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Disclosing product ingredients information through scanning mobile apps:

Impacts on consumer purchasing behavior

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ABSTRACT

The willingness to make healthier choices has increased the level of consumer involvement in the purchasing process of all those convenience goods that directly impact human health. However, the lack of sufficient information has often hindered consumers' ability to take the right purchase decision. A considerable percentage of shoppers is less than convinced that the health information they receive is accurate or, even more important, many of them do not know how to "translate" products' composition labels. Several studies have been done to understand how to increase product labels usage and efficiency, as well on how to lead consumers towards healthier consumption. At the same time, other researches have indagated how mobile technologies are going to redefine the retail scenario, but just a minority has focused on how individuals may use these apps to transform their behavior in-store.

Basing on a qualitative approach, this research wants to explore how the possibility to access comparative, objective and understandable product information through mobile apps directly in-store (regarding ingredients and their healthiness/dangerousness) will impact the consumer purchasing behavior.

The analysis of ten in-depth interviews highlights the app efficacy in increasing individual perceived behavioral control and in reducing the attitude-behavior gap regarding healthier consumption. It also shows a change in consumer's classification of primary and secondary attributes when taking a purchase decision and a reduction in consumer's sensitivity towards traditional marketing tools.

As managerial implications, the results will show the importance of making some changes in production formulas, of predicting consumers' future information searches, of engaging in new marketing practices and of taking part in consumer education.

Key words: Retail – Mobile – Shopper – Consumer Behavior – Information search – Health

ABSTRACT

La volonté de faire des choix plus sains a accru le niveau de participation des consommateurs dans le processus d'achat de tous les produits de consommation courante qui ont un impact direct sur la santé humaine. Toutefois, le manque d'informations suffisantes a souvent entravé la capacité des consommateurs à prendre la bonne décision d'achat. Un pourcentage considérable d'acheteurs n'est pas convaincu que l'information qu'ils reçoivent sur la santé est exacte ou, plus important encore, beaucoup d'entre eux ne savent pas comment "traduire" les étiquettes de composition des produits. Plusieurs études ont été réalisées pour comprendre comment augmenter l'utilisation et l'efficacité des étiquettes des produits, ainsi que comment amener les consommateurs à une consommation plus saine. En parallèle, d'autres recherches ont montré comment les technologies mobiles vont redéfinir le scénario du commerce de détail, mais une minorité seulement s'est concentrée sur la façon dont les individus peuvent utiliser ces applications pour transformer leur comportement en magasin.
Basée sur une approche qualitative, cette recherche vise à explorer comment la possibilité d'accéder à des informations comparatives, objectives et compréhensibles sur les produits par le biais d'applications mobiles directement en magasin (concernant les ingrédients et leur santé/dangerosité) aura un impact sur le comportement d'achat des consommateurs.
L'analyse de dix entretiens approfondis met en évidence l'efficacité de l'application à accroître la perception individuelle du contrôle comportemental et à réduire l'écart attitude-comportvvemental en ce qui concerne une consommation plus saine. Il montre également un changement dans la classification par le consommateur des critères primaires et secondaires lors de la prise de décision d'achat et une réduction de la sensibilité du consommateur envers les outils de marketing traditionnels.

En tant qu'implications managériales, les résultats montreront l'importance d'apporter certains changements aux formules de production, de prévoir les recherches d'information futures des consommateurs, d'adopter de nouvelles pratiques de commercialisation et de participer à l'éducation des consommateurs.

Mots clés : Commerce de détail - Mobile - Shopper - Comportement du consommateur - Recherche d'informations - Santé

Table of Contents

1. INTRODUCTION

Global warming, increased pollution, risks for personal health… these are the themes the are influencing the purchasing decisions of the consumer 2020, who is assumed to act under the statement "healthy for me, healthy for the environment". Nevertheless, at the moment, consumer's care about his/her own health seems to be priority number one at the retail point. People are becoming increasingly health-conscious and the new "Generation Z" seems destined to become the most health-centric group of consumers. Younger buyers present greater involvement in the purchasing process of all those convenience goods that directly impact human health and higher willingness, with respect to their parents, to forgo a brand to switch to healthier options. This generational division has certainly been enhanced by technology: consumers are more digitally engaged and their devices play a significant role in purchase decisions. Briefly, they are more likely to have products and knowledge available in one click.

The health domain represents a new market to size and technology developments are working to help consumers in matching their needs with the right products.

Enterprises need to well formulate their portfolio and to prepare to face the high level of scrutiny that consumers may apply to their products before purchasing them. They will be required to state and communicate data so to pass the consumer scan of ingredients. Very often buyers have pre-existing perceptions about the health impacts of different product categories, but they own very little information about individual brands. This lack of information becomes particularly relevant when considering the comparative nature of the purchasing process that consumers go through at the retail shelf. By not being provided in-store with standardized brand-level information within a category, their perceptions about products are likely to result vague and imprecise.

In general, brand-level information can affect choices, product evaluations, brand and retailer perceptions; however, these effects are often mediated by greenwashing concerns and consumers' skepticism about claims.

The first objective of this research is to demonstrate how the provision of clear and simplified brand-level information as well as the creation of a standardized point of reference will push

the consumer to make more informed and healthier purchase decisions.

As for many different challenges, new technology companies seem to be meant to provide the solution. The idea at the base is nothing new: in many states, websites about product ingredients analysis have been developing since the very first decade of the 21st century in a spontaneous, but often unorganized way. However, recent smartphone applications have visually summarized these complexed lists (ingredients lists, nutritional information etc.) in something easy to read and to understand at the point of purchase.

On October 2018, the French newspaper "Stratégies" published an article entitled "Yuka, l'appli qui fait trembler les marques" that translated gives "Yuka, the app that makes brands tremble" (Le Goff, D. and Soulas-Gesson, D, 2019). What is remarkable in the title is the stronger appeal directed to brands more than to customers. Many apps examples are out in the market: Yuka, QuelCosmetic, Y'a Quoi Dedans, INCIBeauty, Greenity, Pharmapocket and so on.

It is clear that anything empowering the customer on one side will affect brands on the other hand. The type of repercussion on the latters will certainly depend on the enterprises' ability to respond and adapt to the changing status quo.

The sectors that have been mostly affected by this new revolution seems to be the agro-alimentar, the cosmetic/self-care and the pharmaceutical ones (which can be identified as those having the most direct effects on consumers' personal health).

Proving that consumers' purchasing behavior is highly influenced by the provision of composition/health information should increase firms' motivation to improve their production methods and to change their marketing practices in order to compete more effectively in the marketplace.

Even if it is too early to count on true numbers, these applications are going to affect the level of sales and the brand image of the companies which appear to be obliged to move towards transparency and safety.

The aim of this research is to disclose some insights regarding the possible changes in the consumer buying behavior due to the app informative role and to provide some suggestions that could be used to elaborate future marketing strategies.

The dissertation will be organized in the following way: (1) consumption changes and trends will be analyzed to contextualize the research, (2) previous theories and academic findings will be revised before submitting the new research proposition, (3) the research protocol will be presented in detail, (4) results will be reported and discussed by relating them to theory, (5) limitations and future research opportunities will be set out.

Finally, some managerial implications and conclusions will be discussed.

2. MARKET TRENDS

Firstly, being economics and management social sciences, there is the need to go through some consumer changes that have led the market at the current situation. Secondly, even if change and volatility seem to characterize the business environment during the last years, enterprises need to make the right investment and strategic decisions that will make them able to serve the customer as s/he will be in ten years and beyond. The aim of this first part is to get some insights about economic and demographic trends as well as some considerations about changes in on our daily life, to get some predictions on how attitudes and patterns of consumption will vary over the next future.

This section has the purpose of contextualizing and demonstrating the importance of the research in the current world. In a first sub-section, the profile of the consumer 2020 will be presented, whereas in the second one, some consumption trends will be investigated.

2.1 Consumer 2020

During the time period prior to the economic crisis of 2008-2009, countries as United States, United Kingdom, Spain and Ireland were characterized by a strong consumer spending growth, funded by borrowing against the increasing value of homes and fueled by export-driven countries such as China, Japan and Germany. When the inflated values of property-based assets peaked and the collapsed, major financial institutions had to face enormous losses. The result was a loss of confidence in credit markets and indebted consumers who stopped to overconsume and started to save more.

Consumers felt the necessity to rebuild savings as well as the psychological factor to engage in less risky behaviors due to the length and depth of the recession, the worst of the post-war era. All this has triggered a shift in consumer behavior towards a more prudent spending on one hand and towards investments in quality products on the other hand (Deloitte Russia, 2019).

Consumers are more value conscious and keen to avoid discretionary spending. This has implications for brands that aim to obtain growth through gaining market share by focusing on good brand management, improved customer experience and differentiation from competitors.

The 2008-2009 economic downturn and the middle class' explosion in emerging markets had significant consequences in determining future consumer demographics. As countries become more developed, a number of factors cause people to have fewer children (for example more educated and labor-force-participative women). Skills demanded in the work environment have become more specific and varied, as a consequence higher educational levels are now requested; the tendency is to have fewer children and having them later in life, which means to have the possibility to have more disposable income to spend on products and services for oneself or for each child. On the opposite side, low birth rate implies a reduction in working age population and an increase in age imbalance due to improved life expectancy.

Clearly, all this has some implications on the type of consumption pursued by the population. The combination of financial instability, longer work-life, aging population and increasing health-care costs has decreased the demand for leisure services, favoring higher spending for those things determining good quality of life.

For example, an enormous shift has taken place in the food industry. In all countries, middle class has become predominant since the very beginning of 2000. Especially in emerging countries, this has had important impacts: rising wages, sedentary white-collar jobs and lifestyles, an increase in chronic diseases too. As the consumers have become more aware and educated, they started to change food consumption and lifestyle towards healthier choices. In addition, as the companies' supply chain has become increasingly global, an always higher number of consumers is demanding greater transparency regarding the origin and contents of the goods, examining labels and becoming more selective in the purchases.

Last but not least, consumers are becoming more sensitive to concepts of environmental damage and sustainability. As a consequence, a growing consumer interest in the sourcing of raw material, in natural and wholesome products and in environmental and ethical practices is arising.

All the above presented are recent changes in the consumer social and personal dimension.

What actually allows him/her to implement these shifts in consumption is this new condition of "empowered consumer", i.e. a consumer that is able to influence companies' actions due

to high information, high connection and high expectations in terms of companies' commitment. At this regard, Ipsos (2017) has surveyed 18000 people around the world, representing empowered consumers, and it found out three main themes characterizing the buying behavior:

- "Make the rules",
- "Lust for the latest"
- "Hunger for healthy"

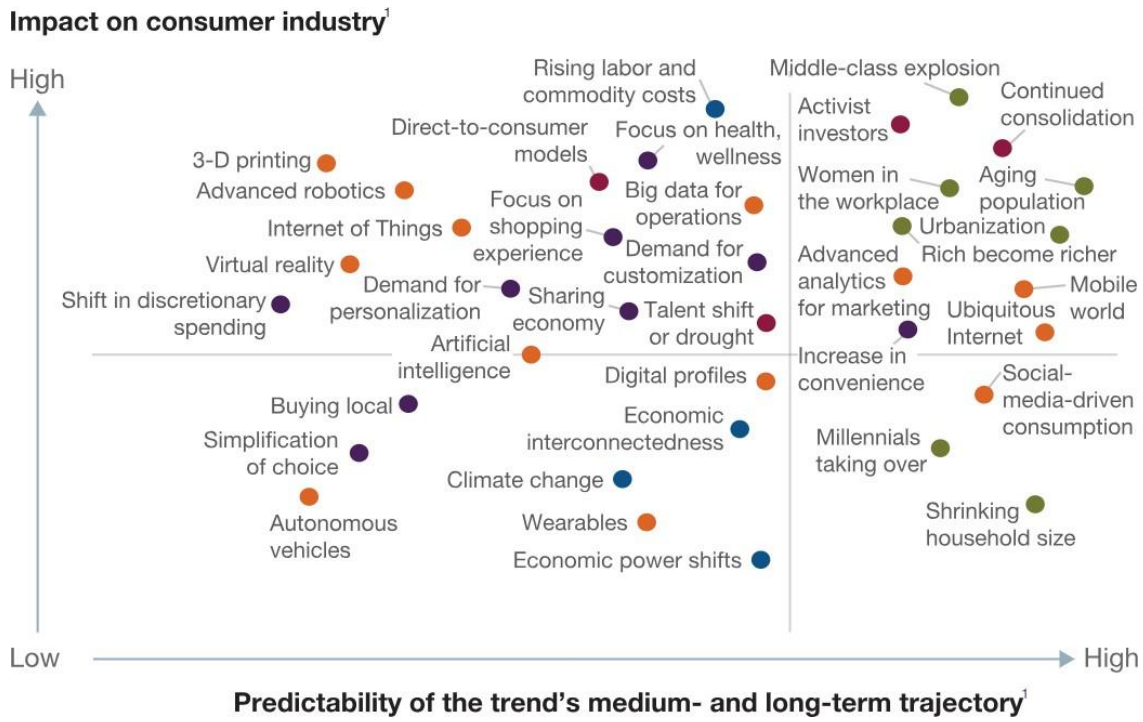
"Make the rules" refers to the consumers' feeling to be overwhelmed by advertisements and choices (around 60%) and the consequent statement "Brands I trust are more important to me than ever". 75% of the consumers responded to buy products and services that make them feel safer and in control of their health. Finally, another way to "make the rules" is through personalization/customization (ex: habit, Personalized Nutrition Delivery).

"Lust for the latest" refers to respondents' belief that technology will make their life better and to the fact that more than half of the consumers are willing to try innovating products.

"Hunger for healthy" indicates the trend for which more people with respect to previous years are worrying about their health. Food seems to be the first thing consumers want to change, by avoiding bad products, sacrificing convenience, eating locally grown products (also for environmental concerns, to avoid "food miles", i.e. transportation from far away) and prioritizing organic foods. As for their own health, parents are worrying even more for their children. Many companies are innovating in this sense, by offering funnier packaging and initiatives for kids.

Then, other concerned sectors are obviously pharma, self-care and home-care.

Figure 1: Impact/predictability of trends on the consumer industry in 2030



(Source: McKinsey&Company, 2015)

2.2 Consumption trends

"Slow consumption"

Since the first decades of the 20th century, consumption trends were subjected to cyclical modifications. Starting from the 30s, the world has faced the challenges imposed by mass production; the consequences of it dragged on for years reaching a point in which people forgot the times in which products were tailor-made and controlled by the customer from raw materials to final use. The enthusiasm of having "more and cheaper" obscured the negative consequences of the hyper-consumption and unsustainable mass production.

First signals of change could be spotted starting from the 90s. In 1995 the Trends Research indicated "simplifying living" as one of the top trends of the decade. As re- stated by H. Cherrier (2007), the concept of "voluntary simplicity" represented a disengagement from consumerism and a mainstream phenomenon based on values such as humanity, community,

locality and respect for life and nature. If looked as a process of deconstruction/reconstruction due to the recognition that some societal rules could not longer be, this new perspective could be considered as a true social movement.

In line with these ideas it is possible to find some new perspectives well summarized by the title "Prosperity without Growth" by Tim Jackson (2009). It was defined by Le Monde "one of the most outstanding pieces of environmental economics literature in recent year" and, before being reworked as a book, it resulted to be the most downloaded report in the Commission's nine years history when it was published. The main issue is that, in advanced economies, there is substantial evidence that ever-increasing consumption is adding very little or even impeding human happiness. "Human society can flourish within the ecological limits of a finite planet", the task of modern economics is envisioning how.

The main reflection that can derive from all these new movements is that people are becoming more and more aware of what they buy, escaping from the buyer's behavior that was characterizing the society of hyper consumption.

