Green talking* happens when brands try to convince their customers that their activities are sustainable when they are

not (Walker & Wan, 2012).

Functional performance

The functionality of a packaging, in the specific, can be intended as being "fit-for-purpose", as stated by Verghese and Lewis (2007), who states the functionality of packaging as being adapt to protect the products inside, while having at the same time the lowest environmental impact of packaging materials.

Some of the participants to Nguyen's study claim that they could rather choose a less sustainable product if they retain it has an higher functional performance if compared to its sustainable alternative. For instance, a paper package is retained by few participants as being not-so-effective in protecting the quality of a product, especially if they are considering to buy some instant noodles. Aside from this little piece of people claiming that, the majority part of participants to Nguyen's study did not even mention packaging's functional characteristics. The deduction is that the sample taken for the study of Vietnamese consumers' preferences concerning instant noodles other key characteristics are more important than functionality, like visual presentation or price. This kind of conclusion about this key dimension lead us to think about the fact that functionality of a package can vary a lot based on the kind of product and also on its market responding.

Price

The third dimension related to the market appeal of an eco-friendly packaging is price. Eco-friendly packaging is usually perceived to be more expensive for consumers. Some participants to Nguyen's study affirm that - besides visual attractiveness - if there is not affordability and convenience, they do not feel encorauged to make a trial of the product. In fact, previous studies found that price is one of the most important criteria in purchase decision (Martinho et al., 2015) and it ha salso been demonstrated that there are consumers who are not willing to pay a price premium, like in Magnier and Crié, 2015. Also Krystallis and Chryssohoidis (2005) found that, unless consumers are convinced that the product satisfies market appeal characteristics at the point of purchase, they would not have paid for a price premium. On the contrary, in South Africa most of consumers have a long term vision as they think an eco-friendly packaging would save money in the long term thanks to the possibility of being reusable (Scott and Vigar-Ellis, 2014).

3.3.3 Manufacturing technology

The third dimension related to eco-friendly packaging perspection according to the Nguyen et al. (2020) study is *manufacturing technology*. In fact, according to the focus groups examined within the study, eco-friendly packaging is also the result of an eco-friendly manufacturing process and it also derives from the use of natural and organic raw materials. This could be a paradox, based on LCA measurements of synthetic versus natural material production (Boesen et al., 2019). In fact, "natural" or "organic" is not always a synonym of "eco-friendly", since not always manufacturing technologies and practices that use natural raw materials respect the environment like if they had used synthetic materials (i.e. deforestation issue). Consumers' concerns related to raw materials do find a justification in the study from Palombini et al. (2017), proving that often packaging materials are associated with environmental issues. Also, some focus group from a study of Nguyen et al. (2020) claim that the manufacturing process should be improved to reduce the environmental footprint. In fact, they stated that the responsibility of providing an eco-friendly packaging mostly lies with manufacturers. Those claims find an evidence in a study from Scott and Vigar-Ellis' (2014) results, where consumers show that they expect manufaturers to adopt as the first ones an eco-friendly manufacturing process.

4. Illustration about the use of sustainable packaging materials in the cosmetic industry

4.1 L'Oréal's eco-friendly packaging evolution

The recyclability and biodegradability of products' packaging material has a strong effect on consumers' mind at the point of purchase, especially on consumers with an high environmental concern. Based on this kind of evidence, L'Oréal company, todays' first cosmetic group worldwide, decided to make a commitment towards sustainability starting from the design stage. Just like the effort of using completely recyclable and biodegradable packaging for its cosmetic products since 2007, the company believes in the 3R rule: reduce, reuse and recycle. In fact, the objective is not only to reach a totally sustainable packaging through its materials, but also by respecting the environment and by reducing the amount of resources needed.

The aim of developing a responsible packaging at L'Oréal is to protect consumer health and biodiversity and to protect the environment. This happens by using materials with the smallest possible environmental impact, by choosing optimal dimensions and with the optimization of materials for recycling.

For this reason, in 2007 the company decided to include, within its policies, the "Packaging&Environment" policy that includes the 3R "adapted" policy: respect the consumer and the environment, reduce packaging volume and weight, replace materials with an high environmental footprint with recycled materials or with materials realized with renewable resources.

In particular, as indicated in the L'Oréal 2017 Annual Report, the company joined the New Plastics Economy in 2017. This concerns a three-year global initiative, bringing together more than 40 industry giants in chemistry and mass consumption, and building long-term relationships with local authorities and recycling companies. The objective was to create a new plastics economy where circular economy is applied to reach a 70% recycling rate for plastic packaging.

Today, L'Oréal company has reached its objective of creating a new plastics economy and this year launched an example is its first product line in FMCGs of 100% recyclable packaging skincare products.

In this chapter, we will analyse the advancements in terms of product material technology, for what concerns the L'Oréal case study.

4.2 Paper-based packaging

4.2.1 La Roche-Posay X Albéa

In 2020, L'Oréal launched its first paper-based cosmetic tube, as a result of the company's collaboration under La Roche Posay brand with Albea, a world leader in the cosmetic packaging (Culliney, 2020).

Figure 8: L'Oréal x Albea Partnership for the first carton-based cosmetic tube (Culliney, 2020).

The product, containing the new moisturising Anthelios sunscreen lotion, is packed in a 200ml paper-based tube. The product's aim is to protect the skin, marine life with its formula and environment.

The product was first launched in France, and then in the rest of the world. The launch was the first collaboration between the two brands, but the companies said it would not be the last. More L'Oréal brands are in line to follow (Culliney, 2020).

Figure 9: La Roche-Posay first paper-based cosmetic tube (Culliney, 2020).

4.2.2 Seed Phytonutrients

This product wasn't the first company's launch of a paper-based product packaging. In fact, in April 2018 L'Oréal company launched its "most organic brand ever created" according to its founders in USA (L'Oréal, n.a.). Led by Shane Wolf, International Brand General Manager at L'Oréal and a man with deep roots in farming, Seed Phytonutrients operate sas an independent venture funded by L'Oréal. The brand has access to group experts in terms of product design but can also work with independent partners.

This project has the objective to reconnect the beauty industry with the land. In fact, the company sources from small family-run organic farms who plant and harvest exclusively for the brand. This marks a paradigm shift in the relationship between organic farmers and cosmetics industry, helping to support farmers in the organic field.

Figure 10:Seed Phytonutrients paper-based packaging. Ouside and inside view (L'Oréal, n.a.)

The initiative is part of L'Oréal's Sharing Beauty With All (SBWA) sustainability program. Through this initiative, L'Oréal Group has been promoting a more responsible production and distribution of cosmetics over the past five years, part of its corporate responsibility active division. Moreover, the product has been designed to have "as little impact on the earth as possible" thanks to its packaging made of 100% recycled paper and 60% less plastic than a traditional shampoo bottle and also thanks to its totally organic formulas.

4.3 Glass made packaging

4.3.1 Giorgio Armani Beauty

My Way, a Fragrance by Giorgio Armani Beauty in partnership with L'Oréal Group for the beauty division, has been launched in August 2020 (L'Oréal, n.a.).

Figure 11: My way. A sustainable refillable perfume by Armani brand (L'Oréal, n.a.).

The feminine fragrance reflects the two brands five years commitment to reduce their carbon footprint by 25%, along with achieving carbon neutrality for all products by 2025. The flacon has been realized with recycled and recyclable materials, while the fragrance is composed of sustainably sourced ingredients. Moreover, to reduce material waste, Armani Beauty will employ a bottle refill system.

4.4 Sustainable Plastic

4.4.1 Biolage R.A.W.

Biolage R.A.W. (Real.Authentic.Wholesome.) is the result of Matrix's brand commitment to sustainability.

Its Nourish Shampoo and Conditioner line is the key example of the brand's commitment to sustainable packaging. The line has been launched on the market in 2017 and it is consists of products made of 100% post-recycled PET plastic with its shampoo reaching the 99% biodegradability of its formula. (Beauty Packaging, 2017). Also, some raw materials are organic and fair trade. In 2017 the product obtained the Cradle to Cradle Silver Certification based on their material health, material re-utilization, renewable energy and carbon management, water stewardship and social fairness.

Figure 12: Biolage R.A.W. totally recylcled PET plastic shampoos (Beauty Packaging, 2017).

4.5 The future of plastic: carbon capture in cosmetics

Moreover, the company just announced – in October 2020 - its collaboration with the US-headed bioprocess developer and carbon recycler Lanza Tech, Inc. and the oil, gas and energy major Total S.A. (Culliney, 2020). The objective is the future launch of the world's first sustainable plastic packaging line, made from captured and recycled carbon emissions.

Figure 13: L'Oréal plastic packaging line made from captured and recylced carbon emissions (Culliney, 2020).

As you can see from Figure 13, L'Oréal has created a sustainable cosmetics bottle made of polyethylene from captured and recycled carbon emissions with the objective to launch the product within four years. (Culliney, 2020).

Jacques Playe, director of packaging and development at L'Oréal, said that the project with Total and LanzaTech offered a promise of a "new sustainable packaging solution that would have helped the L'Oréal brand to go further with its goals of improving its environmental footprint in packaging.

In the following chapter, the reasearch will be presented. The different types of materials used in the study were drawn from this illustration.

Part 2: Empirical analysis

1. Conceptual frame

As previously analysed, the Intergovernmental Panel on Climate Change report (2016) highlighted that to reduce environmental degradation a modification in consumption behavior is needed, through a better understanding of the factors affecting individual's actions toward ecologically conscious consumption behavior (ECCB).

Would environment benefit from the progressive reduction of wastes through an environmentally conscious consumer buying behavior (ECCB) towards cosmetic products with an eco-friendly packaging?

As 2020 Global Buying Green Report (Trivium Packaging) claimed, environmentally friendly packaging is important for the majority of consumers. In particular, a great percentage of them say that they are less likely to buy a product in a harmful packaging and almast the half of them won't buy products in packaging that is harmful to the environment. A really big percentage of consumers also said they would pay more for sustainable packaging.

Moreover, it can be said that sustainability drives sales. In fact, the NYU Stern School of Business (Kronthal-Sacco R et al., 2020) found that sustainability-marketed products grew 5.6 times faster than conventionally marketed products.

This study helps to identify and measure the factors influencing consumers' behavioral intention through cosmetic products with an eco-friendly packaging.

As Taufique et al. (2018) demonstrated in a study on green consumer behavior among young urban Indian consumers through the lens of Theory of Planned Behavior, independent variables like environmental attitude, subjective norm, perceived consumer effectiveness are strongly correlated with green behavioral intention, consequently affecting ecologically conscious consumer behavior (ECCB).

Based on this evidence, the proposed research model has been based on Ajzen's Theory of Planned Behavior. The model is presented in Figure 14 and will serve as a framework for explaining consumers' intention to behave in a proenvironmental manner and their actual

environmentally conscious consumer behavior consisting in purchasing beauty products (BP) with and eco-friendly packaging material.

By analysing environmental attitude, subjective norm, perceived consumer effectiveness, individuals have been divided into clusters, thanks to the input of demographical data. Such clusters will be analysed in order to verify consumers' behavioral intention and Ecologically Conscious Consumer Behavior (ECCB) towards beauty products (BP) with an eco-friendly design, in particular referring to packaging materials.

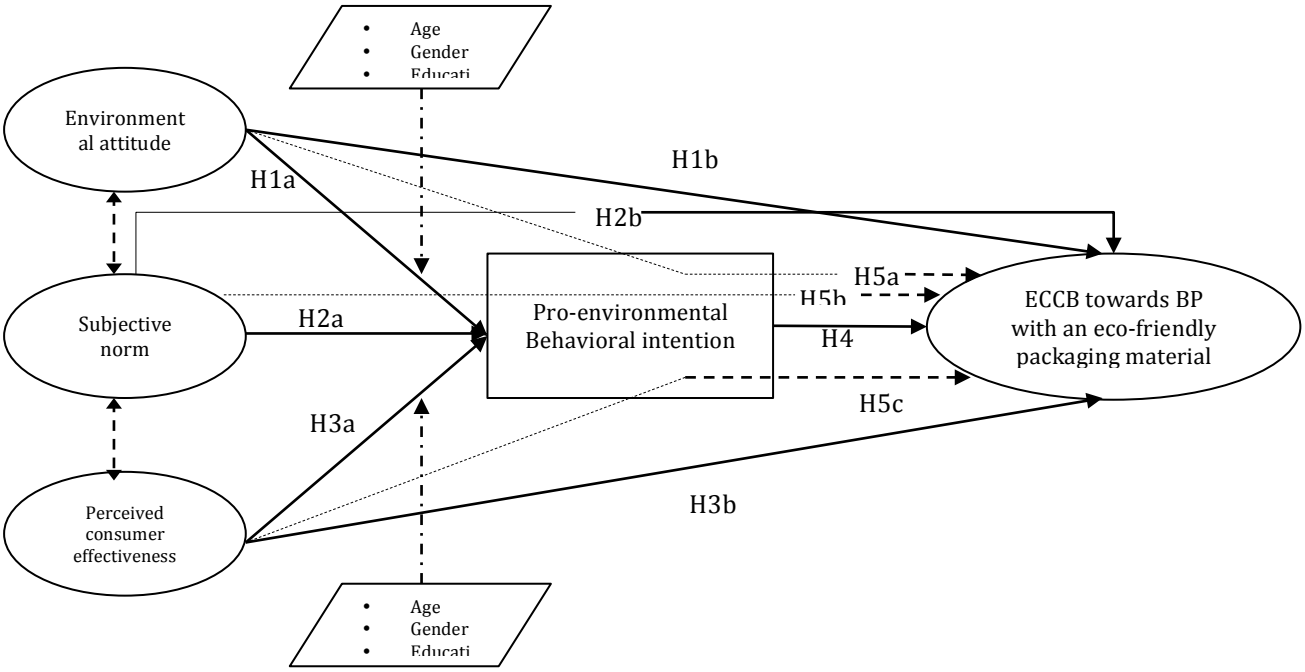

Figure 14: Hypotesized relationships model.

2. Hypoteses

Table 1: Hypoteses of the model.

H1		*Consumers' attitude towards the environment have a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging.*
	H1a	*Consumers' attitude towards the environment have a significantly positive*

		influence on pro-environmental behavioral intentions
	H1b	*Consumers' attitude towards the environment have a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material*
H2		*Subjective norm (social compatibility) has a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging material.*
	H2a	*Subjective norm (social compatibility) has a significantly positive influence on pro-environmental behavioral intentions.*
	H2b	*Subjective norm (social compatibility) has a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material.*
H3		*PCE has a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging material.*
	H3a	*PCE has a significantly positive influence on pro-environmental behavioral intention.*
	H3b	*PCE has a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material*
H4		*Consumers' pro-environmental behavioral intention will positively influence ECCB when purchasing beauty products with an eco-friendly packaging material*
H5		*The relationship between the independent variables and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*

	H5a	*The relationship between attitudes towards environment and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*
	H5b	*The relationship between subjective norms and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*
	H5c	*The relationship between PCE and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*

2.1 Environmental attitude

H1: Consumers' attitude towards the environment have a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging material.

Concept

In the Theory of Planned Behavior framework, attitude is referred to as one of the determinants of behavioral intention and seen as the extent of an individual's favorable or unfavorable assessment of a particular behavior (Ajzen, 1991).

In the environmental context, attitude is defined as " the cognitive and affective evaluation of the object of environmental protection" (Bamberg, 2003, p. 21). In line with the definition, some authors have argued that consumers with greater ecological concern are more likely to be pro-environmental in their consumption behavior (e.g. Rex and Baumann, 2007, Wang et al., 2014). As such, environmentally conscious consumers are more likely to have the intention of adopting environmentally responsible consumption behavior.

Justification

As a start, Ellen et al. (1991) first argued that a significant starting point of Environmentally Conscious Consumer behavior is consumers' general attitude toward environmental

protection. Later, many studies have confirmed that environmental attitude is one of the most important predictors influencing environmental behavior (e.g. Ellen, 1994, Zhao et al., 2014, Zsóka, 2008).

The influence of attitude on behavioral intentions concerning pro-environmental consumer behavior has been demonstrated in some studies in Indian context (e.g. Verma and Chandra, 2018, Yadav and Pathak, 2016). In fact, the two previously cited studies found a significantly positive influence of attitude on green purchase intention. However, neither of these studies analysed the mediating effect of behavioral intention in the attitude-behavior relationship, even though Follows and Jobber (2000) recommended this for pro-environmental consumer behavior.

Moreover, some authors demonstrated the significance of ECCB towards the purchase of green products. In fact, the more closely the consumers are involved with the environment, the more likely they are to buy green products (Alwitt and Berger 1993; Schuhwerk and Lefkokk-Hagius 1995; Vlosky et al. 1999; Schwepker and Cornwell 1991; Rios et al. 2006).

This review of the literature led to the following hypotheses in this thesis:

Hypotesis 1a: *Consumers' attitude towards the environment have a significantly positive influence on pro-environmental behavioral intentions*

Hypotesis 1b: *Consumers' attitude towards the environment have a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material.*

2.2 Subjective norm

H2: Subjective norm (social compatibility) has a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging material.

Concept

The concept of subjective norm refers to the individual's assessment of others' preferences and support for a behavior (Werner, 2004), based on a set of accessible normative beliefs concerning the expectations of important referents, such as family members, relatives, friends,

colleagues, and so on. For this reason, many researchers highlighted that individual-consuming decisions were largely influenced by the attitudes of friends, family members, and other important groups in the life of individuals (Chen et al., 2016).

In fact, the influence of subjective norm in marketing and consumer behavior literature is associated with the influence of different reference groups on consumer behavior.(e.g. Hsu et al., 2006, Yang et al., 2007).

For this reason, many social campaigns have used the social norm of conformity to shape behavior by suggesting the preferable behavior by the majority (Perkins, 2003).

Justification

Social norm in significant in determining pro-environmental consumer behavior (Biswas and Roy, 2015b, Yadav and Pathak, 2016). In line with this, Biswas and Roy (2015b) found that the most significant influence of pro-environmental consumption behavior comes from peer influence and social recognition.

The influence of the subjective norm or reference group on consumer behavior can be culture-specific, where individual behavior in collective society (e.g. India) is more likely to be influenced by others (Markus and Kitayama, 1991).

Besides, Lee and Green (1991) argued that the relative importance of subjective norm on individuals' behavior is influenced by cultural differences in different countries.

Moreover, a more recent study conducted by Chen et al. (2016) about the moderative effect of product knowledge on the relationship between the three independent variables on green purchase intentions, demonstrated the significance of subjective norms in determining green puchase behavior applied to green product consumption.

Based on the litterature, the following hypotheses were proposed here:

Hypotesis 2a: *Subjective norm (social compatibility) has a significantly positive influence on pro-environmental behavioral intentions.*

Hypotesis 2b: *Subjective norm (social compatibility) has a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material.*

2.3 Perceived consumer effectiveness

H3: PCE has a significantly positive influence on pro-environmental behavioral intentions and consequently on green consumer behavior towards beauty products with an eco-friendly packaging material.

Concept

Perceived consumer effectiveness (PCE) represents the extent of an individual's confidence in their personal efforts in solving a problem (Weiner and Doescher, 1991). The indipendent variable is similar to self-efficacy (Bandura, 1986), and indicates the belief in an individual's capability to attain goals through personal effort.

Justification

In an environmental context, PCE is the individual's internal locus of control, when for example making a personal effort to preserve the environment (Cleveland et al., 2012). The first starting to use PCE as a personality variable to predict environmental concern has been Kinnear (1974). Later, researchers used it as one of the attitudinal variables in predicting consumer behavior and consequently as a direct predictor of ECCB (Roberts, 1996).

In fact, empirical evidence shows that an individual's degree of control on their ability to perform the behavior significantly influences their behavior (Bandura et al., 1980).