There are some clear benefits that enterprises can derive under these conditions. By referring to the findings of Horváth and Birgelen (2015) that analyzed the extreme cases of compulsive buyers versus non-compulsive ones, the latters are more likely:

- To develop brand trust (i.e. the consumer's willingness to rely on a brand for the execution of certain functions; it is developed through repeatedly quality promise and focus on functional benefits).
- To develop brand attachment (i.e. the strength of the bond connecting the consumer with the brand and affecting brand profitability and customer lifetime value). In case of brand attachment, when a brand is withdrawn from the market, the consumer finds difficult to find a good replacement and to get convinced of the high quality of new brands. It also translates in higher willingness to pay.
- To avoid frequent brand switching and to present brand loyalty (the tendency to look for a certain brand whenever searching something in a product category)
- To buy products that fit their personal image and values. If they buy branded products, it is because of quality reputation and not because of fashion.

Companies could segment customers basing on their level of compulsivity in buying behavior, which could be derived by in-store behavior (as physical brand approach or avoidance

behavior, eye movement) and from tracking actual purchase behavior (as using scanners or online data before buying).

So, if compulsive buyers are more attracted by status and image, emphasizing good quality of brands is particularly effective for aware, non-compulsive buyers. It is important to never underestimate the role of brand loyalty in compensating the investments made to build brand equity.

In the end, more attentive and "slower-pace" buyers may not necessarily imply bad news.

"Organic Consumption"

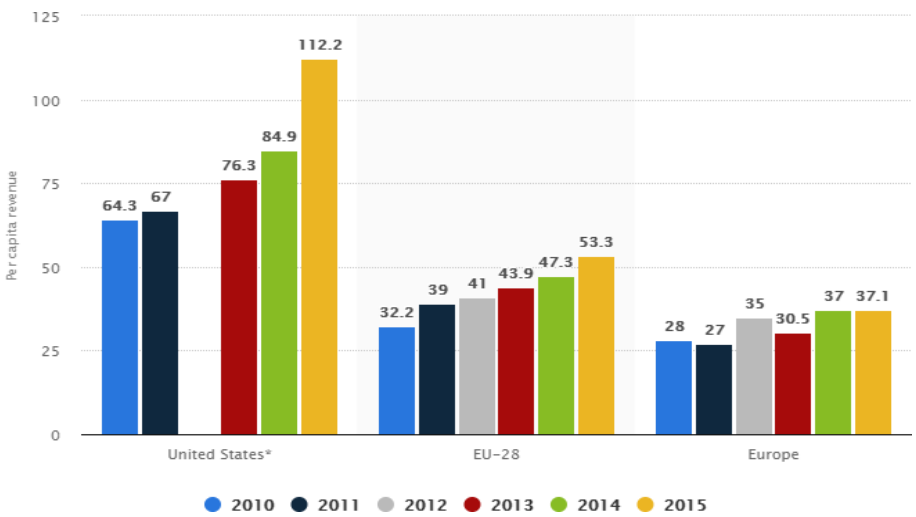
Increasing concern of personal health as also translated in higher consumption of organic products. To understand which product categories have been the mostly affected by the new organic wave, statistical data have been investigated (*Statista databases*). What resulted from the search is that people tend to buy higher percentages of eco-bio products for:

- Food products
- Self-care products (shampoos, shower gels, creams etc)
- House-care products

These findings are particularly relevant if we think that the mobile apps under study have been developed exactly for these markets.

Now if we continue with the assumption that people go green for those products that majorly impact their health, it is possible to provide some useful data.

Figure 2: Per capita revenue of organic food in Europe and the United States from 2010 to 2015 (in euros)



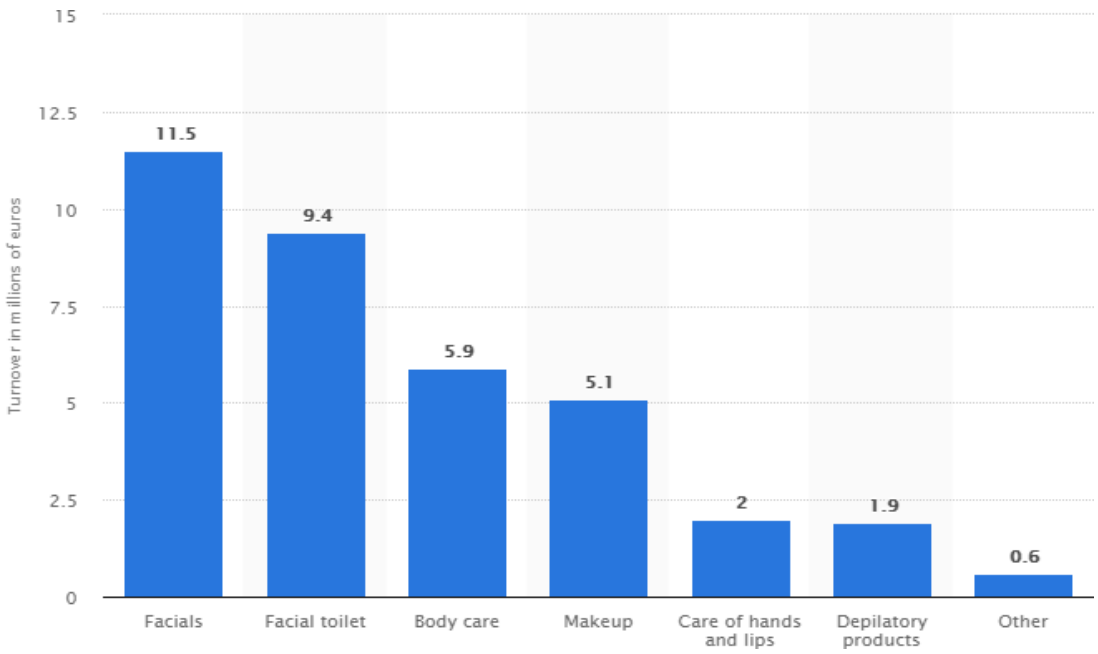
(source: Statista based on BÖLW; FiBL; AMI; 2010 to 2015)

A general increase in organic food revenue over the years is evident; it is even more accentuated in the years after.

As long as specific product categories are concerned, there is an interesting phenomenon that could be noticed from statistics produced by country; an overall preference for organic fruits and vegetables is registered, however the determination of other categories presenting high organic consumption depend on national habits. France and UK report a higher organic consumption in diary products, Italy in cereal products as rice and pasta and Germany in Bread and Baked goods as well as hot drink (Statista 2018). Since organic foods tend to be more expensive, we could hypothesize that people buy them first for those categories consumed more frequently and so, that have an higher impact on their health.

The second type of market affected by the organic trend is the beauty and self-care industry. The world has seen an overall increase of the sales of organic, natural and sustainable products. By taking France as representative country, most of the revenues come from the "facials" category; they are in fact the products concerning the most sensitive and damages-subjected part of the body. Similar tendencies can be found for American consumers, purchasing mainly organic products.

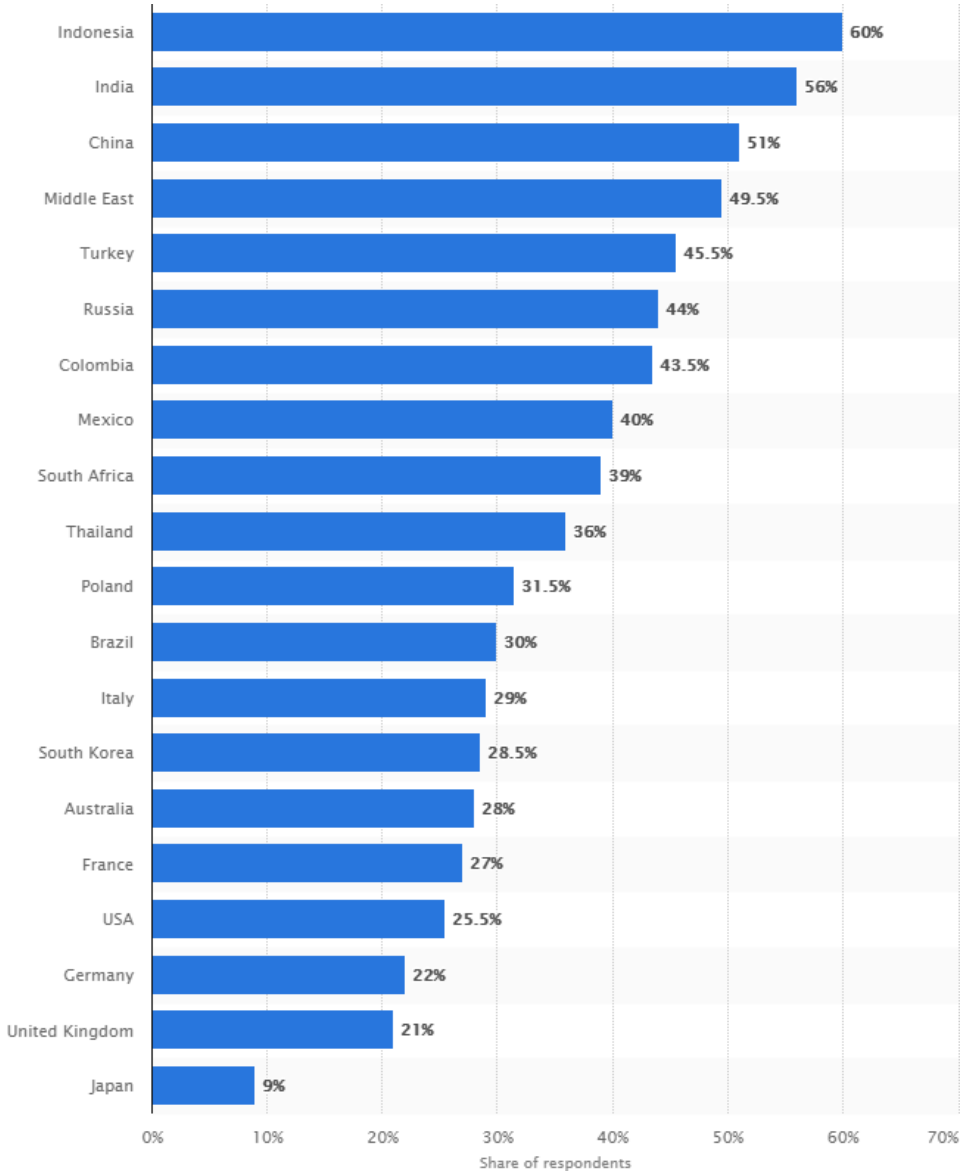
Figure 3: Revenue from organic beauty products sold in supermarkets and hypermarkets in France by product category (in millions of euros) _ Sep 2014 – Aug 2015



(Source: Statista based on France, IRI)

To finish, the graph below shows the demand for “natural or organic” or “eco-friendly” skin care products per country in 2016. An interesting fact, for the purpose of the research, is that the first countries in the graph are exactly those where scanning mobile apps are used very frequently. The phenomenon was also observed by professionals in the sector, who feel the pressure to find an effective way to tackle to the “problem”; at this regard, Estelle Philibert, Retail Marketing Director for the Asia-Pacific region at Pierre Fabre Dermo-Cosmétique, pointed out significant challenges when facing the Asiatic market: since the pharmacy channel has no direct equivalent in Asia-Pacific, the brand adopted a multi-channel strategy (Travel Retail, e-commerce, department store, flagship store) and sold its products (made of natural ingredients) primarily through personalized department stores environment. A big difference between Asian and Western customers is the percentage of clients, paying attention to the product composition: in Asia they frequently use applications on the spot to get information about product ingredients. In these countries skin sensitivity is in fact augmented due to urban pollution and people tend to buy organic products since perceived as more skin- friendly and nurturing.

Figure 4: Demand for "natural or organic" or "environmentally-friendly" skin care products worldwide by country (2016)[1]



(Source: Statista based on Worldwide; Euromonitor; Statista estimates, 2016)

[1] as of October 2016; 20,000 respondents; 15-70 years; 1,000 respondents per market; 70% female and 30% male

3. LITERATURE REVIEW

In the retail world, mobile phones are changing the dynamics between consumers and distributors day by day. On one side consumers are able to be better informed, on the other side distributors can enter in contact with customers much more easily (Demirkan, Spoher, 2014). For sure, this is going to cause some problems to brands. From the consumer perspective, the mobile is becoming a true Shopping Assistant.

Some specific usages have been identified in the literature (Shankar, 2010). Here some examples:

- Shopping list creation
- Information search about prices and product characteristics
- Products comparison
- Purchases
- Post-Purchase activities

In the end, the use of the mobile in a retail-context allows the consumer to be better informed (informational value), to be better organized and to take advantage more easily of deals (convenience value) (Gonzales et alii, 2012). Finally, the consumer is able to share his/her own opinion immediately and to get suggestions from other users in one click. This has contributed to empower the consumer and to re-equilibrate the power-relationship between companies and buyers. It is on the “Informational value” before mentioned that the dissertation will be based on.

Mobile applications are the reason for the “smartphone” success. In 2018, the consumer could count 2 million apps in the iStore of Apple and 2.1 million on Google Play. In 2015, an average consumer seemed to pass seven minutes out of eight of smartphone usage on an app (Fulgoni, 2015).

This has led many developers (brands, retailers or intermediators) to create their own applications dedicated to the retail world. Among the most popular apps in the recent years, we could find the ones for price comparisons, for loyalty programs or the ones allowing self-service.

All apps are likely to redefine the retail scenario. There are a lot of studies made on mobile technologies and their role in the retail environment, but just a minority seems to approach the theme on how individuals make use of these technologies to adapt or transform their behavior in-store.

For the purpose of the research, we are going to concentrate on that type of apps facilitating product comparison and increasing information about product composition. Moreover, since these apps are satisfying both the consumers' need for easiness and ubiquity and the quest for reliable, objective information to make better choice in terms of health, they may help to solve the attitude-behavior gap concerning this field.

Again, a lot of research has been done to understand consumer obstacles in making healthy choices and in reading labels, but very few considered how technology may bring a change to consumer usage of this information and how this may impact the entire purchasing journey and the final choice.

The theoretical part will start by presenting theories about consumer behavior and factors causing attitude-behavior gaps. A second section will focus on the single factor "product information" and how specific variables may affect the type of information search performed (prior knowledge, assortment size, brand name). Finally, the last section will explore the limitations of consumer usage of "external memory" tools and issues regarding claims' skepticism.

3.1 Consumer behavior and attitude-behavior gap

Theories as the Theory of reasoned action (TRA) (Azjen & Fishbein 1980) and the Theory of Planned Behaviour (TPB) have been found as fundamental explanations of consumer behavior. These models start from the premise that individuals make logical and reasoned decisions by evaluating available information before engaging in specific behaviors. However, some factors are going to determine the real performance of a behavior:

(1) The individual's intention to engage in it (determined by the value that the individual assigns to it, the ease with which it can be performed and the views of significant others)

(2) The perception that the behavior is within his/her control. We could say that behavioral control is similar to self-efficacy and it depends on the individual perception on how difficult will be to engage in a specific behavior.

In a nutshell, more favorable is the social support, the person's attitude and the perceived behavioral control, higher will be the probability to perform a specific behavior. It derives that personal skills and knowledge, environmental factors and past experience will influence the type of behavior performed.

The literature identifies two type of factors influencing the attitude-behavior gap when considering purchasing decisions: individual factors and situational factors. Here listed the main ones (applied to a purchase context):

- Knowledge. The knowledge of specific issues and their consequences influences the type of choice a consumer may take.
- Perceived consumer effectiveness: it indicates to what extent the individual believes that his/her choice will impact the reaching of the final aim.
- Subjective norm: refers to the influence of peers, reference groups or significant others. The social environment or, to better say, the "social pressure" felt when making specific choices will impact the final result.
- Availability. People do not want to spend too much time searching for the optimal option. Busy workers' lifestyle negatively affects the amount of time and effort put while doing grocery shopping for example. This is why products should be easily accessible and the choice comparison fast.
- Willingness to pay premium prices. Whenever the adoption of the optimal solution may imply paying a price higher than the average in a product category, the gap may enlarge.
- Product information: the probability of making the optimal choice is undermined by the fact of not having enough knowledge or by not having the access to clear and objective information. In both cases the consumer would end up in a state of lack of control and he/she would feel the burden of processing new information.

3.2 The impact of product information search on purchase choice

When talking about convenience products, marketers spend a lot of resources to establish unique brand connections for products that have very similar functions and characteristics. Ideally, increasing consumer awareness about the presence or the lack of quality differences would affect buying behaviors (Cox, Coney and Ruppe, 1983).

Generally, decisions about FMCG purchases are expected to derive from habitual and limited decision-making processes (ex: food consumption). However, this practice may change under certain conditions, as in the case of "healthy consumerism" or "ethical consumerism" (i.e. consumer behavior in the context of individual or corporate social and/or environmental concerns). What changes in this type of situation is the degree of involvement in the purchase decision and, consequently, the information search performed.

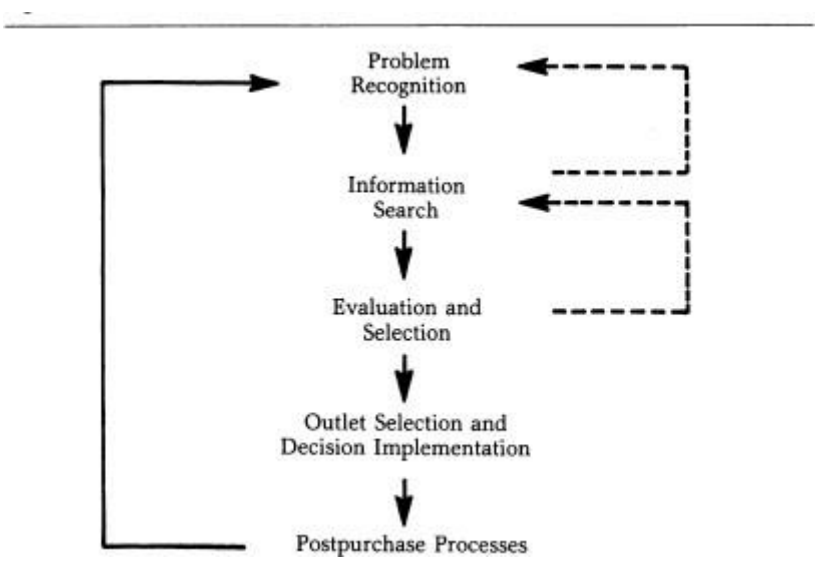
The following section aims to give a deeper understanding of the consumer decision- making process and an overview of the different variables affecting the extent of information search and the probability of reaching the optimal solution.

3.2.1 The consumer decision-making process

As first thing, it is important to define some basic concepts about the consumer decision-making process. This last one is part of the customer journey, which can be divided into five key steps: (1) problem recognition, (2) information search, (3) evaluation and selection of the alternatives, (4) decision implementation and transaction and (5) post- purchase processes. The first three phases constitute the basic consumer decision- making process:

- Step 1: The recognition of a problem that could be solved through the purchase of a product
- Step 2: The search of available brand alternatives for the specific good
- Step 3: The gathering of information to take the best decision: "The process by which the consumer surveys his or her own environment for appropriate data to make a reasonable decision" (Solomon et al., 2006)

Figure 5: Consumer Decision Process



Source: Del I. Hawkins, Kenneth A. Coney and Roger J. Best (1980)

Ideally, we could separate these activities in different phases: ex-ante, during and ex- post the purchase. Though, in case of non-durable goods, the first two phases tend to merge.

We can see that information search is part of the purchasing process and for this reason we could state that they are closely related to each other.

If we consider that the process is supposed to take place on a rational basis, we could assume that the amount of information searched should be determined in order to maximize the ratio benefit to effort. The benefit is seen as the ability to satisfy the individual needs while minimizing the possibility to experience negative emotions (Sheth and Parvatlyar, 1995); on the other hand, the effort refers to the cost of seeking information, the time spent, the cognitive effort as well as some expenditures if encountered.

In reality, what the majority of people do is to use heuristics in order to reduce the cognitive effort and control information flows.

There are some limitations regarding information searched that should be taken into account. By referring to the previous steps, they are:

- Step 2: the greater is the number of brand alternatives, the higher is the probability that a product that satisfy individual tastes exists. However, greater is the variety, lower will be the probability for the customer to be well-informed about price and quality differences and, therefore, to maximize his utility.

- Step 3: the amount of information gathered before a purchase will depend on the type of product and consumer. Benefits and costs to search are likely to determine this amount. For convenience goods, comparative brand information is mainly acquired via experience (buying and trying various alternatives) rather than through search. For expensive products, for which potential savings due to search are high, people seem to undergo a previous search.

All this has main implications for brands, since the consumers' knowledge and perception of brands will depend on repeat purchase behavior: if they are keen to buy and experiment different options, they will probably be informed enough about price and quality differences; if they tend to stick to habits and they show high levels of brand loyalty, they may not.

3.2.2 Information search behavior

In any given purchase situation, there are at least three dimensions determining an information search strategy: temporal, spatial and operational (Fodness and Murray, 1998).

- Temporal dimension: the distinction is made between ongoing and pre-purchase searches. Ongoing searches are related to the continuous involvement of a person and are independent of buying decision; whereas pre-purchase decisions are linked to the information gathering to solve a specific problem and the desire to make a better consumption choice (at this regard it is possible to note that technology developments have allowed to synchronized information search and purchase decision).
- Spatial dimension: internal against external sources, i.e. the ability to retrieve information stored in memory or to obtain it from external sources. Normally, internal search takes places first and then, if results are insufficient, consumers are likely to use external sources.
- Operational dimension: it refers to the sources used. The consumer may use brand marketing-controlled information (personal selling, advertising, packages, product brochure etc), information provided by third-party, independent organizations (providing articles or reviews for example) or direct inspections (derived from observations and inference).

The search for purchase decisions implies a considerable effort in terms of time spent, financial cost and mental effort.

It follows that for low-involvement and routine purchase decisions, as the ones concerning convenience goods, consumers desire to spend little time searching, to consult few sources, to visit one retail store and to consider only a limited number of alternatives. They tend to rely more on external sources and to impulsively decide based on the information provided.

A common practice for brand managers is to identify the type of information that results to be more appealing for consumers and to focalize on that to design better communication strategies. Not only, the type of consumer information search will also affect retailers' assortment plans and labels regulation by decision makers.

In a nutshell, the amount of information searched will depend on:

- The motivational approach: beliefs, attitudes and involvement are variables that are likely to affect the implementation of the task
- The information-processing approach: memory and cognitive processing theory
- The economics of information theory: costs and benefits are weighted when making decisions about search strategies.

3.2.3 The impact of product class knowledge on information search

Another important variable affecting information search is product knowledge. Prior knowledge refers to the information stored in consumer memory and it plays a crucial role in the way in which future information is processed in human minds (Bettman and Park, 1980). In this case knowledge refers to:

- the recognition of differentiating product attributes
- terminology knowledge
- usage situation knowledge.

An important distinction must be done whenever consumer knowledge about a product category is assessed: does the subjective knowledge of the person coincide with the amount of objective knowledge? The first type measures an individual's perception of how much s/he knows, whereas the second one the amount of knowledge that an individual is actually storing in his memory. Differences in the two occur whenever people do not perceive correctly how much or how little they know. Here we have that subjective knowledge depends both on

knowledge and self-confidence levels.

In this sense, perceived self-confidence influences both information search and decision-making strategies. A lack of it should push towards a higher search of information despite the real knowledge level or to a decrease of the purchase intention.

Further elements likely to influence product knowledge would be the amount of purchasing and the usage experience of it.

The relationship between prior knowledge and information search is quite complicated. Some studies arrived to the conclusion of an U-shape relationship (Bettman and Park, 1980): a positive relationship at low-to-moderate levels of knowledge/experience and a negative one at moderate-to-high levels. In case of a positive correlation we could see prior knowledge as an help for individual to reduce the cognitive cost of using information: it may help to formulate questions as well as to evaluate responses and leading to greater search.

On the other hand, a negative relationship may derive from:

- consumers using their own knowledge to evaluate different alternatives (instead of acquiring from other external sources)
- experienced consumers performing the information search more efficiently (and so reduce the time and amount of search) because they know which attributes should be used to discriminate among different brands/alternatives. (Brucks 1985)

Finally, if a consumer has low product class knowledge (related to the number of attributes), s/he is expected to look for further information, but more likely for wholistic evaluations of the alternatives; instead, more knowledgeable ones are supposed to be better able to acquire and integrate information and so to search for specific attributes.

In the end to understand the overall searching strategy, it is good to have an idea of the average subjective and objective knowledge of our customer.

Obviously motivational variables are likely to covary with knowledge and search behavior. In this case we could refer to “interest” and “involvement” in the product. High scores in motivational levels may translate in higher product usage/consumption and higher number of alternatives examined.

3.2.4 Impact of assortment size on consumer information search

In the FMCGs world people face information-rich environment and wide assortments. This may cause cognitive overload, deferral and lower satisfaction in choices made. Under this scenario, it may be interesting to understand the effect of assortment size and of attribute quantity on the content and quality of external information searches.

Dörnyei, Krystallis and Chrysochou (2017) did some studies at this regard, linked to pre-purchase information search.

Whenever we make choices among different product alternatives, we include a number of alternatives (assortment size) and a number of attributes (attribute quantity).

- The assortment size: it is the number of different products that is possible to find in a product category at a given time; larger it is, easier it is for consumers to find the desired products at a low searching cost. Consumers' preferences are addressed and so uncertainty is reduced. However, a wide variety of options is not always beneficial. Increasing the size of the assortment may lead to cognitive overload as well as to confusion, weaker preferences and lower choice probability (Oppewal and Koelmeijer, 2005).
- Attribute quantity: it refers to the number of attributes that defines a product. Attributes influence the evaluation and the choice of the consumer, who compare and examine them when looking at different products. Usually more attributes help the consumer to infer perceived utility. Nonetheless, as always, more information complicates the choice.

The depth of the search is linked to the number of searched products, the number of searched attributes and number of information cues (e.g. price).

In its turn, the number of cues is influenced by both assortment size and attribute quantity, while cue utilization depends on multiple factors as prior knowledge, product category type and marketing environment (Rao and Monroe, 1988). Higher it is the number of cues available, greater will be the amount of resources needed in terms of time and effort to process information. Since resources are limited, some of the product cues are destined to be sacrificed.

As a general rule, a wide assortment and a high quantity of attributes increase the number of cues consumers acquire, but they decrease the proportion of cues used from the available

total number (in our case: higher is the number of products considered, lower is the number of attributes kept in consideration to make consumer a decision among the different alternatives).

Consumers tend to sacrifice those attributes they rate as unimportant when building mental hierarchies. Such hierarchical relationships lead to product attributes categorization in primary and secondary attributes (perceived as less important to infer overall product quality and value). It follows that when the assortment becomes wider, the average number of primary attributes searched remains constant, but the one of secondary attributes decreases. These findings refer to frequently purchased, low-involvement, packaged products in retail shops.

Table 1: examples of potential primary and secondary attributes

Examples of a list of Attributes:

- Price
- Brand Name
- Product description
- Weight/volume
- Country of Origin
- Manufacturer's Name
- Ingredients
- Nutritional Value
- Energy content
- Storage and Usage conditions
- Type of packaging
- Health Claims
- Certifications (Organic, Fair Trade)

To sum up, when the assortment size increases, more products are researched but fewer attributes are considered: the number of primary attributes read remains constant (traditionally price and brand name), whereas the number of secondary attributes is sacrificed.

On the contrary if the number of attributes increases, the amount of products, cues and attributes is not affected.

How could this be translated in a retail scenario?

Starting with the beginning of mass production to the extensive globalization's effects, consumers had access to an always wider number of product alternatives at competitive prices. We could assume that this has led them to more confusion, overwhelming feelings and more "shallow" decisions, driven mainly by primary attributes as price and brand name.

These considerations may result useful for brand managementcategory and retail management. In the first case, the objective is to choose which type of information to emphasize and to decide how to design attractive packages; in the second case to choose how to split product categories in smaller sets around secondary attributes so to help consumers to place more attention on these (for taking their ultimate choice and compete against mainstream brands, as in the example of responsible-and-ethical positioning).

Policy makers may take into account this "manageable amount of information" too, when thinking about how to improve consumers' choices when talking about health- related or sustainability-related issues.

Under the light of my research, these premises are useful to underlie the importance of managing information and to understand how the wide variety offered in the supermarket may affect consumer purchase decisions.

In this scenario, internet/applications provide a fast "self-made" solution for consumers to focus on important attributes.

3.2.5 The effect of brands' name when assessing quality

In marketing, the term "quality" indicates the degree to which a product fulfils its function, basing on the needs of the consumer. Theoretically, it involves both functional and psychological qualities, but in common-sense language (i.e. how consumers perceive it) only the first ones are used to infer it (Box, 1983).

Whenever consumers are not able to determine specific aspects pre-purchase, the consumer has to depend on other sources to infer some quality issues. These sources can be both intrinsic and extrinsic product quality indicators: the first ones are product attributes that the consumer presume to have a connection with quality (e.g. brand- name, price, country of

origin etc), whereas the second ones are external sources of information (e.g. advertising, fellow-consumers etc).

The consumer's inability to have his/her own objective judgement about a product is at the base of the success of marketing strategies built on product promotion based on psychological differences and on quality pseudo-indicators.

Traditionally, sellers have affected consumers' choices through advertising, which represents a source of product information; however, because of its great reliance on psychological properties, advertisement has always been subjected to strong waives of criticism. Despite this, it has played a critical role in facilitating consumer prior search as well as in encouraging it. On the contrary, it can reduce experimentation by creating brand identity (Buder 2014) and strong brand preferences.

If then we consider that experimentation per-se involves risk, which a lot of people tend to avoid, we easily derive why some risk-averse consumers use brand-name to infer quality; they end up perceiving branded-goods as less risky or of higher quality (even if not necessary true). These restrictions limit consumers trials and so their knowledge about inter-brands purchases. The imperfect consumer information about relative brands' quality is one of the underlying causes of price and market share differences.

The inability of accessing information before the purchase leads the consumer to take sub-optimal decision and to use unrelated factors to infer quality levels.

3.3 "External memory" tools and consumer choice

In many situations, consumers have the willing to make the "right" decision, but they end up not doing it or postponing the purchase in the future because of missing individual or comparative information. Buyers have three main sources of information (Box, 1983):

- Commercial sources (catalogues, sales personnel, advertising etc): free but biased since very often used as a promotional tool
- Personal sources (acquaintances, fellow consumers etc): highly reliable but weak in expertise
- Independent sources (informative labelling, comparative tests etc): competent and reliable, but usually less immediate in terms of understanding

From these, consumers drawn specific inferences, which will depend heavily upon the type of data stored in memory and how they are organized; for this reason, memory seems to play a major role in consumer choice.

Important questions can arise whenever research on consumer memory is done: under which conditions do consumers tend to emphasize information on packages? Or when do they use internal memory instead? Which types of information or claims are easier for consumers to remember? (Bettman, 1979).

Normally human memory is distinguished in short-term and long-term, then influenced by individual usage of various strategies for processing information.

In consumer choice, an external memory is usually questioned; this implies that the information is available without needing to be stored in consumer's mind; the external source could be packaging information, buying guides or, to bring it to modern days, Internet.

This happens because people have limited processing capacity to receive incoming information. Moreover, this capacity can be allocated to various levels of processing, which range from simple sensory analysis (colors, images etc) to more complex cognitive and semantic elaborations of the information (Craik and Lockhart, 1972). To exemplify this, studies have demonstrated that consumers tend to not process the semantic information coming from advertisements since the "background" of the ad is likely to divert their attention from the message; the same may happen in case of elaborated/embellished packaging: sensory features are perceived without processing the text in the ad and without relating it to what is known about the product category. The presence of an external memory device can serve to reduce the burden on consumer's internal memory. When making product comparisons, it may be easier to encode information from an external source (ex: from a package in case of clear information) than to try to retrieve and process the same data from internal memory. Moreover, if the consumer knows that the same data is available in an external memory, s/he may not even try to store it internally.