This has led to the development of the following hypotheses:

Hypotesis 3a: *PCE has a significantly positive influence on pro-environmental behavioral intention.*

Hypotesis 3b: *PCE has a significantly positive influence on ECCB when purchasing beauty products with an eco-friendly packaging material*

2.4 Behavioral intention

H4: Consumers' pro-environmental behavioral intention will positively influence ECCB when purchasing beauty products with an eco-friendly packaging material

Concept

Behavioral intention refers to an individual's degree of determination and willingness to perform specific behavior, often determined by attitude and subjective norm (Ajzen, 1988).

Justification

Ajzen (1988) suggested that the higher levels of willingness are likely to result, the better chance of performing the behavior. The behavioral intention model was developed in individualistic society (i.e., USA), but cross-cultural examination found the model applicable in collective society as well (Lee and Green, 1991).

The importance of including the intention variable in models for understanding green consumer behavior has been emphasized in past studies, particularly those that believe its exclusion often contributed to the low correlation between environmental attitudes and behaviors. (Follows and Jobber, 2000).

Furthermore, environmentally conscious consumers are considered to be more willing to act for environmental improvement. In line with this assumption, Lin and Huang (2012) argued that when two products are thought to be identical, eco-friendly aspects hold key decision criteria in consumers' product evaluation.

Based on these findings, the following hypothesis was proposed here:

Hypotesis 4: *Consumers' pro-environmental behavioral intention will positively influence ECCB when purchasing beauty products with an eco-friendly packaging material*

2.5 Relationship between the independent psycho-social variables and ECCB when purchasing beauty products with an eco-friendly packaging material

H5: The relationship between the independent variables and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.

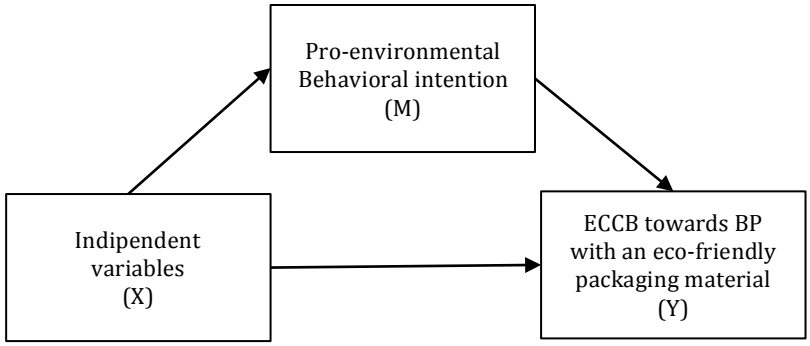

Figure 15: General mediation analysis model.

In this thesis, it has also been tested the indirect effects in its proposed model on ECCB towards beauty products with an eco-friendly packaging. As Baron and Kenny (1986) demonstrated, when examining the mediation effects, if it is hypothesized that B mediates the relationship between A and C, it is not sufficient to examine only the direct relationship between A and B and between B and C. In line with this, the reasoning related to mediation effects is also significant when predicting environmental behavior within the TPB framework (e.g. Flamm, 2009, Oreg and Katz-Gerro, 2006). In fact, Bamberg and Möser (2007) conducted a meta-analytic SEM (structural equation modeling) that confirmed that eco-friendly behavioral intention mediates the influence of all other psycho-social variables on ECCB.

For this reason, in the present model behavioral intention mediates the relationship between independent and dependent variables.

Hence, the following hypotheses were put forward to examine the indirect effects:

Hypotesis 5a: *The relationship between attitudes towards environment and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*

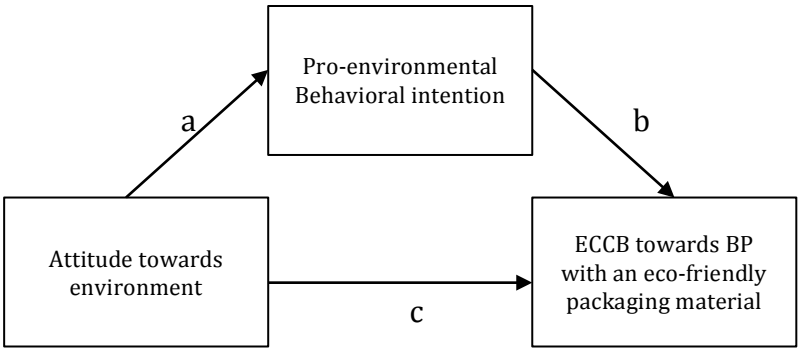

Figure 16: Mediation analysis model of pro-environmental behavioral intention between attitude towards environment and ECCB towards beauty products with an eco-friendly packaging.

Hypotesis 5b: *The relationship between subjective norms and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention.*

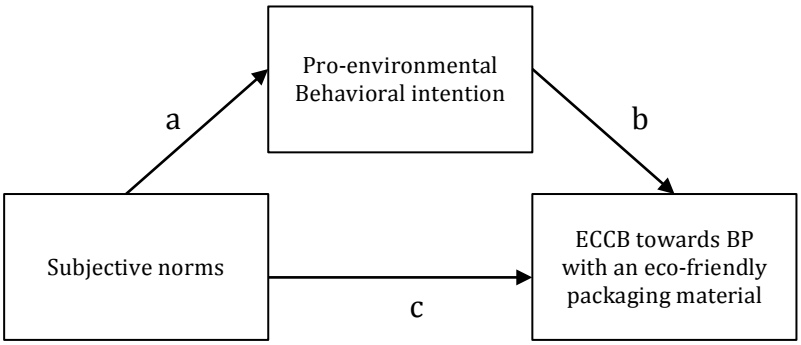

Figure 17: Mediation analysis model of pro-environmental behavioral intention between subjective norms and ECCB towards beauty products with an eco-friendly packaging.

Hypotesis 5c: *The relationship between PCE and ECCB when purchasing beauty products with an eco-friendly packaging material is mediated by behavioral intention*.

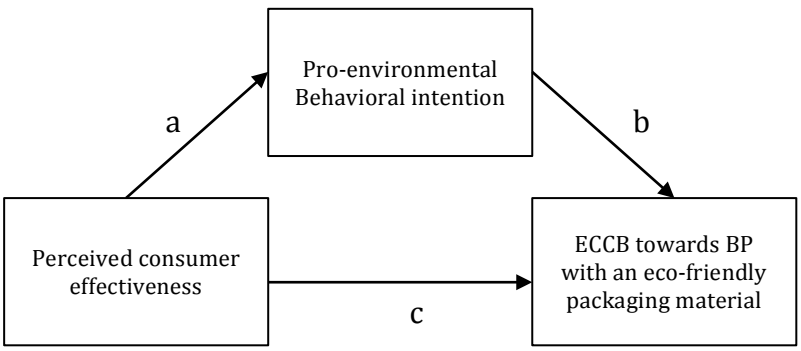

Figure 18: Mediation analysis model of pro-environmental behavioral intention between PCE and ECCB towards beauty products with an eco-friendly packaging.

3. Research Methodology

This Master's thesis investigated attitudes and behavioral intentions of consumers with respect to green products.

The objective of the research was to analyse green consumer behavior applied to the purchase of beauty products with an eco-friendly packaging material.

For the research, we concentrated on three main independent variables: attitude towards environment, subjective norm and perceived consumer effectiveness (PCE).

After having divided the sample in clusters based on socio-demographic characteristics, the influence of the independent variables on behavioral intention was analysed to convey ECCB attitude towards the purchase of beauty products with an eco-friendly packaging material.

To test the previously indicated hypoteses, a quantitative method based on survey collection and data analysis has been adopted.

3.1 Sample Description

Fieldwork began with the development of a questionnaire. Questionnaires were administered online via Qualtrics and analysed via SPSS software.

In this research study, the target population is the total population we need to have relevant information to answer the different hypoteses.

In particular, it concerns people living in Italy. Since the survey will be conducted online, we suppose that older people could be less predisposed to answer our survey. We are not going to exclude them from the sample because there is, at the same time, some people of more then 55 years using social networks.

3.2 Data collection

Appendix B includes the descriptive characteristics of the sample. Survey data were collected from 223 Italian consumers.

However, previously validated instruments were adopted to be sure about content validity of the scales used in the current research (Hair et al., 2006). Based on Hinkin (1998) guidelines,

all items were simply written and concise.

An online survey was used to collect the data. The respondents for the primary data collection were mostly recruited via a snowball sampling technique, which was carried out by sending the link to the survey to this Master's thesis student network contacts (Italians only) who forwarded the questionnaire to their peers (Italians only). The message invited them to participate in the study and contained a link to the online survey. Survey invitations were sent to about 300 contacts, guaranteeing anonymity and confidentiality for the respondents, and informing them that the gathered data would be published for academic scopes.

Overall, 223 usable responses were received, yielding a 74 % response rate which is consistent with most online survey response rates (e.g. Deutskens et al., 2004).

Of the total respondents, 77 % were female and the remaining 23 % were male, 43 % had a Master's degree, 22% an high school diplome and 12 % had an undergraduate degree. The age brackets of the majority of respondents were 25 – 34 years (29 %) and 18 – 24 years (22 %).

3.3 Pre-test

A pre-test of the online survey with four people was first performed to verify the feasibility of the survey and its pertinence. This test is verified on a little group of four people from the the same population that will be used for the research or with equivalent characteristics.

The objective of the pre-test is to identify the level of comprehension and feasibily of the sample. Another objective is to get to know the socio-demographic characteristics of the sample.

Subsequently, the questionnaire was slightly modified with respect to the level of knowledge required and the wording of the questions.

There was no criticism regarding the layout or the length of the survey. Furthermore, no respondent at pre-test stage complained about the format of the questionnaire or the time it took to complete the study.

3.4 Questionnaire building & measurement scales

Questionnaire is a format that enables standardised, relatively structured, data to be gathered

about each of a large number of cases. They are commonly used at all levels of social research, from small scale students and community projects through to large-scale international surveys and laregely used to conduct research on green consumer behavior in the majority of the studies previously analysed.

As stated by Matthews & Ross (2010), the answers to a correctly formuled set of questions helps the researcher to answer the research question and test the hypothesis. Most questionnaires have already structured answers, but some of them have some open questions which gather semi structured data.

Phillips (2008) stated that a questionnaire may contain open-ended questions allowing unlimited answers, chacklists with a list of items, two way questions limit answers (yes and no), multiple choice questions and ranking scales.

For this study the questionnaire will be conducted via Qualtrics software after having been designed based on the previously used model of Taufique et al. (2018) study on green consumer behavior among young urban consumers through the lens of Theory of Planned Behavior, because of its relevance and already tested liability on the subject of green consumer behavior. We then adapted the questionnaire on our research study, concerning in particular ECCB towards the purchase of beauty products with an eco-friendly packaging material.

In particular, the questionnaire has been built on a TPB framework, which has proven to be applicable in past studies investigating the association between environment-related attitudes and corresponding behaviors (e.g. Kanchanapibul et al., 2014, Yazdanpanah and Forouzani, 2015).

The independent variables

i. Attitude towards environment

To measure environmental attitude, as tested by Taufique et al. (2018), three items were adopted from Lee's (2011) seven items scale used in his study about the role of media exposure, social exposure and biospheric value orientation in the environmental attitude-intention-behavior model in adolescents.

ii. *Subjective norm*

Moreover, to measure subjective norm eight items were adopted from a nine-item scale present in Minton and Rose's (1997) study about the effects of environmental concern on Environmentally Friendly Consumer Behavior conducted in South Carolina.

iii. Perceived consumer effectiveness

In addition, to measure Perceived consumer effectiveness (PCE), two items were adopted from Roberts (1996) four-item scale.

iv. Pro-environmental behavioral intention

To measure pro-environmental behavioral intention, five items were adopted from a six-item scale from Minton and Rose (1997)'s study. In particular, in one item, instead of asking consumers their willingness to pay more taxes or electricity to support environmental protection, the item was substituted with a question on their willingness to pay for a product with an eco-friendly packaging.

v. Environmentally conscious consumer behavior (ECCB)

This variable has been measured by using 14 items from Roberts (1996) original 30-item ECCB scale. In particular, in this case too, the items were adapted to the context in which the study in conducted, relevant in the field of the purchase of beauty products with a sustainable packaging material. Lastly, a seven-point Likert-type scale (1 = strongly disagree; 7 = strongly agree) was used.

Table 2: Dimensions analysed in the survey and related sources of items.

Concept	**Source**	**Number of items**
Environmental attitude	Lee (2011)	3
Subjective norm	Minton and Rose (1997)	8
PCE	Roberts (1996)	2
Pro-environmental Behavioral intention	Minton and Rose (1997)	5
Environmentally conscious consumer	Roberts (1996)	14

behavior (ECCB)		

Furthermore, within each variable testing, image testing was combined with questions based on Rokka and Uusitalo's (2008) previously mentioned study. In those questions, a choice between two images to answer to the question is required, using images of already illustrated products in the fourth chapter. Socio-demographic questions about age, gender and education are asked in the beginning for the results to be divided according to clusters.

The online survey that was conducted in this study is further described in Appendix A.

4. Data analysis & results

Data management and analysis were performed using SPSS.

Structural equation modeling (SEM) was used to verify the conceptual framework and hypoteses using SPSS calculating multiple linear regression with partial least squares (PLS-SEM) (Lohmoller, 1988).

This approach has demonstrated to be superior to covariance-based structural equation modeling (CB-SEM) in most of studies where sample size is relatively small (Chin and Newsted, 1999, Reinartz et al., 2009).

Moreover, H5 will require a mediation analysis since as Bamberg and Möser (2007) confirmed by using a meta-analytic SEM (structural equation modeling) that eco-friendly behavioral intention mediates the influence of all other psycho-social variables on ECCB.

4.1 Reliability

As a starting point, we are going to verify if the answers are coherent with the different groups of questions. This kind of analysis is needed because there are different groups of questions linked to a single indipendent and unobservable variable (f.i.: 3 questions linked to Attitude towards behavior indipendent variable). For this reason, it is fundamental that the answers received for each group of questions are coherent with each other, otherwise the analysis could loose its significancy.

To verify the coefficients reliability, we are going to examine Cronbach alpha's reliability index, developed by Lee Cronbach in 1951. Cronbach's alpha tests to see if multiple-question

Likert scale surveys are reliable. These questions measure latent variables—hidden or unobservable variables like, in this case: a person's attitude towards behavior, subjective norms, behavioral intentions and environmentally conscious consumer behavior towards beauty products with an eco-friendly packaging. Cronbach's alpha will tell us how closely related this sets of test items are as a group.

Table 3: Chronbach's alpha

Variable	Alpha
Attitude	0,843
Norms	0,937
Intentions	0,851
ECCB	0,944

In litterature, usually, high and significant values of reliability are those higher than 0,7. Moreover, Cronbach Alpha is a normalized index. Consequently, results can be read in percentages.

As it can be noticed, for all the unobserved variables of the present study Cronbach alpha shows a reliability superior to 80%, therefore the model can be considered reliable.

4.2 PLS-SEM Modeling

For the model analysis, the partial least squares path modeling or partial least squares structural equation modeling was chosen (Lohmoller, 1988).

PLS-SEM stuctural model is a method of structural equation modeling which allows estimating complex cause-effect relationship models with latent variables. The model was used to test the hypoteses via Stata17 software.

As previously mentioned, this kind of approach has proven to be superior to covariance-based structural equation modeling (CB-SEM) in most studies where sample size is relatively small (Chin and Newsted, 1999, Reinartz et al., 2009).

Let's build the design of the model and implement the analysis:

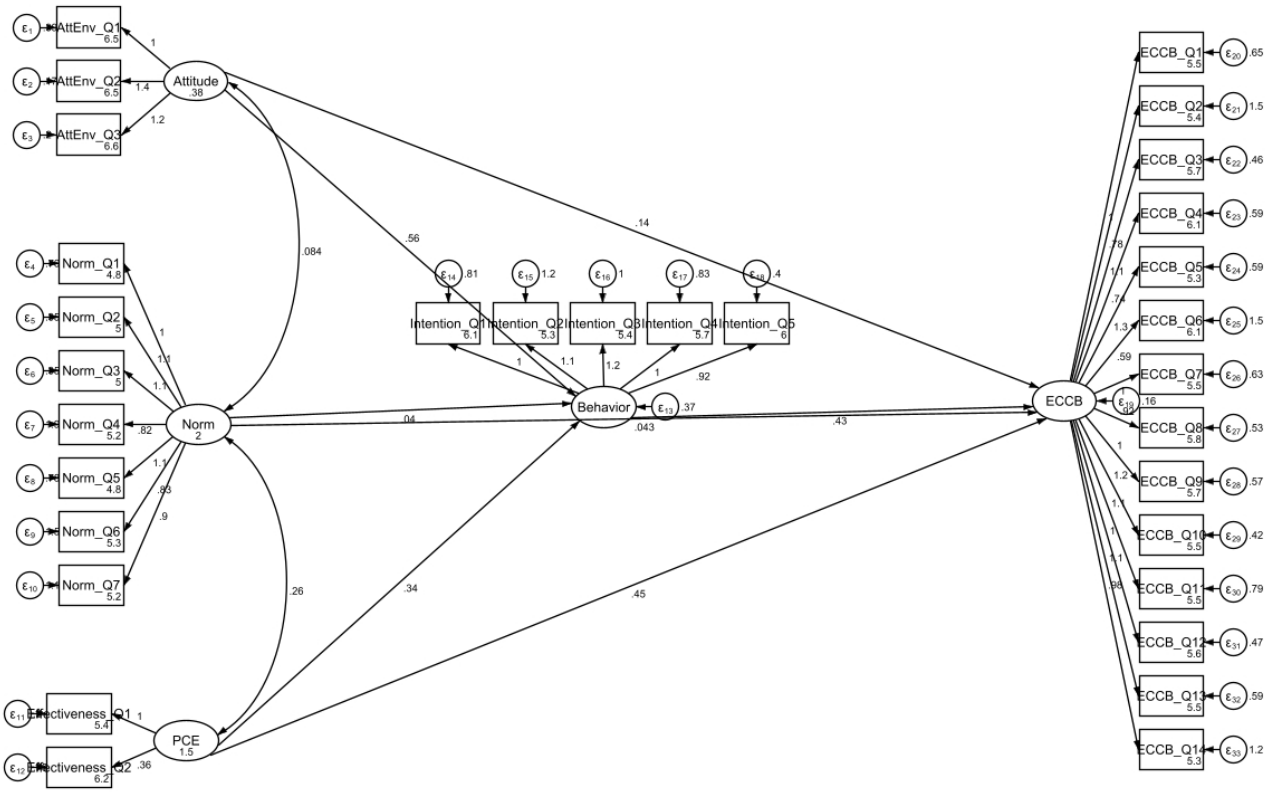

Figure 19: Design of the PLS-SEM structural model.

The above designed PLS-SEM model shows - in oval shapes - the unobserved variables (independent & dependent), while - in rectangular shapes - the observed variables through the survey. For instance, "Attitude" has to be considered as a latent, unobserved variable. On the other side, "AttEnv_Q1", which is the first question of the group of three questions appartaining to Attitude, is the observed and measured variable. This kind of observation can be applied to all the other variables.

Dual arrows represent the correlation between the three independent variables, while one way arrows represent the influence of unobserved/latent variables on the observed/measured ones.

In particular, the first group of arrows, starting from the three independent variables, represent not only the influence of the three unobserved variable on the observed variables, but also the influence of the three unobserved variables on the mediating variable being behavioral intention (indirect effect on ECCB).

The second group of arrows represent the direct influence of the three independent variables being attitude, norms and PCE, on the dependent variable being ECCB.

Little rods represent the error associated with each measured variable of the study.

Table 4: Multiple linear regression.