The internal memory is used to internalize such external data, but the burden of processing information is seen as smaller if an external memory exists. Thus, the presence and accessibility of an external memory in any choice situation can represent an important factor in determining the amount of information taken in consideration.

As Bettaman (1979) showed, it is not the rate of information presented per se that requires capacity, but rather the internal processing rate and the task that aims to analyze and transfer

information into memory; if the tasks of monitoring and processing the incoming data are not demanding, high input rates may result tolerable (Bettaman, 1979).

The reason why it is interesting to pay attention to all these theories is that they will certainly have some implications for marketing and all information-based companies about where and how to present the information to emphasize.

Consumers tend to process information in-store when they have little prior-knowledge/experience or when the decision results to be difficult. Nonetheless, even for consumers that do have experience, information provision encourages the comparison of the product with others in the store.

Finally, in-store information provision serves as an external memory for the consumer, allowing him to simply recognize rather than recall many pieces of information and to allow consumers to make more detailed comparisons among brands.

The presentation should be relatively simple and congruent with what consumers know and tailored to the characteristics of the target group. The presentation should be relatively simple and congruent with what consumers know and tailored to the characteristics of the target group.

Again, information search is more extensive if the costs of information search are low, mainly when information is easily accessible or when the expected benefit is higher thanks to information acquisition; this is the case whenever the decision could cause negative impacts on the consumer and/or the product decision can reflect personal values and attitudes. Additional situational factors are likely to impact the extent of the research as context, time pressure etc. It is quite evident how Internet may touch each of these dimensions.

In the following section, the effect of using external memory tools will be investigated.

3.3.1 Usage of product labels

One traditional tool provided as “external memory” are product labels. Despite their final aim, in many have questioned their real efficacy and usage of labels (Cox, Coney and Ruppe, 1983).

Linking it to the health issue, the literature indicates some factors as the most important ones

affecting the usage of product labels regarding product ingredients.

(1) Knowledge and Perceived choice effectiveness

Following what has been reported by Moorman and Matulich (1993) higher levels of health knowledge positively affect information acquisition from media sources (including labels reading). So, in the case of food, having a higher personal nutrition knowledge will cause also a higher use of nutrition labels. In addition, people that are aware of the impact of their food choice on their health are much more likely to check for characteristics of the product (Derby and Fein, 1994). The same would be valid for self - care products: consumers having knowledge about the impact that certain chemicals may have on their health, they are keener to check product composition. In this sense, we can say that higher levels of knowledge and of perceived choice effectiveness are positively correlated to the use of labels. People becoming more knowledgeable about the relationship "purchase choice-health impact", they may be more likely to believe they could take better choice in the future.

(2) Health Status

Consumers' current health status influences their purchasing behavior and leads them to put attention to specific information. To exemplify, a study conducted by Russo and colleagues (1986) reported that people with diet-related disease had more positive attitudes towards the importance of a good nutrition with respect to healthy consumers (the same would be valid for skin-related problems).

(3) Skepticism

Skepticism towards the content claims and the frequency of claim use are negatively related, but they are positively related to labels reading. This implies that skeptical consumers are less likely to use information they do not believe in, but also that they are more likely to search for more detailed information, which they perceive as more accurate.

(4) Display

Some studies have demonstrated how putting a label in front of the package attracts more attention than putting it in the back or as simplified labels are more likely to attract consumer attention on bad ingredients rather than on good ones (Elshiewy and Boztug, 2018).

All the points mentioned before touch the sphere of knowledge. However, consumers knowledge is limited, even less if the person does not have any immediate interest in getting it (ex: a generally healthy person). So, when talking about product ingredients and making the

healthier choice, there is a relevant problem: people do not know. This condition does not allow them to make sense of product composition neither to infer absolute nor relative judgments about product comparisons. It is not surprising if some researchers have pointed out the need to provide a reference point (Barone et al., 1996) and the success of new technologies.

3.3.2 Internet effect on purchase intentions

Many researches have been done concerning the cost-saving practice of "showrooming": people learning product information in physical retail contexts to then purchase the product through an e-commerce site. This type of practices has led to an increased competition among purchase channels, arising the issue of channel cross-integration and the fear of offline stores cannibalization. However, even if Internet use in people life is becoming increasingly important, most of consumer purchases takes place in brick-and- mortar stores, not in e-commerce websites. In 2016 the U.S. Census Bureau reported that, in the previous year, less than 8% of US retail sales were made through e-commerce (regarding major product categories). So, now one good question to answer would be: how could the continuous presence of Internet affect the consumer spending occurring in physical retail context?

At this regard, an important contribution has been brought up by the study "The Cue-of- the-Cloud Effect" (Bhargave, Mantonakis, White 2016). With the term "Cue-of-the- cloud", it is indicated an in-store reminder of the presence of product information online; more specifically, the product information in the "cloud" (server networks that store data) is meant to be cued indirectly or directly in stores.

The concept at the base is that consumers have always used external sources of information to learn about products and services: salespeople, in-store information, product packaging and so on. Now Internet is outperforming all these sources and because of the unlimited amount of information provided is likely to have distinct consequences on consumer behavior. In addition to this, Sparrow et al. (2011) have demonstrated the qualitatively distinct influence of Internet, i.e. the people's habit to offload the responsibility of retaining information in memory to the Internet. In general people tend to not encode and store information anymore, but to look up for information online when it is needed. This is also called the Google Effect: when we know that information is available online, we put less effort into storing that information in the brain; we develop ways to remember where information is stored rather

than its precise content.

This may seem to fall under a negative connotation, however in an information society as ours, having the ability to navigate, evaluate, compare and synthesize online information is much more valuable than having a lot of facts stored in biological memory (Heersmink 2016).

Starting from all these assumptions the authors have researched the impact that a reminder of online information presence would have on consumer behavior; because of the properties of Internet (convenient, accessible and omnipresent) and its role of a memory partner, the chance to use a cue-of-the-cloud would activate a specific feeling in the person: consumers would think to have the possibility to delegate the responsibility to retain product information to the Internet. This would increase people confidence in information access and on purchase decisions. Increased confidence during a purchase decision leads to more positive product attitudes as well as greater product inclinations. Here we derive that if a cue-of-the-cloud increases confidence in information access, it will also increase purchase intentions.

Important findings in this field are: first, people have higher purchase intention when information is cued rather than not cued. Second, people confidence about accessing information and about purchases is higher when the cue is of-the-cloud rather than written as in an information sheet form. Third, confidence plays a highly important role to translate purchase intentions into real sales.

It may be possible to assume that this effect of cue-of-the-cloud may turn out even stronger. Mobile internet totally became an additional channel of search and purchase. Consumers are engaging on mobile Internet to obtain quick answers and information while moving around, visiting websites to find product information and so on. The main advantage is that it is accessible anytime and anywhere, plus phone icons allows consumers to click and initiate instant communications. In this sense mobile internet will also have different effects on consumer behavior with respect to web usage: the mobile channel offers higher convenience (the convenience of obtaining reliable product information anytime-anywhere).

Obviously younger consumers are more likely to search for information using the Internet, which is substituting other kind of traditional search methods with main explanation information quality.

3.3.3 The Impact of virtual communities on consumer trust and choice

When talking about Internet and online searches there is another phenomenon to take in consideration: virtual communities. Since the very beginning of 2000s, Internet has become one of the most important communication channels and, as previously mentioned, the growing usage is bringing some changes to the consumer purchasing process; buyers can get information and share ideas about products and brands, they can contact other consumers who are seen as a more objective sources of information. The concept of a virtual community is very easy: it is a social group, originated in the Internet. People discuss through that communication channel and connect with each other (Rheingold 1993). The difference with other types of communities is that in virtual ones, individuals voluntarily relate to each other because of their interest in one product or brand; plus, space and time barriers to interaction are overcame. Participation in virtual communities helps to share knowledge, spread ideas in a faster way and to provide emotional support to members (Koh and Kim, 2004). The most important outcome when considering online communities is trust, which by definition is made of: competence, honesty and benevolence. More specifically we need to refer to "trust in the community" and "trust in products/brands". From an enterprise point of view, the latter is really important since trust is considered to be a major precursor of consumer loyalty and to favor higher purchase intentions. It is however subjected to the communities' power. This is why over the years, companies have been encouraged to analyze brand and products communities to identify needs and desires of particular groups of people.

Virtual communities are not easy to sustain over time since they require strong consumers' participation. Koh and Kim (2004) have identified some factors to measure such a participation: the effort to stimulate and activate a community, individual's motivation to interact with each other, the value of comments posted and the excitement of messages and responses. But exactly for these same reasons, if a community lasts over time, it is likely to have great influence on its members.

They may be really dangerous for enterprises. Consumers are more likely to listen to other buyers rather than to companies' claims and the traditional effect of negative word-of-mouth becomes thousands of times higher. This is generally called informational social influence, whose extent depends on the credibility of the source and on the network through which a communication is conveyed (Sheth and Parvatlyar, 1995).

We could also assume that the creation of a mobile scanning app may render even easier the access to information coming from uncontrolled sources (and even more powerful ones since professional) and put enterprise under never-seen amount of pressure.

3.4 Research propositions

A consistent part of the consumer behavior research has examined the effect of different variables at the retail point in leading the consumer to sub-optimal decisions. Moreover, several studies have indagated the effect of comparative product information regarding consumer inter-brand choice of a variety of durable goods, but very little is known when considering non-durables.

Starting from these assumptions, three main research propositions will guide the reflection:

(1) Considered the objectivity and comparative dimension of the information provided by these mobile app (about ingredients' impact on health), will this help to minimize the consumers' attitude-behavior gap towards healthier consumption?

(2) How do consumers use the app's evaluations and how these ones will impact their future choices?

(3) Will a "slower" and more rational purchasing behavior affect the traditional marketing tools efficacy?

4. METHODOLOGY

The way the study was conducted involves a first qualitative research, which represents the core part of the dissertation, and a second online survey to get some more general insights.
First, semi-structured interviews with scanning apps users took place. The choice of using a qualitative research method is determined by the willingness to obtain insights and variances in consumers' behavior when being provided with comparative product information thanks to the app.
The prior literature review was written to understand current research gaps and to obtain useful theory to build the right background (for the creation of some hypothesis and for the data interpretation by the researcher and by the reader). The data are there to provide the context and to have an in-depth vision of the issue. The idea is to integrate the data and the theory to then make connections and to expose the phenomenon under a new light. To do so, patterns across observations will be found and coded.
Qualitative researches often imply an iterative process since insights are likely to change part of the assumptions on which the initial search was based on. It must be said that an iterative process is often more desirable than a detailed planning that is characteristic of a well-done quantitative study (Bansal and Corley, 2012). The fact that the research project could have been subjected to design changes as new findings and questions were arising was taken in consideration since the very beginning. Another reason supporting the choice is the common belief that in a qualitative research the researcher's preconception of a phenomenon is less likely to influence and determine the research results than in a quantitative research (Stenius, K, Mäkelä, K, Miovský, M and Gabrhelík, R. 2017). This is particularly useful whenever the phenomenon is recent and innovative.

A qualitative research is useful to answer research questions as "how" and "why" instead of "how often" or "how many" (Eisenhardt, K. and Graebner, M., 2007), so it is understandable why a qualitative design was considered appropriate for the type of research. In fact, even if the number of the scanning apps' users is increasing, there is almost no research made about how this new external source of information will impact the consumer behavior in-store and his/her purchase choice. The respondents-driven research is justified by the lack of existing theory.

The qualitative research was performed through the conduction of semi-structured interviews, optimal method to identify insights about an issue from the participants and users' perspectives. This method offers a good balance between the flexibility of an open-ended interview and the focus of a structured survey, offering the possibility to uncover rich descriptive data from the personal experiences of participants.

After, an online survey was done to get opinions from a larger sample and to offer a more complete view of the issue. The survey was posted in social network groups dedicated to product's reviews and ingredients-related discussions (groups linked to words as "healthy living", "INCI reading", "natural"). During the first part of the survey, people were asked questions about their purchasing behavior and information search habits; then a second part aimed to understand people's opinion about the use of a mobile app in an in-store environment (note: only people stating to use an app to scan products could have access to some questions about the app usage). Finally, since eco- bio consumption is strictly related to the increasing health concern, some questions were done at this regard.

In conclusion, even if the core results are given by the qualitative research some insights coming from a second survey will be reported in the result section. In fact, the integration of them will deepen the understanding of attitudes and motives.

4.1 Data Collection

For the core part of the research, the way in which data were collected was through one- to-one semi-structured interviews. For qualitative research, informal in-depth interviews are often preferred to questionnaires on the grounds that they will provide more genuine information and that they help to handle participants' distress. Finally, anonymity was ensured to respondents.

A lower amount of interviews allows to a much more careful analysis of the same ones. A constant time length as well as the fact of having no other audience while interviewing were necessary elements to avoid variations due to the actual study design.

An interview guide was drafted to make sure to touch five main topics: app usage, motivations, information search patterns, changes in purchasing behavior (including effects on marketing tools sensitivity and on relationship with brands), consumer's feelings.

The method of semi-structured interviews was used for all participants. Questions were mainly open-ended to get lengthy and descriptive answers. Language was simple to make sure all the participants could get the questions clearly. Questions were framed in such a way no strong positive or negative association could have been attach to them.

In case of vague answers further questions were asked to have respondents' validation of the interpretation of their responses. This and the constant comparison to identify key themes were supposed to ensure rigour. Moreover, interviews were all recorded.

Participants were asked to give their availability in a moment when they were alone and far from disturbing factors.

By using the questions classification of Kvale S. (1996), introducing and probing questions were used to obtain information (ex: "Could you describe a typical situation in which you would use the app?", "Why did you start to use the app"?), but also direct questions ("Are there any products you voluntary decide not to scan?", "How do you feel about your choices after the use of the app?").

The online survey was mainly based on closed questions or short open questions. Questions were formulated basing on the following themes: demographics, methods and reasons for information search about product composition, sentiments about the in- store usage of the app, purchasing patterns regarding eco-bio products (frequency, product categories, motivations).

4.2 Data Analysis

For the data analysis, a combination of deductive and inductive methods has been applied. Prior to the coding of the data, the writing down of the literature review about product information processing and potential factors causing attitude-behavior gap has helped to identify some potential key issues.

Transcripts were carefully read to advance code development. Since we are talking about text data coming from interviews, the analytic technique of content analysis was used to get themes and patterns through the classification process of coding and their identification. The main goal of content analysis is "to provide knowledge and understanding of the phenomenon under study" (Downe-Wamboldt, 1992).

Since research literature about this specific issue is limited, conventional content analysis was used to analyze the data arising from discussions concerning usage, behaviors, motivations and feelings. The idea is to avoid preconceived categories and to allow new insights to emerge thanks to the direct information obtained from study participants (Hsieh and Shannon, 2005). For this purpose, questions were formulated open-ended or followed by probes as “why?” and “can you tell me more about that?”. While reading the data, exact words that appeared to be able to capture key concepts were highlighted in the text. Right after, at the margin of the text a keyword able to summarize the idea was written each time. As the process continued, labels for codes emerged, reflecting two or more key thoughts. The number of codes increased every time a data that did not fit into an existing code was encountered. To prepare for the reporting of the findings, exemplars for each code were identified from the data.

As long as the part of the interview dedicated to explore participants’ response to marketing tools is concerned, a different kind of content analysis was used: a directed content analysis. Existing theory helped to create more targeted questions about predetermined categories and to provide predictions about variables of interest (price sensitivity, brand attachment etc). This may refer to a more deductive application.

Research findings are then addressed in the discussion section of the thesis.

The aim of the coding process was to organize data into categories of findings and to identify broad themes emerging from the data. The term “theme” will be used and it will indicate a cohesive category of responses, found across respondents.

Finally, findings regarding the online survey have been obtained thanks to the same method of content analysis (when short open questions were involved, all the answers were read and divided in broader categories) and to the use of the statistical program SPSS to obtain percentages.

4.3 Sample Size and Selection

Respondents for the qualitative research were chosen among volunteers found through a quick online survey, acquaintances and suggested people through snowball sampling. Precedence was given to respondents with whom it was possible to perform interviews in

person.