		OIM Coefficient	std. err.	z	P>|z|	[95% conf.	interval]
Structural Behavior							
	Attitude	.561064	.1063819	5.27	0.000	.3525592	.7695687
	Norm	.040242	.0366501	1.10	0.272	-.0315908	.1120748
	PCE	.342008	.0704333	4.86	0.000	.2039613	.4800547
ECCB							
	Behavior	.4279961	.1119161	3.82	0.000	.2086446	.6473476
	Attitude	.1447974	.0801267	1.81	0.071	-.012248	.3018428
	Norm	.042642	.0256392	1.66	0.096	-.0076099	.0928939
	PCE	.4521105	.0900792	5.02	0.000	.2755584	.6286625

At first, as shown in the table, starting from PCE variable, it is highly significant as a predictor of Behavioral intention and ECCB, having a positive effect on it. In fact PCE p-value < 0,05, and when comparing it to the other p-values is the most significant being the most little value. Moreover, the confidence interval being at 95% does not include 0 in both cases affecting behavior and ECCB, confirming the significance of PCE variable in influencing both behavioral intention and ECCB when purchasing beauty products with an eco-friendly packaging material.

Secondly, when looking at attitude towards behavior variable, the analysis shows that attitude p-value < 0,05 in the first case, in fact attitude is even more significant when influencing ECCB in an indirect way. This observation is confirmed as well when looking at the confidence interval, which does not include 0 value in the first case influencing behavioral intention, while it includes 0 in the second case, demonstrating that the variable is even more significant when having an indirect effect on ECCB, consequently validating the model and the significant role of the mediation analysis in the process.

Thirdly, when analysing subjective norms variable, results showed that this variable does not have a significance when influencing behavioral intention and ECCB. In fact, in both cases p-value > 0,05 and the confidence interval includes 0.

Last but not least, as the second analysis shows, behavioral intention p-value < 0,05 and really low, showing its really strong significancy in the model. The confidence interval at 95% does not include 0 and the coefficient of the variable is significantly positive, almost as PCE, showing its positive relation when correlated to ECCB.

As emerged, the more p-value has a little value less than 0,05, the better the variable will be significant. Moreover, as coefficients show, all variables considered have a positive influence in the linear regression model, demonstrated by the positive values of all coefficients. In particular, this observation is congruent with all the variables except for subjective norms.

In fact, the coefficient related to norms – even if positive – is not significantly different from zero, furtherly proving that subjective norms do not have a significant role in influencing either behavior or ECCB. When looking at attitude towards behavior's coefficient, it comes up what previously confirmed by the analysis of p-value and confidence interval. In fact, attitude is positively corelated with behavioral intention but its positive correlation when directly related to ECCB is weak, showing the relevant role of behavioral intention in the model since attitude is significant in influencing ECCB only when mediated.

4.3 Model validation

Now we are going to test if the model is well congruent with data obtained and we are going to do it with two different indices:

Table 5: CFI and TLI indices for model validation.

Baseline comparison		
CFI	0.835	Comparative fit index
TLI	0.819	Tucker-Lewis index

They are two normalized indices (between 0 and 1): the higher their value, the more the model works well. In litterature, good models have a value higher than 0.95, but even models higher 0,8 are considered as acceptable models.

As a whole, we can deduce that our model, even if it's not optimal, is an acceptable model.

4.4 Mediation analysis

As observed in statistics, a mediation model has the objective to identify and explain the process that underlies an observed relationship between an independent variable and a dependent variable via the inclusion of a third hypothetical variable, known as a mediator variable.

Instead of using a direct causal relationship between the independent variable and the dependent variable, a mediation model has the independent variable indirectly influencing the (non-observable) mediator variable, which in turn influences the dependent variable.

Consequently, the role of the mediator variable is to define the nature of the relationship between the independent and dependent variables.

In particular, mediation analysis definitely contributes to better understand the relationship between one or more independent variables and a dependent variable when those variables do not have an obvious direct connection.

Let's now verify if green behavioral intention variable has a good moderative role in between the independent variables and ECCB.

a) Mediation between Environmental attitude and ECCB

Table 6: Mediation analysis of pro-environmental behavioral intention between environmental attitude and ECCB (See Appendix C1).

```
 Model : 4
    Y  : ECCB_Q1
    X  : AttQ1
    M  : Int_Q1

Sample
Size:  223

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .4700      .1027     4.5786      .0000      .2677      .6723

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .1364      .0689      .0013      .2762
```

As we can see from the table (full table in Appendix C.1), the confidence interval does not

include 0, consequently the indirect effect is statistically significant.

Based on this, the relationship between Attitude towards behavior and Environmentally Conscious Consumer Behavior towards the purchase of beauty products with an eco-friendly packaging material can be explained by pro-environmental behavioral intention.

Consequently, attitude towards environment not only has a direct effect on pro-environmental behavioral intentions, but also has an indirect effect on Environmentally Conscious Consumer Behavior (ECCB) towards the purchase of beauty products with an eco-friendly packaging material.

b) Mediation between Subjective norms and ECCB

Table 7: Mediation analysis of pro-environmental behavioral intention between subjective norms and ECCB (See Appendix C.2)

```
Model  : 4
    Y  : ECCB_Q1
    X  : Norm_Q1
    M  : Int_Q1

Sample
Size:  223


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0707      .0496     1.4241      .1558     -.0271      .1686

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .0339      .0244     -.0030      .0912
```

In this case, as we can see from the table (full table in Appendix C.2) the confidence interval includes 0, so the indirect effect is not statistically significant.

Based on this, the relationship between Subjective norms and Environmentally Conscious Consumer Behavior towards the purchase of beauty products with an eco-friendly packaging material cannot be explained by pro-environmental behavioral intention.

Consequently, not only subjective norms don't have a direct effect on pro-environmental behavioral intentions, but they don't even have an indirect effect on Environmentally Conscious Consumer Behavior (ECCB) towards the purchase of beauty products with an eco-

friendly packaging material.

c) Mediation between PCE and ECCB

Table 8: Mediation analysis of pro-environmental behavioral intention between PCE and ECCB (See Appendix C.3)

```
Model  : 4
    Y  : ECCB_Q1
    X  : Eff_Q1
    M  : Int_Q1

Sample
Size:  223
****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .5951      .0493    12.0728      .0000      .4979      .6922

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .0492      .0241      .0135      .1074
```

Finally, in this mediation analysis the confidence interval does not include 0, consequently the indirect effect is statistically significant. (full table in Appendix C.3)

Based on this, the relationship between PCE and Environmentally Conscious Consumer Behavior towards the purchase of beauty products with an eco-friendly packaging material is explained by pro-environmental behavioral intention.

Consequently, PCE not only has a direct effect on pro-environmental behavioral intentions, but also has an indirect effect on Environmentally Conscious Consumer Behavior (ECCB) towards the purchase of beauty products with an eco-friendly packaging material.

5. Discussion

5.1 Context of the study

This study has been conducted in the context of the cosmetics industry and its growing evolution towards more and more eco-friendly packaged products. Based on the crescent need for the planet to be better preserved with its resources, it has been interesting to see how the adaptment to the evolving trends related to ecological interests can be determinant in green consumer behavior applied to beauty & personal care products.

For this reason, sustainable developments and strategies in the cosmetic industry changed over time by reacting to environmental issues.

As defined in the 1987 report entitled “Our common future”, sustainability is defined as the concept of sustainable development defined as the development that is able to meet the current needs of the population without compromising the needs of the future generations (Bruntland, 1987).

A big change in terms of sustainable production started with one of the most relevant documents in the sustainable development movement, Agenda 21 (United Nations, 1992), that put in evidence the main causes of environmental degradation: unsustainable production and consumption standards.

This came after two important waves of natural products joining the Green Game in 1970s and 1980s, with two main first movers in the market: Caswell-Massey in America and The Body Shop in Europe. The first one made it by selling cucumber based soaps and pineapple hair rinses in its shop in Lexington Avenue to a selected range of clients (Csorba and Boglea, 2011). The second one in Europe, among the pioneers of the second wave, made it by using the Caswell-Massey concept to develop and sell a complete range of bath products and fragrances in a very simple and sustainable packaging. (Csorba and Boglea, 2011).

Nowadays, the Italian market is one of the largest in Europe both in terms of turnover and consumption, right after Germany and France. Concerning the worldwide turnover, the Italian cosmetics and personal care industry reached an estimated value of 11.9 billion euros in 2019 with the two leading segments being facial care and body care.

Two important litterature referrals are taken into consideration as basic assumptions for this

study. The first one, based on Fernando and Hennayake's study (2017), highlights that one of the most important drivers of sustainability in the cosmetics industry is the awareness of consumers about environmental and social issues that is pushing the cosmetics industry to become "greener".

The second relevant driver in the process that is leading the cosmetics industry to a more sustainable path is the availability of more sustainable raw materials, like the ones presented by Evonik during in-cosmetics 2018 (Krauter, 2018).

Packaging has a big relevance in the production process and, in particular, cosmetic packaging has a very negative effect on the environment, contributing to land and marine pollution and influencing biodiversity. The most important concerns related to packaging are the excess layers and the materials used, like glass, paper and paperboard, aluminium, wood, plastic/polymeric materials and hybrid constructs.

Some big companies have been paying crescent attention to the issue for many years, setting on sustainability policies and a growing evolution of the cosmetic industry.

Starting from Aveda and Amore Pacific, companies well known for their sustainable manifacturing strategies, they bring an effort to reduce the environmental impact of their practices (Amorepacific Group, 2017; Aveda, n.d.; Feng, 2016).

Another well known company for its success in implementing sustainable packaging production is L'Oréal, whose product will be analysed as an example of successful eco-friendly strategy in the field of cosmetic & personal care products.

More and more companies in the cosmetic industry are following up on building a strong strategy in sustainable care, one of them being M.A.C. with its program called "Back to M.A.C." (Feng, 2016; M.A.C. n.d.). and brands like Shu Uemura, INGLOT, Tarte and DHC with their refilling policies (Feng, 2016; Inglot).

For the concept of reusing the cosmetic packaging, The Naruko cosmetic company won the International Package Design Awards (IPDA) in 2014 (Feng, 2016).

In the context of this growing evolution, the objective of this Master's thesis is to analyse consumers' evolving needs by paying attention to the variables influencing green consumer behavior when buying beauty and personal care products with eco-friendly packaging

materials.

In particular, based on litterature and on the Theory of Planned Behavior, three main variables have been identified and analysed through a quantitative study: attitude towards environment, subjective norms and perceived consumer effectiveness related to the eco-friendly packaged product. The three variables, as discussed in the following section, mediated by environmental behavioral intention, contribute in different ways in the Italian context and demographic range of analysis.

5.2 Summary of findings

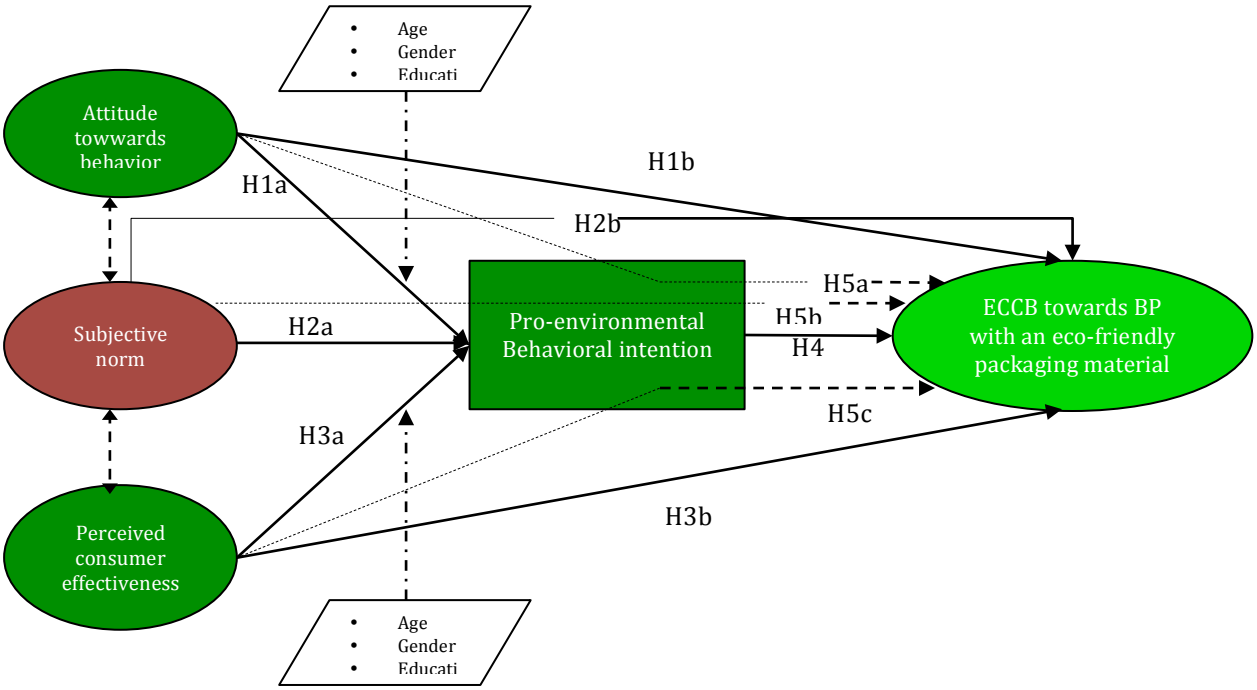

Figure 20: Design of the PLS-SEM structural model implemented after the regression analysis.

Concerning **Hypotesis 1**, thanks to the data analysis of every item, we could study the preferences of respondents in terms of attitude towards environment.

In the study, the items chosen were taken from the study of Taufique (2018) that took the environmental attitude items from Lee (2011).

Just like in those studies, this research shows that attitudes toward the environment have a significantly direct and positive influence on behavioral intention as well as on ECCB in the context of purchasing personal care products with an eco-friendly packaging material.

Moreover, attitude has a significantly indirect and positive influence on ECCB via behavioral intention.

The results obtained are in line with the original Theory of Planned Behavior model, where attitude is considered as an important antecedent to the behavioral intention and actual consumer behavior. In addition to this, the results are consistent with past studies on pro-environmental consumer behavior in other contexts, where attitude is considered as a strong predictor of such pro-environmental consumer behavior (e.g. Chan and Lau, 2002, Ramayah et al., 2012).

Consequently, results related to Hypotesis 1 are strictly in line with previous findings arguing that consumers with greater ecological concern are more likely to be pro-environmental in their consumption behavior (e.g. Rex and Baumann, 2007, Wang et al., 2014). In fact, results showed that environmental attitude is one of the most important predictors influencing environmental behavior (e.g. Ellen, 1994, Zhao et al., 2014, Zsóka, 2008) and are also in line with the previous findings affirming that the more closely the consumers are involved with the environment, the more likely they are to buy green products (Alwitt and Berger 1993; Schuhwerk and Lefkokk-Hagius 1995; Vlosky et al. 1999; Schwepker and Cornwell 1991; Rios et al. 2006).

Even if in the studies taken into consideration in the Indian context (e.g. Verma and Chandra, 2018, Yadav and Pathak, 2016) did not demonstrate the mediating role of behavioral intention for attitude to influence ECCB, in this study conducted in the Italian context, the mediating role of pro-envionmental behavioral intention has been demonstrated.

Concerning **Hypotesis 2**, after data analysis it has been obtained some relevant information concerning subjective norms' influence on behavioral intention and ECCB when purchasing personal care products with an eco-friendly packaging material.

In particular, the items chosen were taken from the study of Taufique (2018) that took the subjective norm items from Minton and Rose (1997).

In line with Taufique's (2018) study, subjective norm, referring to perceived social demand to perform a specific behavior, in this case pro-environmental behavior, was found to be insignificant when analysing direct effect on pro-environmental behavioral intention as well as its indirect effect on ECCB via behavioral intention and also the direct effect on ECCB was

not significant.

On the other side, results are in contrast with previous litterature arguing that social norm is significant in determining pro-environmental consumer behavior (Biswas and Roy, 2015b, Yadav and Pathak, 2016, Chen et al., 2016). Conforming to other studies, in fact, a relatively weaker impact of subjective norm on behavioral intention and/or actual behavior was evident (e.g. Cialdini and Trost, 1998, Trafimow and Finlay, 1996).

Probably the reason is that - as highlighted in litterature - the effect of the subjective norm or reference group on consumer behavior can be culture-specific, where individual behavior in collective society (e.g. Chine, India) is more likely to be influenced by others (Markus and Kitayama, 1991).

For example, Lee and Green (1991) argued that the relative importance of subjective norm on individuals' behavior is influenced by cultural differences in different countries. This notion also proved to be valid in a further study on consumers' recycling behavior in rural China (a collective society) (Tang et al., 2011). Consequently, as the sample of 223 respondents was from Italy, results are quite in line with this approach, being Italian society is more individualisic than collectivistic.

Concerning **Hypotesis 3,** Perceived Consumer Effectiveness (PCE) was found to have a positive influence on pro-environmental behavioral intention and also on ECCB when purchasing personal care products with an eco-friendly packaging material.

In particular, the items chosen were taken from the study of Taufique (2018) that took the PCE items from Roberts (1996).

The results were in line with Kinnear et al. study (1974), who – as previously mentioned - was the first one in litterature starting to use PCE as a personality variable to predict environmental concern. They are also in line with Taufique (2018) and Roberts' studies (1996), who considered it as one of the attitudinal variables in predicting consumer behavior and as a direct predictor of ECCB.

In fact, PCE was has a significantly direct and positive influence on behavioral intention as well as on ECCB in the context of purchasing personal care products with an eco-friendly packaging material. Moreover, PCE has a significantly indirect and positive influence on ECCB via behavioral intention.

Other studies on pro-environmental consumer behavior also confirmed the positive influence of PCE on behavioral intention and/or actual behavior (e.g. Yadav and Pathak, 2016, Zhao et al., 2014).

Concerning **Hypoteses 4 and 5**, they have been partially confirmed.

In particular, the items chosen were taken from the study of Taufique (2018) that took the pro-environmental behavioral intention items from Minton and Rose (1997) study.

In line with those studies, pro-environmental behavioral intention positively influences and significantly mediates the relationship between attitude towards behavior and ECCB and between PCE and ECCB applied to the context of purchasing personal care products with an eco-friendly packaging material.

This result is in line with previously mentioned litterature, where it has been emphasized that it is important to include the intention variable in models for understanding green consumer behavior, in particular some studies believe that its exclusion often contributed to the low correlation between environmental attitudes and behaviors (Follows and Jobber, 2000). In fact, the reasoning related to mediation effects is significant when predicting environmental behavior within the TPB framework (e.g. Flamm, 2009, Oreg and Katz-Gerro, 2006). As Bamberg and Möser (2007) found out in their study through a meta-analytic SEM (structural equation modeling), eco-friendly behavioral intention mediates the influence of psycho-social variables on ECCB.

Moreover, results are in line with the assumption of Lin and Huang (2012) arguing that when two products are thought to be identical, eco-friendly aspects hold key decision criteria in consumers' product evaluation.

On the other side, data analysis also showed that pro-environmental behavioral intention does not have a significant neither positive effect in its mediation between subjective norms and ECCB. This finding is line with subjective norms, that were found not significant in predicting pro-environmental behavioral intention and ECCB in this context of analysis, neither directly or indirectly through pro-evironmental behavioral intention on ECCB.

The results about the mediating role of behavioral intention between subjective norms and ECCB were in line with Taufique's (2018) study and in contrast with Minton and Rose's (1997) study, who considered it as a good predictor of intentions to act in environmentally

concerned ways.

5.3 Theoretical implications

This current Master's thesis first conducted a review of past studies on ECCB to help identify the current state of knowledge in the subject as well as identify any gaps needing to be explored. This Master's thesis also analaysed previous research successful in identifying good predictors of pro-environmental consumer behavior, applying the Theory of Planned Behavior (TPB) (Ajzen, 1985) framework, considered as one of the most predictive persuasion theories to understand behavioral intentions.