The main criteria used for the selection were: users of mobile scanning apps (evaluating convenience products that impact health), people that frequently do their own shopping and respondents that could guarantee a minimum of age variation in the significant range (20 – 40 y.o.). The choice derived from the willingness to have a sample presenting different characteristics of a variety of supermarket shoppers.

Before the selection, it was asked to respondents which kind of mobile app they were using to scan products. The mobile app used had to meet the following requirements:

- Allowing to reach the product evaluation with a simple scan
- Presenting an overall evaluation of the product (assigning also a color bullet point basing on the evaluation: red, orange, yellow and green)
- Presenting a more detailed evaluation of the product composition and indicating with a colored bullet point dangerous elements for the consumer health

The research focuses on a small but purposefully selected sample. The logic of purposeful sampling is not to allow a confident generalization from the sample to a larger population, but to select information-rich subjects for in-depth studies, who, by definition, are those informants from which a lot can be learnt for the purpose of the research.

Being it a qualitative research, the number of respondents is much lower than in quantitative study. However, ten interviews were considered enough to cover a certain variation of the phenomenon studied. The respondents covered different social and working positions; this was considered an enriching element since it is likely to cause some differences in the way in which information is read.

Welch and Patton (1992) distinguished different strategies to select information-rich cases. Following the definitions presented by the two authors, the sample for this qualitative research was done first by applying a criterion sampling strategy (i.e. selection of only those people using the mobile app) and secondly by using an intensity sampling (i.e. selecting "excellent" examples, basing on high frequencies of purchase and usage, in the past or current period). Another reason for which highly knowledgeable informants have been selected was to limit bias related to interview data collection: more knowledgeable informants are able to view the focal phenomena under different perspectives.

To increase the level of transparency and to not leave the reader at the mercy of the researcher's intuition alone the method used and the unit of analysis are under displayed:

Table 2: Presentation of the sample considered for the qualitative research

Identifier	Gender	Age	Profession	Marital status	Period-of-usage of the app	Method
I1	F	33	Employee	Married	3 years	In-person
I2	F	28	Employee	Fiancée	9 months	In-person
I3	F	24	Marketing Student	Celibatarian	4 months	In-person
I4	F	25	Housewife	Married	5 years	In-person
I5	F	23	Marketing intern	Celibatarian	2 years	In-person
I6	F	21	Management Student	Celibatarian	2 years	In-person
I7	F	30	Sales Assistant	Fiancée	5 years	In-person
I8	M	38	Employee	Married	1 year	In-person
I9	F	30	Teacher	Married	1-2 years	In-person
I10	M	21	Student (sport-science)	Celibatarian	8 months	In-person

Finally, for the online survey mentioned in the methodology, 129 responses were obtained. The respondents were mainly women aged 26-40 years old; almost equal percentages were obtained when referring to the size of the town of living (medium to big city and small town). The sampling was not random, but purposefully-made since the survey was post on social media groups whose members were interested in understanding products' composition.

5. RESULTS

In a first part, patterns emerging from the analysis of interview data will be identified. As described in data analysis, each pattern will be incorporated into a theme which will be discussed in the following section. The table below summarizes all the "themes" that will be presented; in addition, a short description is associated to each topic to guide the reader in the right direction. After, each theme will be explained in more details, reporting pieces of the interviews in order to justify the findings (the most significant statements have been selected, with the care of trying to use answers coming from all participants).

A second part will be dedicated to report just few significant results obtained from the online survey, ran among people searching for information about products' ingredients and for reviews online (to support the qualitative research).

In this section, I will aim to report the results as objectively as possible. Comments and implications will be further discussed in the "Discussion" section.

Table 3: Challenge themes due to app usage

	Topic	*Sub-topics*
Theme 1	Motivations: Gaining control	(1) Why people started to use the app (2) why they kept using it
Theme 2	Labels Issues	Consumers' inability to (1) interpret or to (2) trust labels.
Theme 3	Limitations	Factors limiting the usage of the app (1) retail context, (2) applicability issues, (3) trust
Theme 4	Information Search	(1) People's prior habits, (2) Pieces of information that they spontaneously declared to be willing to know more about/

		(i.e. potential future improvements for apps)
Theme 5	Impact on purchase Behavior: a reduction of the gap	Changes in purchase behavior and intention due to the app
Theme 6	Impact on marketing tools efficacy	(1) Changes in consumers' reactions to marketing tools/initiatives. (2) Initiatives taken by brands that respondents seen as value-adding
Theme 7	After-purchase emotional state	How people feel about themselves and about what they ended up buying

In order to understand how these mobile apps will impact the purchase decisions of the final consumer, it was asked to the respondents to describe a typical usage situation. First of all, scanning apps to obtain information about products' composition are used for the following product categories: food, self-care products (shampoo, soaps etc..) and cosmetics, pharma. No other product categories have been mentioned in respondents' answers. The majority of the respondents buy these kinds of products in supermarkets, except for two subjects that prefer to shop in fully bio-shops whenever possible. All the apps mentioned report information about product composition and give indications about the dangerousness of ingredients.

Theme 1_ Motivations: Gaining control

All respondents demonstrated concern for their own health. We can see that the increasing consumer attention for his/her own health is confirmed.

I5: "(I use) *Yuka in supermarkets, mainly for snacks and products I know are not very healthy, to know how unhealthy they are and if there are any alternatives available. Actually… I use it also for very common products, but I will only use it once, and then get on with the results I got and try to change my habits. I also use INCI Beauty for cosmetics and hygiene products, in all types of stores (even if I mainly buy cosmetics in supermarkets), because I think it is very difficult to understand the ingredients and their toxicity."*

Two respondents out of ten declared to check products slightly more for the environment than for themselves. They present some differences with respect to others: they are highly committed to change their habits and to shift to green consumption to improve their health and reduce their impact on the environment. They are also more interested in getting knowledge about general issues and to access more detailed information.

I9: (the most important information for me is) "*if there is any chemical that it is bad for my health and for the environment. Maybe even more for the environment, because if I do something bad for myself, it is "my problem"… but I really don't want to do something bad for the world. For example, when I use Yuka I don't really care about the nutritional information, like if it is too fat or too salty, because I already know it and I think it is a bit of common sense; but I look at chemicals and if there is anything that it is toxic. Then… for example… I try to avoid products containing silicone, since the transformation needed to obtain it provokes enormous pollution or, in food, palm oil."*

Across all informants it emerged the willingness to find healthier or more natural products. All the respondents looked at first at the general evaluation. Then to the presence of bad ingredients, but no-one stated to spend time on looking at green ingredients.

When asking about why they use the app, all respondents agreed on the willingness to know what is inside the products we normally buy and on the possibility to be able to check personally whether something is good or not. The app was also seen as a fundamental help to change personal habits in better and to simplify the choice at the purchase moment. In general people feel the power to take rational decisions.

People agreed on the reason why they continue to use the app. However, different motivations have pushed people to start to use it: who was tired to not being able to take rational choices, who did not trust brands and who started for curiosity or external suggestions. All respondents denoted to have not the competences to make the right decisions without the app.

***I3**: "I knew some brands were doing greenwashing. I wanted to check myself and verify what the industry and companies used to tell me in order to have my own opinion and change my habits"*

***I9**: "I remember I read about the app on the Internet and I thought it was a great idea. I really wanted to see what was inside the things I used to buy."*

I6: *"I started using it when I first lived alone and I realized I did not really know anything about the products I was buying"*

I2 *"I started because of some friends' suggestions and because of some articles I have read. I was eating really random staff... I started to pay more attention to my health and to what I was eating."*

I1*: "because I had enough. There are so many things inside products, we are starting to get sick because of their composition… when talking about cosmetics, it is mainly for the environment… obviously also for my skin... they add things to make products "better", but in fact they are not. We are vulnerable and we are changing our nature. And for the food, I really care about my body"*

Other marginal, but interesting usages have been noted as:

- The app as an help to "translate" product ingredients' dangerousness when living or visiting a foreign country (especially if the local language is not known)
- The app as an help to reach fitness goals (in the case in which also nutritional information is reported, as for Yuka)
- The app as a way to re-access product information in the case in which this was reported only on the packaging (which is likely to be thrown away) and not on the container.
- The app as an help to be a "good parent"

I8: *"I started when my daughter was born. For example, Quelcosmetic tells you if there are dangerous substances, basing on your age… babies are really vulnerable and I wanted to avoid buying bad things for her… You know being a good father… and I obviously wanted to buy good products also for myself… I was not able to remember which were the "no" ingredients. The app has helped me a lot. And Yuka helped me to avoid food containing additives for example".*

Theme 2_Labels Issues

There are three main issues concerning information presented on product packages:

- Accessing more information
- Understanding information
- Obtaining true information

The first case refers to people asking for clearer information as well as more details.

I9: "*The app is very interesting because if you click on an ingredient, it explains what's inside, the effect, why it is there…* "

The second case presents the consumer's issue to not being able to understand what some ingredients are and which are their implications. This inability derives from the fact of not having enough knowledge or to be confused by having too much information presented on packaging. People define the possibility to learn ingredients by heart as "impossible" or "too time-consuming"; instead they stated that the app helps them to "translate" ingredients, thanks to the use of colors or symbols.

I6: *"I firstly look if there are some "red signals". I would not be able to recognize all the ingredients alone*"

I2: "*I like to have my own information. I like to read articles about nutrition and things like that, but for sure I would never learn by myself all the ingredients. It requires too much time, so the app is good for that"*

***I7**: "I definitely would not be able to remember all the ingredients or to evaluate them. For this reason, the app is a great help. In this way I have no excuses, I have to make the good choice"*

In case of "obtaining true information", we include the feeling of not being able to trust what companies tell and the importance of having true and objective information. All these scanning apps are seen as a sort "allies" in helping to make the right choice. Because of the scandals happened over the years, some people have difficulties to trust brands.

I9: *"I don't trust what's written on packages. They hide a lot of things behind really complicated information. Moreover, I cannot read them… for this reason I don't trust the labels."*

A tricky question has been asked to respondents; they were obliged to choose one and only product information source among the following alternatives: the app, a sales person and an information sheet/packaging. Some respondents hesitated; however there has been an unanimous choice in selecting the app. Three people took in consideration the sales assistant but just in case of a specialty store. The main reason behind the choice was the app "Independence".

I9:" *I would say the app. Because the app… maybe I am wrong… it has no interests in lying… the sales person may say things just to sell me a product… the same for labels. I*

would trust the app because of its "independence"… the app should be independent.. I find this important"

At this regard an important question has been asked to respondents about what their reaction would be if they would have discovered that the app they are using is managed by a specific brand. Seven people out of ten used words as "*disappointed*", "*angry"* and "*betrayed",* because of a loss in terms of objectivity and independence.
The remaining three showed no astonishment or indifference, denoting however a decrease in trust due to the condition of not being sure to have unbiased information.

Theme 3: Usage Limitations

Firstly, the usage of the app seems to slightly depend on the context. All respondents declared to use the app in supermarkets; however, their behavior may change when in smaller or specialty stores. Two very different reasons have been pointed out thanks to the interviews.

- In a first case, the consumer does not use the app, because she feels she does not need to. Both respondents I1 and I9 went through radical changes in their purchasing behaviors in recent years, switching to full organic consumption. They are also the ones showing the highest commitment to preserve the environment and to take more eco-friendly solutions in general. For this reason, they are more likely to shop to local, little shops which they fully trust whenever possible. In spite of this, it happens that they have to shop in normal supermarket due to time constraints.

I1: "*I prefer bio-coop for food. In general, I stick to certain smaller shops where, for example, I can bring my own tissue bag. I go there because I am "sure" about the products I am buying, whereas in supermarkets I am not. For this reason, I try to avoid them or I use the app to check products*."

- in the second case instead, the consumer does not use the app because she/he does not feel comfortable to. In this situation people feel to be observed by the sales people or by other customers.

I4: ***"****Sometimes I feel a bit uneasy because I take some time to choose or because it may seem I want to compare prices with other points of sale****.*** *Except for this, It (the app) helps me to make the right choice."*

I3: "*However, if I go to a specialized shop/specialty store I won't be so comfortable to use it (the app) because I would feel spied by the sales people. While in a big supermarket nobody would watch at me and I would use it.*"

Further limitations implied more practical features as the need to increase the number of products rated in the apps or to improve internet connection inside retail points.
Lastly, because of the high amount of variables concerned and the high level of uncertainty, some respondents keep to be a bit skeptical while choosing to trust the information coming from the apps.

I3: "*I rely a lot on the app, however if I want to buy a cream that I think it is a good, I would trust my feeling toward the brand. Sometimes the product may be good even if not 100% perfect. I like to have my own opinion*".
I9: "*… in any case I don't trust anything that it is on the app… this is why I tend to buy organic products and cook everything…. So, to be sure about what I am eating and what I am using on myself*".

Theme 4_ Information Search

Most of the respondents have shown enthusiasm for the way information is presented on the app. They value the easiness and the immediacy in getting and understanding it.
I4: "*The app is so convenient in terms of use, because you can use it whenever and wherever you are, much easier than simply searching on Google*"

In addition, everybody agreed to rely on the app to detect bad components because they would never be able to remember them. Respondent I4 also mentioned the possibility to "save" the information she may need (ex: putting a comment on the product card).
Basing on the answers, the majority of the respondents did not do any extensive research about product ingredients before: some people stated to have tried to analyze products, but with little success. In this case, the enormous benefit of the app is the time-saving aspect, by displaying all information needed in one click.
I9*: "yes, I started with a website... I don't remember the name… but it was less convenient*

because you had to enter every component written on cream containers for example… so it was a very very long process".

For the second type of people, who started to use the app mainly for curiosity, the app has pushed them to search also for different kinds of information with respect to the one they were used to look for. In fact, when thinking about convenience goods, some respondents stated to have used Internet search to get more details about the brand (ex: the values), the product benefits (ex: for shampoo) or about general topics (ex: nutrition themes) rather than single ingredients.

I4: *"I read some articles on Internet or watch some videos about health… For example, regarding the effects of sugar and the addiction that it provokes… I discovered that sugar can appear under a wide variety of names on packaging… but I didn't really search for ingredients in single products"*
I3: "*I used to search for things concerning the brand… as brand values… or the benefits of the product... but not really for ingredients or composition*"

It appears that the ease of using an app has helped in facilitating the process of people approaching new kinds of information. Not only, as a consequence of this, people show the willingness to get even additional knowledge about other features. The most mentioned were: country/place of origin, certifications/labels (regarding ethical production) as well as quality of the ingredients and of the overall production system. One creative solution has also been proposed by advancing the idea of substituting pre- made products by suggesting home cooking recipes and ingredients, in collaboration with cooking websites.

I9: *"I think I would also like to know where the product comes from. I don't want it to come from too far away, I prefer local. Or I would like to know where certain ingredients are grown… if naturally or in a laboratory. I don't know… but this is the kind of information I would find really useful. It would help to know if the product is really sustainable."*
I5: "*However, I think Yuka could be better if it rated the sourcing of the products and their sustainability too. For instance, it could give a warning when a product is not ethical and offer fair trade alternatives. I guess in the future (but that is a whole other level), it could also offer recipes or ways to make the product you're looking for. For instance, if I'm going to buy cookies that are not healthy, it could offer me a recipe with natural and organic ingredients, as the*

ones you can find easily online. It could make a partnership with online cooking websites".

Theme 5 _ Impact on Purchase Behavior: a reduction of the gap

The fact of having access to the information provided by the app in an in-store context has certainly impact the decision-making process and the final choice of the consumer. There are some slight differences in the way in which the app is used to find the optimal choice: who scan the products in order to choose between two alternatives and make right trade-offs between quality and price, who purposefully scan products that s/he loves and knows are bad in order to get immediate healthier suggestions and who scan a big quantity of products to be sure to find the best option (and usually to stick to it in the future).

The fact of receiving automatically better-scored alternatives was mentioned as a great value-adding feature since it speeds up the process and avoid the need to scan all products.