This research analysed both behavioral intention and actual behavior within the TPB framework, where both direct and indirect influences of attitude towards behavior, subjective norms and perceived consumer effectiveness (PCE) on green consumer behavior are tested.

Theory of planned behavior (TPB) has been found to be both applicable and successful (Bamberg et al., 2003) in predicting pro-environmental behavioral intention and green consumption behavior in a wide range of different eco-friendly contexts, related to organic food (e.g. Scalco et al., 2017), green hotels (e.g. Verma and Chandra, 2018), energy-efficient products (e.g. Ha and Janda, 2012), and recycling behavior (e.g. Park and Ha, 2014).

The TPB model is based on the assumption that attitudes and subjective norms influence intentions, resulting in behaviors. Such a framework has proven to be applicable in past studies by exploring the relationship between eco-friendly related attitudes and corresponding behaviors (e.g. Kanchanapibul et al., 2014, Yazdanpanah and Forouzani, 2015). Moreover, in some studies PCE has successfully been integrated in the model, with positive results both demonstrating a direct and an indirect relationship with green consumer behavior (Taufique, 2018).

Considering those theoretical implications, this research thesis has included attitude, subjective norms and PCE as predictors of pro-environmental behavioral intentions, by linking those intentons to ECCB towards beauty products with an eco-friendly packaging material in the Italian context.

5.4 Practical implications

The results of the study have as well some practical implications.

First, results showed that consumers' attitude towards environment are strongly correlated with their pro-environmental behavioral intentions.

As suggested to be adaptable for developed markets like USA (e.g. Chan and Lau, 2002) and Europe, marketers should implement communication plans that guide towards favorable attitudinal changes towards ECCB.

This could happen by communicating environmentally related information about products and practically illustrate consumers those positive outcomes deriving from the consumption of eco-friendly products and from pro-environmental consumer behavior in general, leading to help limit environmental harm. In particular, this kind of implementation could be applied not only to already developed markets, but also in developing countries like India, as this country for example has still a lot to improve with regards to environmental deterioration (Taufique & Vaithianathan, 2018).

Second, the strong positive influence of PCE on ECCB leads to the conclusion that consumers believe that their individual efforts will positive influence environmental protection.

This self-belief could be enhanced by showing more facts about benefits for both consumers (e.g. health benefits) and environment (e.g. low CO2 emissions) on product packaging and advertising messages. Moreover, in the communication strategy positive testimonials of actual consumers who helped protect the environment by practicing ECCB could be included (Heo and Muralidharan, 2017).

Third, if on one side, in collectivistic cultures like Indian or Chinese environments subjective norms proved to have a relevant role in influencing pro-environmental behavioral intention and ECCB (e.g. Chan and Lau, 2002, Tang et al., 2011), in individualistic societies subjective norms did not demonstrate to have a significant role.

In fact, the not significant relation of subjective norms in relation with pro-environmental behavioral intention and ECCB suggests that standardize communication policies to promote green consumption may not be suitable in the kind of individualistic Italian culture taken into consideration for the analysis. Given the low power of subjective norms in influencing green consumer behavior in this kind of culture, marketers could think about building a personalized and individualized communication plan through online and targeted advertising. In addition to this, as it has been demonstrated in previous litterature (Taufique &

Vaithianathan, 2018), standardized communication policies to promote green consumption may not be suitable across all collective cultures, like Indian one as well, where targeting strategies from an individualistic perspective could also lead to great results in terms of pro-environmental consumer behavior.

Conclusions, constraints of the study and avenues for future research

This thesis has revealed some interesting findings such as the insignificant influence of subjective norms in the referring context when related to pro-environmental behavioral intentions and ECCB. This research thesis also showed the significant influence of PCE and Attitude towards environment in the TPB model applied on ECCB.

On the other side, this study has some limitations that could lead to new avenues for further research.

First, the papers selected were mainly from Science Direct database and found through Google Scholar, which cannot cover all the litterature. Moreover, the papers analysed were mainly up to 2021, so researchers could extend time range in the future to consider new aspects of emerging litterature and new cosmetics & beauty care reports.

Second, a major limitation is the limited geographical coverage, so researchers could extend the research on a broader geographical area for future studies.

Third, almost % of respondents is female and only % is male, which could be a limit since it could have influenced results. In fact, many studies in litterature found that women are more oriented towards pro-environmental consumer behavior. For future studies, a more equally distributed percentage of respondents' genders would be recommended for the data to be more reliable.

Fourth, our research concerned green products related to the category of beauty and personal care products with an eco-friendly packaging material and did not analyze in details green products of other categories with an eco-friendly packaging material, such as home care or food products.

Based on the analysis and findings of the study, there are some key research directions for the future that will be set out below.

A. Research object

As in this kind of research green product purchase intention and ECCB were chosen as the

final explanatory variables, consumer may have enhanced their environmental protection by overestimating their awareness and sense of responsibility. This could mine to the accuracy of questionnaire data debatable. As a solution, future researchers could select as research objects consumers who already purchased sustainable products, consequently solving the risk of subjectivity of answers.

B. Dynamic research

This study can only reflect psychological activities of consumers at a certain moment & via online form. Consequenly the impact of external factors and environmental changes on consumers, such as education and policy, are ignored.

Considering the rapid evolution of networks in today's society, consumers' consumption preferences for certain products could change rapidly, leading to a difficult analysis through the considered research methodology of questionnaire of experiment to meet the actual research needs.

A dynamic research, through experiments in person in-store and tracked continuously could lead to a vertical study of consumers eveolving needs in terms of green products.

This kind of research could be conducted by analysing data tracked from supermarkets known as "Supermarket of the future". An example is the supermarket Coop realised in collaboration with Accenture Digital team by creating an avanguard shopping in-store experience through interactive tables, vertical shelving and real-time data visualization. Thanks to this, real time external factors could be included to analyse consumers face reactions & data associated with purchases that could be tracked over a range of months or years.

C. Cross-cultural research

At the present time, litterature is quite developed in terms of green purchase behavior, equally distrubuted across countries, but there is quite little research in a cross-cultural context.

Considering differences in the economic conditions, culture, traditional customs, there are quite big differences when comparing developed countries with less developed countries.

Since, with globalization, consumers are moving across the world, marketers could develop differentiated marketing strategies by analysing the same consumer under different living environments and how this could impact green purchase behavior by conducting a cross-cultural research.

D. Multiple products research

As previously mentioned, although beauty & personal care products are part of consumers' daily life, it is only a side of sustainable development through eco-friendly packaging material. Other products using this kind of new materials protecting environment could be used to conduct further research, like food, travel, housing, furniture and other products covering all aspects of life in the future.

E. Research on Crossing the Fixed Paradigm

Research conducted on green consumers behavior mainly focuses on behavioral decisions of consumers following the analysis of relevant literature, which assumes that consumers are rational people and always make decisions to maximize their benefits after weighing up various factors or under the constraints of values or individual norms.

Consequently, the most used consumer theories are TPB, VAB and VBN. These theories pay attention to psychological factors, they do not consider external factors and result in a limited explaining of consumers' purchase behavior.

ABC model, on the other side, takes external factors into the research scope and has been widely used to overcome this barrier. Researchers could then integrate multiple theories to explain consumers' purchase decisions in respect of green products in the future.

Moreover, this limit in closely related to the methodology chosen. In fact, the simple linear causality model may have limited interpretation in explaining consumer shopping preferences, so future researchers could try to use non-linear models to explain consumer behavior, which would lead to a better understanding of green purchase behavior.

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Appendices

Appendix A: Survey

Attitude towards environment

4. In my view, it is very important to raise environmental concern among our people in Italy.
5. In my view, more environmental protection works are needed in Italy.
6. In my view, it is essential to promote green living in Italy.

Subjective norm

1. In Most of my friends think I should use beauty products that are safe for the environment.
2. Most of my friends think I should recycle (beauty) products with an eco-friendly packaging material.
3. Most of my neighbors think I should use environmentally friendly beauty products
4. Most of my neighbors think I should recycle.
5. Most of my co-workers think I should use environmentally friendly beauty products.
6. Most of my co-workers think I should recycle.
7. Most of my family members think I should use environmentally friendly beauty products.
8. Most of my family members think I should recycle.

Perceived consumer effectiveness

1. When I buy products, I try to consider how my use of them will affect the environment and other consumers.
2. Each consumer's behavior can have a positive effect on society by purchasing products sold by socially responsible companies.

Behavioral intentions

5 I would be willing to sign a petition to support an environmental cause.

6 I would consider joining a group or club which is concerned with the environment.

7 I would be willing to pay more for products with an eco-friendly packaging (material?)

8 I would be willing to stop buying products from companies guilty of polluting the environment even though it might be inconvenient for me.

9 I would be willing to make personal sacrifices for the sake of slowing down environmental degradation even though the immediate results may not seem significant.