When in presence of "red or orange bullet points" or bad ingredients in general, people affirm to not buy the product.

I9: "*If I see something red or orange, I don't buy the product***.** *I started to buy full organic too. They haven't bad ingredients and it is better for the people that are producing them and the entire industry."*

I4*:"I remember once… I was with a friend and we wanted to cook dinner at home… I was about to buy some sliced ginger at the supermarket… my friend scanned it and we saw there were many red points… we put it back where we found it"*

However, some flexibility and variation in behaviors is noticed when the consumer is highly price-sensitive, as in the case of respondent I10 (student, who weights price and quality 50%-50%) or when a really strong brand attachment is shown, as for respondent I4 (who really loves the L'Occitane brand, she has worked for them, she knows it is a good brand even if not perfect and she has no intention to scan their products or to stop buying them).

Except for the two respondents that have shown the highest commitment and have changed their consumption towards full organic, each person admitted to buy certain products that s/he is aware are not that good (because s/he has scanned it once or because s/he already knew it). Though, some of them stated to consume/use them less frequently and to have found a substitute for daily consumption.

I4: *"Sure. Nutella for example. I know it is bad and it destroys the amazon rainforest. I actually scan it once… it was bad, but I was aware of it. I still buy it… However, it is true that I buy it very rarely and for particular events. For "daily" consumption I found a substitute… I actually started to prefer it to Nutella, since I am getting used to the more natural taste"*.

Finally, another habit is worthy to be mentioned. Even if the app seems to allow to make healthier choices in less time and to facilitate products comparison, the effort- minimizing nature of human being tends to place some limits to the app usage. More than one person stated to use a lot the app at the very beginning, to then reduce the usage frequency over time and to rely on it just when switching to a new product.

I9: "*I think using the app is a bit of a time investment at the beginning… but then it becomes better and better… once a product results to be bad, I exclude it from my list… sometimes it has been hard, because it had happened also with products I used to love… but I gave up on them anyways. I also admit that lately I don't use the app that much, because I have developed some habits and found out my favorite products ... or I have switched to 100% natural methods… but if I need to buy products that I have never tried before, I use the app*".

It seems that the app will not necessarily increase consumer product knowledge. In fact, very little attention is paid to green-labeled ingredients (only the student in sport sciences seems to look at details regarding amounts of nutritional levels in Yuka in order to reach fitness goals). However, what consumers appreciate is the ability to spot the healthiest option within the category and to distinguish among brands. In this sense, the app allows the consumer to compare two alternatives on the base of the same comparable information.

I3: ***"****yes, I definitely care about more attributes… So… In case of food, it helped me to discover how bad some foods are for my health yes… In case of cosmetics or self-care… I think it helped me to distinguish among brands more than among products… but actually even for food… I am thinking about cereals … there are some cereals that are good, you just need to discover which ones."*

Theme 6_ Impact on marketing tools efficacy

Important findings have been found regarding the attributes taken into account when purchasing. The "priority ladder" was definitely subjected to some changes (i.e. how important any attribute is with respect to the others to infer product value).

All respondents agreed on paying more attention to ingredients quality, some to check for labels and certifications. At the second place we find price, whereas brand name has definitely lost great part of its influencing power. Even worst, two people stated to trust even less big, well-known brands and other two people almost never buy products of commercial brands since they have turned towards full organic.

I10: "*I feel much more satisfied with my choices. Before I wasn't able to say if one product was better than another one… I assumed it basing on the brand only. I was not able to understand all those complicated ingredients… now thanks to my studies and the app, it is easier for me."*
I10: "*Since I am a student I still pay attention to prices. However, I go for the best trade- off price-healthiness. The brand is not important anymore"*

I8*: "I have stopped to buy main commercial brands, I pay much more attention to ingredients***.** *Actually…at the beginning it was "funny" to see how famous brands had very bad scores"*

I4: "*I pay more attention to the composition and definitely less to brands. I still care about price, but if it is just a bit higher, I would definitely go for the healthier option. For example, I bought a butter last week… I didn't know the brand… Actually, I don't remember it right now either… But it had a much better score than the other alternatives and so I bought it even if the price was a bit higher*."

In line with this, the great majority seems less sensitive to advertisement, since they care more about "*what products contain rather than what they promise*"; in this sense the app has helped to focus on different aspects and to reduce advertisement influence too. Finally, price promotions. All respondents showed sensitivity towards price reductions; however, they were asked how they would act in a very specific scenario: in front of two unknown products, which one would they choose between one in price promotion but with a low app score (and at a lower price) and one with a much better app score but at a higher price. The common answer across all the interviews was that, despite the attractiveness of the price discount, the higher

score product would be chosen. Just two respondents mentioned the possibility to cede to the price promotion from time to time.

I9*: "I think now I put less importance to price. Now, with the app, I am more likely to buy something more expensive... because I know it is better for me and the app shows me that… I am more ok with that. I really don't care about the brand, but about ingredients and about how the product was made. Of course, If I can choose between two good products I would choose the cheaper one."*

Another interesting insight can be obtained from some perspectives regarding promotions performed under product bundles. Seen under an app user's point of view, this kind of discount is not particularly attractive, since it impacts negatively the app usage. If packed together, the user is not able to scan the products in the middle and verify their composition.

I6: *"I still care about price discounts, but I would not buy a product with a really low rate. Especially… I think I do not care anymore about promotions selling products in bundles… you know when they sell together three shower gels of different flavors for example… they may have very different evaluations… but since they are often packed together, sometimes you cannot scan the ones in the middle… If you buy them, very often you end up bringing home staff you do not need… and even worst, it may be bad staff you will never want to use."*

Now, focusing on brands that were able to pass the "scanning test", we can say that:

- some brands derived great benefits from the scanning app since they have become known by certain customers only thanks to the app

I6: *"I like to change brand quite often, so not exactly… thanks to the app, I discovered many good brands I would have never considered before… or that did not look appealing at all to me."*

- some respondents find now more time-consuming the process of identifying potential alternatives. For this reason, they are more likely to stick to certain products and develop some habits.
- In general, the fact that the consumer is sure that the product has good ingredients, guarantee higher goodwill towards the brand.

  Some respondents pointed out certain practices that lead them choose one brand instead of others and increase their loyalty. For example, between two well-rated

products a good packaging seems to help the choice (even better if it looks more nature-friendly). In addition to this, some initiatives concerning CRM or oriented toward transparency may bring value.

I3*: "If I am being loyal to a brand, it's because the products have a good efficacity… but then some brands are better than others in the sense that they are more caring about people and the society… or if I am in front of two equally good products and I know that one of the two brands was involved in…. a certain scandal for example… I would choose the other."*
I4: "*I am thinking about Innocent… I knew the brand before but I didn't know if it was especially good or not. Now I know it's good … the packaging is nice and the taste Is good… or in general if the brand has a sustainable packaging I would choose that one"*

I9: *"There are few brands that I know and I really like. For example for cosmetics... there is one brand "Comme avant"… a small factory in Marseille…I really love them because they are quite transparent… they explain everything they do and if you send them a critique, they quickly answer you back by explaining you why they had to do a certain thing or what a certain ingredient is etc… If I could not find their products anymore I would certainly be really sad*"

I6: "*I do not know if it is the right answer… but I am thinking at the brand "Lush"… their products are good for me and I like that they are so public with what they do in terms of sustainability… it makes me wish that other brands were like that as well… it completely draws me to them"*

Theme 7_ After-purchase emotional state: Satisfaction

In general, all respondents declared to be more focused and aware about what they end up buying as well as to be less influenced by other factors as packaging, advertisement or situational ones as time pressure. When it was asked to them to think about how they would feel about their purchases after the use of the app, the feelings were very positive:

I6: "*I think… reassured. It allows me to not take impulsive decisions or decisions based on attractive packaging only. I also discovered many good products at affordable prices. Buying the healthier choice doesn't always imply spending a lot of money".*

I6: "*I am more confident in my purchasing decision. I am more relaxed since I am not afraid to buy something that I didn't want just because of the pressure derived from a crowded supermarket"*

More than one person cited the feeling of being "at peace with myself" or to feel less guilty.

I4: *"I feel less "guilty" if I check with the app. I am more satisfied with what I buy. In supermarkets there are so many products that sometimes I feel overwhelmed. Moreover, it helped me to discover convenient bio products, especially now that even regular brands have their own organic version. Even in apps as Yuka, even if it is not focused on bio/organic, bio products usually have much higher scores"*

Everybody appreciated the possibility to make objective evaluations and so they ended up feeling more confident about the goodness and safety of their purchase decisions.

Results from the online survey

In this subsection I will report some of the results obtained from the online survey just as a support for the previous ones; having a bigger sample allows to make some generalizations and to support why the findings of the qualitative research should be considered interesting. Still, the sampling was purposefully made, so the results concern people already presenting an interest in getting information about products' ingredients and their impact on health. These participants also shown propensity in buying eco-bio products but with different frequencies, who from time to time and who always, in the following categories: food, self-care & cosmetics, home-care (rarer). The majority became more sensitive to organic products since a period included between two and five years and more for health reasons than environmental ones.

The first table report the reasons why people search information online for the types of products before mentioned.

Table 4: Why do you search information online?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		23	17,8	17,8	17,8
	Ad/packaging distrust	9	7,0	7,0	24,8
	More information	47	36,4	36,4	61,2
	Reviews	29	22,5	22,5	83,7
	To get to know the producing company	1	,8	,8	84,5
	To save time at the supermarket	20	15,5	15,5	100,0
	Total	129	100,0	100,0	

Since motivations were explored through a short open question all the answers were read and analyzed in order to class them under five main categories. The labels attached to the various categories mean:

- *Ad/Packaging distrust*: the category includes all the answers indicating a feeling of distrust about what was written on a product packaging or what was communicated by an advertisement. Example: "*I don't trust what is written on the packaging", "I do not want to buy bad products just because they are on trend*".
- *More information*: the category includes all the answers expressing the willingness to know more about how and of what products are made or to get an help to interpret given product information.
- Review: the category includes all the answers indicating the willingness to have other external-parties/consumers' opinions, so to know more about product post-purchase effects.
- *To save time*: it includes answers of those people mentioning the risk to buy something that is not valuable due to the pressure felt in-store.

Then, people's opinion concerning their attitude towards product information presented on product packaging was surveyed. Again, all the answers were grouped so to identify three main attitudes.

Table 5: What do you think about product information on packaging?

		Frequency	Percent	Valid Percent
Valid	(1) Distrust	61	47,3	47,3
	(2) Difficult to understand	27	21,0	21,0
	(3) Fundamental	41	37,9	37,9
Total		129	100,0	

Category 1: around 47% of the respondents presented a feeling of distrust: blaming false claims, declaring the need to have clearer information *("they give us information about ingredients, but no about the quality of the ingredients themselves", "sometimes there is a claim, but than a little asterisk reveals you the opposite", "they are misleading"*).

Category 2: it includes all those people stating that even if information is presented, they do not find it useful since they have difficulties to understand it *("I am completely lost without the help of an app that helps me to interpret ingredients", "labels are really long, I am not able to understand them, so I don't read them").*

Category 3: it includes those people stating that labels are fundamental.

As previously seen, people become less price-sensitive when they have the tools to make objective product comparisons and to assess immediately (at least at a certain extent) the impact of their choices. As a proof of this, when respondents were asked if they would have been ready to pay more for a product of which they could have objective information about the ingredients' quality, only the 3.1% said no (NB: it is important to remember that this percentage refers to a sample made of people already interested in obtaining information about product composition.)

Table 6: Higher willingness to pay

Would you be willing to spend more money for a same product, if you could be sure about the quality of the ingredients of it?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	4	3,1	3,1	3,1
	Yes	72	55,8	55,8	58,9

	Yes, a bit more	24	18,6	18,6	77,5
	Yes, but just slightly more	29	22,5	22,5	100,0
	Total	129	100,0	100,0	

Assuming that some people may not feel at ease to scan a product at a retail point, respondents were asked If they would be willing to use an app and if their attitude at this regard would change in the case in which the scanner would be provided by the retailer. To provide relevant answers to this last point, the data were obtained through cross-tabulation.

Table 7: App usage in a retail context

Would you use a mobile app to scan a product before buying it? Do you think you would use the scanner more easily if provided by the retailer/supermarket? * Crosstabulation

			Do you think you would use the scanner more easily if provided by the retailer/supermarket?				
			No	More No than Yes	More Yes than No	Yes	Total
Would you use a mobile app to scan a product before buying it?	Indifferent	2	3	1	4	3	13
	No	1	4	1	6	1	13
	Yes, I have already used it	1	2	6	22	30	61
	Yes, I would be interested in trying it	1	2	3	16	20	42
Total		5	11	11	48	54	129

We could see that almost the 80% of the respondents had a positive attitude towards the usage of an app; as well, the usage probability increased whenever the retailer was meant to provide the scanning solution (79% of the respondents assumed an easier adoption due to the retailer intervention).

To have a further feedback about motivations to use a scanning app, one question about the main benefit deriving from it was asked to only app users (a quarter of the sample):

- It facilitates the decision: *"it helps me to reject some products", "it is easier to choose",*

"It helps to make more rational decisions and to differentiate among brands", "it helps me to make the right choice"

- It translates information: *"I know what I am really putting on my skin", "it is easier to know if a product is good, acceptable or bad (thanks to the colors). There is no need to have absolute knowledge of all ingredients' name."*
- It helps to discover new brands: "*It helps to have a broader vision of the offer, helping emergent brands that have high-quality but that consumers don't know"*
- Immediacy and speed

6. DISCUSSION

6.1 General Discussion

Basing on the results of the qualitative research, it possible to assert that these informative apps seem to affect the customer journey regarding the information search, the evaluation and the selection of the alternatives, the decision implementation and the post-purchase appraisal. In this section, results will be interpreted under the light of the theories presented before.

Effects on Information Search

As previously mentioned, information strategies are mainly determined by three dimensions: temporal, spatial and operational. Prior to the usage of the app, the type of information search for these product categories (food, self-care) was likely to fall under the following scenario:

- Temporal dimension: they performed almost no pre-purchase or on-going search
- Spatial dimension: they did not retrieve any information about product ingredients from internal sources neither from external ones; they had very little knowledge about substances' effect on health (one respondent is getting it now thanks to his studies) and they were not able to interpret labels about products' composition.
- Operational dimension: they distrusted external sources provided by brands (advertising, packaging…) and third-party entities were not providing any effective solution to access information in-store (you could find websites or search-per-ingredient solutions, not efficient to use)

The result of this prior-app situation was that people ended up taking "random choices" based on packaging/brands/feelings. Consumers with higher commitment found alternative solutions as avoiding supermarkets as much as possible and going only to specialized shops as full-bio stores (obviously not efficient in terms of time).

In general, people using the app stated to be much more aware about their purchases and to be more satisfied with their choices. For sure, they are making healthier choices with higher frequency.

The three main advantages associated to the app were: convenience in terms of usage, objectivity of the information and support to interpret product composition.

By relating respondents' answers to the theory we can say that:

- The immediacy of the app has the effect to enormously lower the costs to search and the cognitive effort. Since the amount of information sought is determined by the maximization of the ratio "benefit to effort", it is clear that the app is able to increase the benefit (seen as the ability to satisfy individual needs) while keeping the effort value low. In this way people are keener to consider higher amounts of information while purchasing something.

  Not only, thanks to the "translation" role of the app, indicating just with a color which ingredient is bad and which is not, consumers feel they have higher behavioral control and the attitude-behavior gap towards healthy consumption is reduced.
- The app helps to face the issue of brand variety at a retail point. In principle, higher is the number of brand alternatives, higher it is the probability to offer a product able to satisfy the consumer's needs; at the same time, lower is the probability that a customer will make a well-informed decision and maximize her/his utility. On one hand, the app facilitates products' comparison allowing people to consider multiple brands, on the other hand it helps them to base their choice on an objective evaluation and to reach higher rationality.

  It reduces time-needed and it helps to make sense of the information provided by companies. As a consequence, people gradually restrict the number of brands considered; as a proof of this, respondents said that, once discovered a product with a very bad or toxic composition, they would exclude it from their future shopping lists. Those under time pressure or presenting lower involvement, switch directly to recommended alternatives: several people pointed out as great value-adding the feature of alternatives suggestion, when provided by the app.

The respondents confirmed that the presence of an external memory device lowers the burden of information on consumers' internal memory. Despite the habitual use of the app, no one has stated to have memorized the information presented about the ingredients; instead, very common is the practice to just rely on colors to distinguish between safe or dangerous ingredients (sensory analysis is one of the simplest levels of information processing).

Once overcame the obstacle of knowing if one product is dangerous or not for the health, several respondents shown the interest to analyze other kind of information: country of origin, fair trade or other ethical certifications, indications about the method of production and so

on. This finding is in line with the principle that information search is more extensive if the costs of information search are low; Scanning apps' creators should take into account these suggestions for future content developments.

Trust and Confidence

The importance of getting objective and non-biased information to make evaluations emerged to be the requirement number one to use any kind of scanning app. This means that any company considering taking part to the development of a competing app should take great care. Respondent have shown very negative reactions to the possibility; even those presenting more neutral responses stressed the importance of having objectivity. If not, the level of trust in the app would be affected.

Trust is what seems to make respondents confident about their purchases; higher confidence is than desirable, since it helps to translate purchase intentions into sales. One really attentive respondent pointed out the fact of having the possibility to save products she really liked and to have access to information about the product even in a second moment (particularly useful when information is given in the outside packaging of the product, which is likely to be thrown away, instead of being put on the container). This could be related to the cue-of-the-cloud effect and identified as a key post-purchase moment when the consumer is able to obtain re-confirmation of the choice made.

Last point, these apps are bringing at an upper level the concept of online communities that have been created since the early 2000s. By not being able to find other official solutions, people have built these communities to help each other, to read or watch reviews of other consumers (about ingredients contained in a shampoo for example). The trust developed was mainly derived from the principle that other consumers would not gain any benefit from cheating others. What was missing was an immediate applicability at the point of sale of the information received. Some scanning apps still let people leave comments, however one user does not have to go through them to have an immediate evaluation of the product.

Factors influencing the purchase decision

Finally, we could infer that respondents' primary attributes (i.e. the most important to infer overall product quality and value) changed because of the usage of the app: as noted by all of them, the first thing considered is the goodness of ingredients, followed by price. Nevertheless, the fact of providing comparative product information has increased consumer willingness to pay and reduced sensitivity to price reductions/promotions. The brand name

has definitely lost positions in the respondents' mental hierarchy of attributes; the type of packaging or the presence of some further certifications seem to outperform the brand name effect too.

Marketing initiatives showing greater transparency and care for the world seem to increase consumers' goodwill for a specific brand, since the claim of higher performance is not a discriminating factor anymore.

6.2 Managerial implications

If we assume that these technologies will be widely adopted and developed, these findings will have significant implications for enterprises and retailers.

- **(1)** Companies should move towards "clean products" as soon as possible. In fact, not appearing acceptable at the first scan, may be really dangerous: several respondents declared to eliminate the product directly from their choices and to not go back for re-checks; the consequences are even more relevant, if the fact of encountering several bad-rated products under the same brand name is used to infer the validity of the whole.

I8: *" … it is true that the evaluation should depend more on the single product rather than on the brand… sometimes it happens that the same brand may offer a product that is good and one that is very bad… but for shampoo for example… If I scan three shampoos of the same brand and all the three had a bad score, I tend to switch to another brand without scanning all the options…"*

If this happens, the company may be obliged to invest heavily to advertise the formulation of a new product or to start from the beginning under the name of a new brand. In addition, there is also the consumer's tendency to develop habits and to stick to specific products over time, so to limit the use of the app only when switching from a product to another. This also implies that changing a bad formulation or meeting some consumers' requirements too late may not be effective anymore: the delay would lead to a definitive exclusion of the product from the person consideration set. If we go further with implications, being excluded from the consideration set of a consumer translates in lower sales volumes; a low amount of sales decreases the

company's power in retail marketing and, in more extreme cases, the exclusion from the retail scenario. It may seem dramatic, but it is just another exemplification of what may happen due to the rise of empowered customers.

Not only, brands should be fast enough to detect the pieces of information that soon may solicit consumer interest and that may be included in apps' analysis (some applications in the self-care industry already rate substances basing on their effect on health and environment too).

Finally, knowing which attributes are considered important by the consumer has fundamental implications on the type of information a brand manager may decide to highlight on the packaging or in advertisements for a certain product; as well, retailers may decide to organize and display products in-store basing on secondary attributes.

- **(2)** Having a good product is not enough. Cleaning the formula of certain products may change the aspect or lower the performance of them (it could be the expiration date, the color of a food, the smell of a product …). All things that may appear unusual to the consumer and create potential dissatisfaction.

I10: *"… I was in a supermarket… a brand was testing a new type of sliced ham with low amount of nitrates… It was easy to note it because of the green packaging… people were looking at it very suspiciously because it had a brownish color… Now, I know that it was just the "real" color of ham, but at the time it did not look appealing at all… I remember I would have never bought it "*

To not make consumers suspicious, it is important to inform them about these changes, deriving from a modification in product formulation. It is impossible to count on the fact that consumers will inform themselves. The accountability for this could be taken by different players: for example, it may be done through information campaigns, through in-store activations made by retailers/companies or through the provision of additional information cards in collaboration with the app.

- **(3)** Consumer disregard towards the brand variable is changing the competition scenario.
  (1) Some brands derived great benefits from the app usage, thanks to which they were able to enter the consideration set of the buyers.
  (2) Some brands are likely to experience higher re-purchase rate due to increasing switching costs for the customer, who may need to spend considerable time to find

valuable alternatives.

(3) Big retailers are clearly going to exploit this moment of weakness for well- known brands to produce and offer their own alternatives under private labels (without even considering the power they derive from managing loyalty programs and possessing data about their clients).

In many cases, brand loyalty will not prevent companies to suffer from this increase in transparency. Some respondents have emphasized their satisfaction in discovering the high value of private labels, which normally are also sold at a lower price. Just to provide an example, in France, the supermarket chain Franprix is aiming to formulate 140 new "clean products" (natural, without additives, made-in-France etc…) by the end of the year 2019 and to raise the percentage of sales made under private label from 16% to 35- 40% (Capital reportage, Feb 2019). Other in-store initiatives have been tested as the "Greentest", nitrates detector to test the quality of fresh foods (Franprix, Paris 2018), so nothing would prevent retailers to provide new technologies in the future. Even some iconic brands may suffer from this revolution: if not completely abandoned, some consumers have shown the tendency to find better substitutes for daily consumption and to limit the usage of certain products to special occasions.

- **(4)** The change in the attributes hierarchy when making purchase decision will impact the effect of traditional marketing tools. Respondents seem to not care about brands' name anymore and also to be much less responsive to price discounts whenever in presence of big differences in rating. Also, some kind of product promotions may lose attractivity because hindering the possibility to use the app: product bundles, cross-selling… we could hypothesize even holiday gift boxes.

  So, we can see that the influence of brand names, of advertisements and of price promotions is negatively affected by the usage of the app. This means that the effect of the most-used marketing tools in the FMCGs world may be undermined.

- **(5)** Referring to what has been mentioned in the previous point, the way in which products of these categories will be sponsored is likely to change. Overcame the first obstacle of getting product validation, the challenge is to understand how to convince the customer to choose your brand instead of another. Seen the overall feeling of disappointment and distrust towards brands, any initiative showing commitment

towards transparency and care is likely to be valued.

As it could be spot from the answers, more is the knowledge obtained by the customer, higher will be the number of requirements that s/he expects from the products bought.

At the point of sale, respondents are still sensible to packaging design; ignoring the pleasure-seeking hedonistic consumer culture would be naïve. However, because of the increasing concern about environmental issues, respondents seem to appreciate a more sustainable appearance of the packaging combined with a nice design or the possibility to get re-usable containers (better if they look good). An idea may be working on embellished durable packaging, it could be the right move to convince people to re-use it and to choose your product instead of the one of competitors (cross-industries collaborations for packaging design are not new; The final aim was definitely different, but the McDonald's case of "Fast Food meets High Fashion" (2018) demonstrated how just a packaging can hype an entire product line.)

A higher sobriety in the type of advertisement made is desirable. Too much product-centric advertisement seems to bother the customer, that instead sees it as an excessive effort to reach higher sales volume. Consumers refuse to be bombarded by ads concerning product performance. From this, it could be suggested to companies to pay a lot of attention concerning the use of social media, which, instead, should be focused on monitoring gain media (people still care about other consumers' reviews and suggestions) and on increasing the dialogue and transparency towards the customer (sponsoring CSR initiatives, explaining product usage etc).

The possibility of getting in touch with the company, asking clarifications through emails/website about products (production, storage, use etc) and having a two- way dialog seems to convince even the most skeptical consumers. It could be possible to look at it as a potential application for chatboxes, which seem to appear among the most relevant tools of the marketing 2030.

Enterprises producing this kind of convenience goods (i.e. affecting human health) have a complete new space to build customer relationships. Technological advances have allowed consumers and producers to interact with each other more and more, while bypassing the middlemen. They also facilitated the process of engaging and developing psychological bonds with customers.

Being public about production methods, product composition and sustainability actions may be a key step to build brand loyalty in such a competitive scenario. Since, very often, customer retention is economically more advantageous than constantly seeking for new customers, enterprises in consumer markets may start to invest in relationship marketing too; a relationship based on transparency.

- **(6)** As it resulted from the in-depth interviews and from the online survey, retailers can play an important role in reducing the social dimension hampering the usage of the app, mainly by creating a friendly environment. Apparently, if the analysis system would be provided by the retailer, the adoption rate would likely speed up. Seen the recent developments regarding payment applications as Scan&Go, it would not be impossible to envisage a merger of the function (with the care of considering the objectivity issue). The benefits would result in an increase in image and consumer goodwill, desirable factors since difficulties may arise not only for brands but even for big supermarkets. In fact, in future years, "relevance" seems the key word for retail channels' success. Offering a wide variety of irrelevant products to the customer without giving him an help to make a distinction may push him/her towards different retail channels as specialty stores or e-commerce, which already foresee an increase (Pma.com, 2019)

I1: *"In general, I stick to certain stores where, for example, I can bring my own tissue bag. I go there because I am sure about the products I am buying, whereas in supermarkets I am not. For this reason I try to avoid them or I use the app to check products."*

- **(7)** Finally, apps creators. In addition to current promotional activities, they may target emerged specific users to foster the diffusion and social acceptance: young parents, expatriates and sportspeople (in case of food)

6.3 Limitations and Future Research

Some limitations regarding the research are likely to arise from the qualitative nature of the methodology. Despite the effort of keeping high levels of neutrality on the researcher side, some pre-conceived concepts may have influenced the collection and interpretation of the results. As well, respondents may have not been at ease during individual interviews, even more when talking about their purchasing process.

Regarding the number of interviews, an higher amount would have allowed to reach data saturation (i.e. the point at which an increase in the number of cases considered would not lead to new features' disclosure). Also, a greater number of cases would allow the inclusion of a larger variation of the data and stratification of the members in terms of sex, age, social position etc.

Certainly, because of the newness and innovativeness of the study, it could be re- performed more in depth, starting from these findings. As well, more detailed researches could be performed in the future by focusing on single variables: a specific industrial sector, a phase of the buying process or explore variations in the behavior, derived from individual-related aspects as family composition, nationality, age etc.

Finally, the topic may be addressed from an enterprise point of view.

To conclude, as a consequence of the extremely complex and evolutionary nature of technology, the research concerning this topic is supposed to take into account future developments.

7. CONCLUSIONS

The advent of Internet and all its further developments have certainly influenced the way consumers have been making their shopping. The possibility of accessing infinite amount of information have made consumers even more knowledgeable than sales people themselves and less disarmed in front of captivating statements of brands. Here we have, why companies should fear these new “empowered consumers”, who are likely to modify the retail scenario more and more in the near future.

Over the decades the initial buzz for consumption and wide choice worn off, replaced instead by distrust and disappointment for enterprises’ practices and concern for human health.

This has led to more awareness in consumption. Information search is nothing new. It has been included as a step of the consumer purchasing behavior since the very beginning. However, because of the limited capacity to process information and of the effort-minimizing nature of human beings, information search has often been restricted to high-involvement/durable consumer goods.

The changes in people’ priorities and a return to a more basic and simpler lifestyle have modified the degree of involvement and the type of information search for many product categories, especially those affecting human health on a daily basis. Here we have that the final choice regarding a food product or a self-care product is not anymore a random decision taken at the point of sale, but the result of an attentive evaluation. Thanks to these mobile apps, the consumer can access immediate and understandable comparative information. Not only at product category level, but at a brand-level. Even more important, they can obtain this information through search rather than through experience.

Scanning apps represent an “external memory”. Consumers’ reliance on “external memory” tools has increased since when Internet has pervaded people life. However, the mobile app represents an upgrade to the previous options. The higher benefits of these apps derive from an augment in: immediacy (i.e. it is sufficient to scan the barcode to obtain all the information, instead of searching one piece of information at a time), ubiquity (i.e. you can use the app whenever and wherever), easiness (i.e. they present information in an easy-to-understand way), and reliability (i.e. the possibility to trust objective information coming from a third-party entity).

In conclusion, it is possible to assume that the creation of these type of scanning apps and the

provision of objective and trustworthy information about product composition is going to affect the entire purchasing process. More specifically, the apps have:

- Provided a tool to interpret product composition information and increased attention to product labels
- Increased perceived consumers' self-efficacy and reduced attitude-behavior gap towards the choice of healthier options
- Modified consumers' classification of primary and secondary attributes when making the purchase decisions.
- Changed consumers' sensitivity to traditional marketing tools (ads, salespeople advice, brand name, price promotion as bundles and cross-sells).
- Increased consumers' goodwill towards more transparent and caring brands and retailers

As a consequence, companies will need to face important implications and changes regarding production methods, marketing tools and initiatives regarding consumer education.

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APPENDIX

R: Hello Emma,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous.

R: First of all, could you please present yourself? Name, age and profession

I3: I am Emma, I am 24 years old and I am a master marketing student.

R: Since when are you using these apps?

I3: 4 months

R: Could you describe a typical situation when you would use the app?

I3: I use the app mostly for self-care / beauty products (Inci-beauty). I want to check if the product is good for the environment and if it is not dangerous for my health. It is an app presenting the product ingredients. I use it when I am in a supermarket and I have many choices for brands and products. I try to scan until I find the best product that has a good mark. However, if I go to a specialized shop/specialty store I won't be so comfortable to use it because I would feel spied by the sales people. While in a big supermarket nobody would watch at me and I would use it. I also use an app for food (Yuka).

R: Which are the most important pieces of information you search for?

I3: Ingredients. I check for natural ingredients and less chemicals as possible

R: Do you do it more for your health or for the environment?

I3: I think I would do it more for health, because I am not that confident about the environmental effect. I don't think I have the power to affect the environment… But if the product is good for both reasons…why not

R: now image you have scanned a product. What do you notice as first thing?

I3: The overall evaluation. If it is bad I put the product back on the shelf. In case of average evaluation… so when it is yellow… I think I give a look also to individual ingredients for curiosity… but honestly I look more at the colors

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I3: I would prefer the sales person point of view if I am in a specialty store, but not in the case of big retailers. If I had to choose one source only… probably the app.

R: Why did you start to use the scanning app?

I was aware of the use of bad ingredients in these products. I knew some brands were doing greenwashing. I wanted to check myself and verify what the industry and the companies used to tell me in order to build my own opinion and change my habits.

R: Did you used to search for product ingredients before starting using the app?

I3: I used to search for things concerning the brand… as brand values… or the benefits of the product... but not really for ingredients or composition.

R: How do you feel when you use the app in a store?