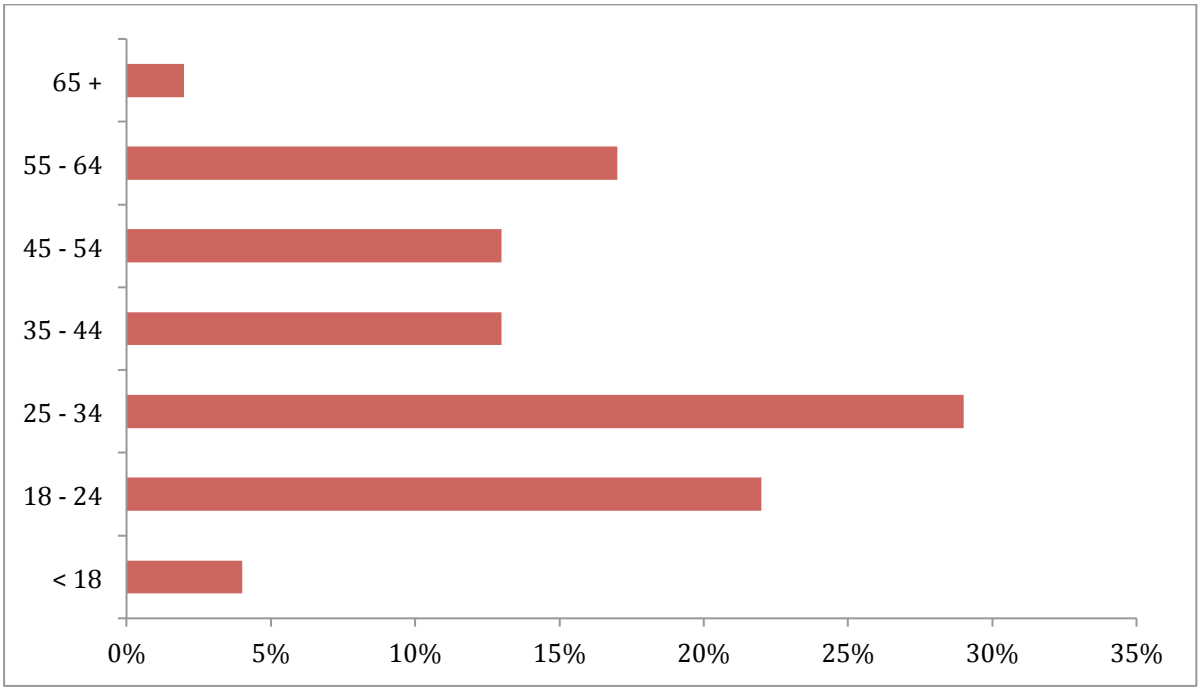
ECCB

1. I normally make a conscious effort to limit my use of products that are made with an use of scarce resources.
2. I will not buy products that have excessive packaging.
3. When there is a choice, I always choose the product that contributes to the least amount of environmental degradation.
4. If I understand the potential damage to the environment that some products can cause, I do not purchase those products.
5. I have switched products for ecological reasons.
6. I use a recycling center or in some way recycle some of my household trash.
7. I make every effort to buy paper products made from recycled paper.
8. Whenever possible, I buy products packaged in reusable containers.
9. When 1 have a choice between two equal products, I always purchase the one less harmful to other people and the environment.
10. I try only to buy products that can be recycled.
11. I do not buy (beauty) products that harm the environment.
12. I try to buy (beauty) products with a biodegradable packaging material.
13. I have purchased a (beauty) product because it uses less harmful packaging materials than other brands.
14. I have purchased (beauty) products that were more expensive but had an eco-friendly packaging material.

Appendix B: Demographical characteristics of the sample

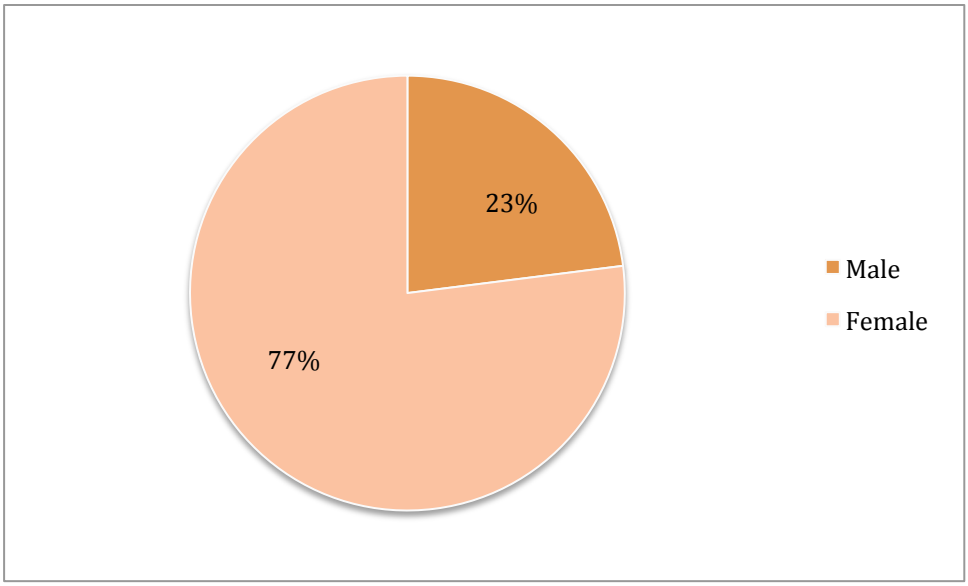
B.1 Age ranges

Age range	Percentage
< 18	4%
18 - 24	22%
25 - 34	29%
35 - 44	13%
45 - 54	13%
55 - 64	17%
65 +	2%



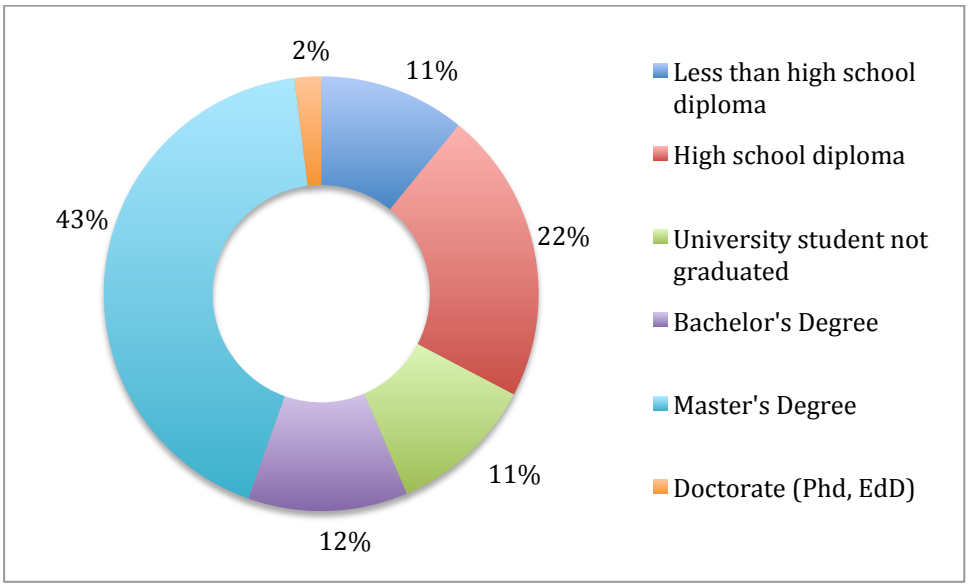
B.2 Gender

Gender	Percentage
Male	23%
Female	77%



B.3 Education

Education level	**Percentage**
Less than high school diploma	11%
High school diploma	22%
University student not graduated	11%
Bachelor's Degree	12%
Master's Degree	43%
Doctorate (Phd, EdD)	2%



Appendix C: Mediation analysis

C.1 Mediation between Environmental attitude and ECCB

```
Model : 4
    Y  : ECCB_Q1
    X  : AttQ1
    M  : Int_Q1

Sample
Size:  223

**************************************************************************
OUTCOME VARIABLE:
 Int_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .5431      .2949     1.1540    92.4426     1.0000   221.0000
.0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.0490      .5278     1.9876      .0481      .0089     2.0892
AttQ1         .7748      .0806     9.6147      .0000      .6159      .9336

**************************************************************************
OUTCOME VARIABLE:
 ECCB_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .4488      .2014     1.3204    27.7377     2.0000   220.0000
.0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.3874      .5696     2.4358      .0157      .2648     2.5100
AttQ1         .4700      .1027     4.5786      .0000      .2677      .6723
Int_Q1        .1760      .0720     2.4464      .0152      .0342      .3178

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .4700      .1027     4.5786      .0000      .2677      .6723

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .1364      .0689      .0013      .2762

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
```

```
  5000

------ END MATRIX -----
```

C.2 Mediation between Subjective norms and ECCB

```
Model  : 4
    Y  : ECCB_Q1
    X  : Norm_Q1
    M  : Int_Q1

Sample
Size:  223

**************************************************************************
OUTCOME VARIABLE:
 Int_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .1261      .0159     1.6107     3.5697     1.0000   221.0000
.0602

Model
              coeff         se          t          p       LLCI       ULCI
constant     5.6020      .2650    21.1384      .0000     5.0797     6.1242
Norm_Q1       .0987      .0522     1.8894      .0602     -.0042      .2016

**************************************************************************
OUTCOME VARIABLE:
 ECCB_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .3651      .1333     1.4330    16.9141     2.0000   220.0000
.0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.0793      .4345     7.0863      .0000     2.2229     3.9357
Norm_Q1       .0707      .0496     1.4241      .1558     -.0271      .1686
Int_Q1        .3436      .0634     5.4146      .0000      .2185      .4686

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0707      .0496     1.4241      .1558     -.0271      .1686

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .0339      .0244     -.0030      .0912

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
```

```
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

------ END MATRIX -----
```

C.3 Mediation between PCE and ECCB

```
Model  : 4
    Y  : ECCB_Q1
    X  : Eff_Q1
    M  : Int_Q1

Sample
Size:  223

**************************************************************************
OUTCOME VARIABLE:
 Int_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .2523      .0637     1.5325    15.0257     1.0000   221.0000
.0001

Model
              coeff         se          t          p       LLCI       ULCI
constant     4.7458      .3531    13.4408      .0000     4.0500     5.4417
Eff_Q1        .2454      .0633     3.8763      .0001      .1206      .3702

**************************************************************************
OUTCOME VARIABLE:
 ECCB_Q1

Model Summary
          R       R-sq        MSE          F        df1        df2
p
      .6884      .4739      .8699    99.0683     2.0000   220.0000
.0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.0617      .3586     2.9605      .0034      .3549     1.7686
Eff_Q1        .5951      .0493    12.0728      .0000      .4979      .6922
Int_Q1        .2006      .0507     3.9575      .0001      .1007      .3004

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .5951      .0493    12.0728      .0000      .4979      .6922

Indirect effect(s) of X on Y:
           Effect     BootSE   BootLLCI   BootULCI
Int_Q1      .0492      .0241      .0135      .1074

*********************** ANALYSIS NOTES AND ERRORS ************************
```

```
Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

------ END MATRIX -----
```

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