I3: I kind of feel more reassured. I feel I can get knowledge. If I would not have the app, I would have just look at the ingredients but I would not be able alone to figure out what it is good and what it is not. it is good for me and for my information. I rely a lot on the app, however if I want to buy a cream that I think it is a good one, I would trust my feeling toward the brand. sometimes the product may be good even if not 100% perfect. I like to have my own opinion.

R: Do you think to use the app to remember information that otherwise you would not remember?

I3: I think they are limiting the kind of information. You don't know the place of origin, where the products come from. There is some missing information about brand engagement, values. there are missing some information that may reassure you. but yes, I just check the app and forget all the info in there. I will remember the grade more or less.

R: Do you think your knowledge about products has increased over time thanks to the app?

I3: yes, I definitely care about more attributes… So… In case of food, it helped me to discover how bad some foods are for my health yes… In case of cosmetics or self-care… I think it helped me to distinguish among brands more than among products… but actually even for food… I am thinking about cereals … there are some cereals that are good and not full of additives, you just need to discover which ones

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I3: primary attributes have changed for me, but not thanks to the app. it is because of what i read on the news, the industry, the trends… It is true that the app is the mean through which I was able to implement this change…. Well… in the end… yes, it helped

R: What about advertisement and "on trend" products?

I3: I think I am still influenced…. But at a lower extent

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I3: Yes. If the products don't meet the requirements I don't feel particularly affected by price promotions. maybe the promotion attracts my attention but then I don't care

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I3: In cosmetics, L'Occitane. I know the app would tell me it is not good, but I buy it anyways because it is years I buy it, I worked for them, it is not that bad and I really like it

R: put yourself in this situation: you are in front of two equally-good rated products. Which one would you choose?

I3: I may try to look for further information online if I have time… otherwise I guess I would go for the most attractive (best packaging) or best brand

R: What do you mean by best brand?

I3: If I am being loyal to a brand, it's because the products have a good efficacity… but then some brands are better than others in the sense that they are more caring about people and the society… or if I am in front of two equally good products and I know that one of the two brands was involved in…. a certain scandal for example… I would choose the other.

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I3: yes… I think... Since I know what's inside a product, I feel like I can make an objective evaluation of what I buy. I am generally more satisfied. Before I was more likely to buy new products before even finish the ones I was using… Now I feel I buy less because I like what I use.

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I3: I would be disappointed. no transparence. it needs to be from a third-party. no benefit behind it

R: Hello Etienne,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I10: I am Etienne, I am 21 and I am an university student… Physical and sport sciences.

R: Since when are you using these apps?

I10: 8 months

R: Could you describe a typical situation when you would use the app?

I10: I mainly use Yuka, in supermarkets. I use it mainly when I want to do healthy choices without spending too much. I sometimes scan also pharmaceutical products**.**

R: Which are the most important pieces of information you search for?

I10: I firstly look at information regarding additives… they are bad for your health. I pay attention at nutritional information, I want to be healthy… and it also helps me to meet objectives linked to my sports practices**.**

R: Imagine you have just scanned a product, what you notice at first?

I10: before I look at the global evaluation… good or bad… then I look more in detail

R: Do you think the app is missing some kind of information?

I10: I think it could go more in depth… and provide other information in terms of nutritional values…. Regarding vitamins for example…

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I10: Maybe the app

R: Why did you start to use the scanning app?

I10: to obtain clearer information… and more details… I wanted to know what was inside the products I was buying. It makes so easy to compare two products when you need to choose.

R: How do you feel when you use the app in a store?

I10: I feel much more satisfied with my choices. Before I wasn't able to say if one product was better than another one… I assumed it basing on the brand only. I was not able to understand all those complicated ingredients… now thanks to my studies and the app, it is easier for me.

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I10: since I am a student I still pay attention to prices. However, I go for the best trade-off price-healthiness. The brand is not important anymore

R: Do you think your knowledge about products has increased thanks to the app?

I10: thanks to the app? Yes and no… I mean… I know if a brand is better than another for the same type of product… But regarding general knowledge of a product, I am not sure… I remember once I was in a supermarket… a brand was testing a new type of sliced ham without nitrates… It was easy to note it because of the green packaging… people were looking at it very suspiciously because it had a brownish color… now I know that it was just the "real" color of ham, but at the time it did not look appealing at all… I remember I would have never bought it **R: What about advertisement and "on trend" products?**

I10: the app has helped me to focus on important aspects and avoid being influenced by advertisement.

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I10: it may happen that I buy something less good. But in general, I remain "loyal" to good brands

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I10: I tend to scan everything… even just for curiosity. Except for la pate à tartiner! I know it is bad, but it is more of a treat

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I10: I guess so… for sure if I have no time I go for the brands I have discovered they are good.

R: Imagine to be in front of two equally good products, why would you choose one brand instead of another?

I10: the price

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I10: I would not like it. The app should be independent and not influenced by any specific brand.

Me: Hello Francesca,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I6: I am Francesca, I am 21 and I am a Management student

R: Since when are you using these apps?

I6: two years

R: Could you describe a typical situation when you would use the app?

I6: I use the app when I am in supermarkets to check the composition of a certain product. I firstly look if there are some "red signals". I would not be able to recognize all the ingredients alone. I mainly use the app Greenity, it tells you which substances are dangerous for you and for the environment. I also take in consideration other people' reviews.

R: Do you think you started to buy it more "green" products for your personal health or for the environment?

I6: honestly more for my health… to avoid to put bad chemicals on my skin... But thanks to that I started to pay attention and to make better choices also concerning other decisions

R: Which are the most important pieces of information you search for?

I6: ingredients and reviews.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I6: the app

R: Why did you start to use the scanning app?

I6: mainly because I wasn't able to read the product compositions alone. Plus, the app is much more convenient in terms of time and easiness. I started to discover the benefits of avoiding certain chemicals while following some YouTube channels and listening to other people reviews. I firstly analyzed some products I had at home with a website… it was super long, I immediately quit… then I found the app… It was good to take in-store decisions.

R: How do you feel when you use the app in a store?

I6: I think… reassured. It allows me to not take impulsive decisions or decisions based on attractive packaging only. I also discovered many good products at affordable prices. Buying the healthy choice doesn't always imply spending a lot of money.

R: Do you think to use the app to remember information that otherwise you would not remember?

I6: Absolutely. I am more confident in my purchasing decision. I am more relaxed since I am not afraid to buy something that I didn't want just because of the pressure derived from a crowded supermarket**.** Also… I find useful the fact that when you scan a product, the app saves it in the history. Sometimes information is given on an outside packaging but not on the container itself.

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I6: price is still important to me since I am a student. However, I definitely pay more attention to ingredients… There is no reason to buy a product with "red ingredients"

R: What about advertisement and "on trend" products?

I6: I am less sensitive since I am more confident about what I am looking for.

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I6: I still care about price discounts, but I would not buy a product with a really low rate. Especially… I think I do not care anymore about promotions selling products in bundles… you know when they sell together three shower gels of different flavors for example… they may have very different evaluations… but since they are often packed together, sometimes you cannot scan the ones in the middle… If you buy them, very often you end up bringing home staff you do not need… and even worst, it may be bad staff you will never want to use.

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I6: sometimes… some non-natural products have a much better performance… in make-up for example… so, I would buy them anyways, but not to use on a daily basis**.**

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I6: I like to change brand quite often, so not exactly… thanks to the app, I discovered many good brands I would have never considered before… or that did not look appealing at all to me.

R: Do you find more difficult to find substitutes?

I6: it takes me more time for sure… I cannot buy just the first product I see

R: Imagine to be in front of two equally good products, why would you choose one brand instead of another?

I6: "I do not know if it is the right answer… but I am thinking at the brand "Lush"… their products are good for me and I like that they are so public with what they do in terms of sustainability … it makes me wish that other brands were like that as well and it completely draws me to them

R: what do you mean by "they are so public"?

I6: They have many social media pages in which they sponsor not only their products, but what they do for the world… they engage in many campaigns… as well they have a Youtube channel explaining how to use their products and how they are made…. I have to admit… I don't necessarily watch them, but I like the idea that if I want to know I can… I appreciate them because they create this feeling that they have nothing to hide…

R: Did you hear that they are considering closing all UK social media pages?

I6: Really? I did not know… It would be brave, they must have their reasons… I am sure they are going to find something new to stay in contact with the customer

R: Going back to the main topic… One final question…How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I6: I would trust it less

Hello Laurianne,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I**2**: I am Laurianne, I am 28 years old, I have a master degree in political sciences and I am currently working as an employee

R: Since when are you using these apps?

I2: 9 months

R: Could you describe a typical situation when you would use the app?

I2: When I am doing my grocery, when I am in a supermarket and I am about to buy something new or changing the brand of the product I usually buy. I want to see if the composition is good… It is not because I am on a "diet"… I just don't want to buy products with bad things inside… I use Yuka mainly, I like when it suggests alternatives. I mainly use it for food products. I try to buy organic food whenever possible… usually it is a little bit more expensive but not that much… but I don't do it always. And I pay a lot of attention to labels… for example for chocolate… for ethical reasons…. Even if the app doesn't tell you anything about them

R: Would you like to get information about certifications also from the app?

I2: Yes I would love to! It would be interesting

R: Do you think you are using the app in any kind of shop?

I2: Yes, I would use the app no matter where, small or big supermarkets. I am a customer, if I want to check something before buying I have the right to do it.

R: You mentioned organic food. Do you think you buy it more for your personal health or for the environment?

I2: I think it is good for both reasons, but honestly… I think I would say more for my health than for the environment.

R: Which are the most important pieces of information you search for?

I2: Ingredients and certifications.

R: Did you used to search for product ingredients even before the use of the app?

I2 : I read some articles on Internet or watch some videos about health… For example regarding the effects of sugar and the addiction that it provokes… I discovered that sugar can appear under a wide variety of names on packaging… but I didn't really search for ingredients in single products

R: You have just scanned a product and you are provided with the information. What do you look at in sequence?

I2: I first look at the overall evaluation. If it is red, I do not buy the product. If it is yellow I search a bit more to understand why… what I search to avoid as first thing are red points regarding additives and sugar.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I2: more the app.

R: Why did you start to use the scanning app?

I2: I started because of some friends suggest me to eat better and because of some articles I have read. I was eating really random staff… I started to pay more attention to my health and to what I was eating. I wanted to eat less processed food and more healthy food. The app is so convenient in

terms of use, because you can use it whenever and wherever you are, much easier than search on Google.

R: How do you feel when you use the app in a store?

I2: I feel less "guilty" if I check with the app. I am more satisfied with what I buy. In supermarkets there are so many products that sometimes I feel overwhelmed. Moreover, it helped me to discover convenient bio products, especially now that even regular brands have their own organic version. Even in apps as Yuka, even if it is not focused on bio/organic, bio products usually have much higher scores.

R: Do you think to use the app to remember information that otherwise you would not remember?

I2: Yes and No. I like to have my own information. I like to read articles about nutrition and things like that. But for sure I would never learn by myself all the ingredients. It requires too much time, so the app is good for that.

R: Do you think your knowledge about products, in your case food, has increased over time thanks to the app?

I2: yes. There are some products you are convinced they are healthy, instead they are not. It's like the simple case of smoothies: you think they are healthy because they are made of fruit, but actually you get a lot of sugar you don't need to. In this sense, there are a lot of things we assume they are healthy, but it would be sufficient to check what's inside to know it is not true.

Then, I remember once… I was with a friend and we wanted to cook dinner at home… I was about to buy some sliced ginger at the supermarket… my friend scanned it and we saw there were many red points… we put it back where we found it"

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I2: I pay more attention to the composition and definitely less to brands. I still care about price, but if it is just a bit higher, I would definitely go for the healthier option. For example, I bought a butter last week… I didn't know the brand… Actually I don't remember it right now either… But it had a much better score than the other alternatives and so I bought it even if the price was a bit higher.

R: What about advertisement and "on trend" products?

I2: I think I am less sensible to trends

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I2: I would choose the healthier option even if on the other one there is a price discount.

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I2: Sure. Nutella for example. I know it is bad and it destroys the amazon rainforest. I actually scan it once… it was bad but I was aware of it. I still buy it… However, it is true I buy it very rarely and for particular events. For "daily" consumption I found a substitute… I actually started to prefer it to Nutella, since I used to the more natural taste."

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I2: Yes, I feel more attach probably. I would feel sad if I brand would be withdrawn by the market because I would have lost the possibility to buy a valuable brand.

R: Imagine to be in front of two equally good products, why would you choose one brand instead of another? For example, You can think about a new brand you have discovered recently

I2: I am thinking about Innocent… I knew the brand before but I didn't know if it was especially good or not. Now I know it's good … the packaging is nice and the taste Is good… or in general if the brand has a sustainable packaging I would choose that one

R: How would you react if you discovered that the app that you are using to scan your products was created by a specific brand?

I2: I would not be surprised. I would use it anyways but maybe with less trust.

R: Hello Philip,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee you that your participation will remain anonymous

R: First of all, could you please present yourself?

I8: I am Philip, I am 38 and I am an employee

R: Since when are you using these apps?

I8: one year more or less

R: Could you describe a typical situation when you would use the app?

I8: I use mainly QuelCosmetic when I am in physical stores and Yuka. I use it to check the composition of the products I buy.

R: Which are the most important pieces of information you search for?

I8: I want to check ingredients and to know if there is something dangerous for me and my family's skin or health

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I8: the app

R: Why did you start to use the scanning app?

I8: I started when my daughter was born. For example, Quelcosmetic tells you if there are dangerous substances, basing on your age… babies are really vulnerable and I wanted to avoid buying bad things for her… You know being a good father… and I obviously wanted to buy good products also for myself… I was not able to remember which were the "no" ingredients. The app has helped me a lot. And Yuka helped me to avoid food containing additives for example.

R: did you use to search ingredients' information before?

I8: not really… a completely new word opened to me.

R: How do you feel when you use the app in a store?

I8: thanks to the app I am able to understand what I am buying and to make sure that it is "safe". I remember once… I was in a supermarket and I went on the bio-section… I took some biscuits… on the packaging there were no "bio-labels", but I assumed they were… plus the packaging was really nice, white and green… and I mean, they were in the "healthy-bio" section… I scanned it and they had a really bad score. I was so surprised.

R: Do you think your knowledge about products has increased over time thanks to the app?

I8: I think the app has helped me to distinguish between good and bad products. If I am in an hurry, I go to the supermarket and I take products I know they are good… If I want to try something new I use the app to check… but anyways… it takes less time than before, because I already know that there are some brands I would not even consider… then… it is true that the evaluation should depend more on the single product rather than on the brand… sometimes it happens that the same brand may offer a product that is good and one that is very bad… but for shampoo for example… If I scan three shampoos of the same brand and all the three had a bad score, I tend to switch to another brand without scanning all the options… or I follow the suggestions of the app directly

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I8: I have stopped to buy main commercial brands, I pay much more attention to ingredients**.** Actually…at the beginning it was "funny" to see how famous brands had very bad scores

R: What about advertisement and "on trend" products?

I8: as before… I look at what they contain not at what they promise

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I8: price promotions are not anymore the reason why I buy something. Avoiding bad impacts on our health values much more than 50 cents or 1 euro reduction.

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I8: only if I already know they are good or if I buy them in specialized shops

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I8: maybe… Very often I do not have much time to spend on grocery shopping… so I just go for the brands I know… than if I know they are good… I have very little incentives to search for other brands.

R: Imagine to be in front of two good-rated products. What would you make choose between one and the other?

I8: that's difficult…. Maybe the packaging…

R: How would you react if you discovered that the app that you are using to scan your products was created by a specific brand?

I8: I am not sure… If the information would still be reliable, I would not care. But I do not know if it is feasible.

R: Hello Mery,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I7: I am Mery, I am 30 and I am a sales assistant

R: Since when are you using these apps?

I7: 5 years

R: Could you describe a typical situation when you would use the app?

I7: I mainly use an app called INCI Beauty, I use it to scan manly self-care products when I am in supermarkets

R: Which are the most important pieces of information you search for?

I7: I look for product ingredients**.** The requirement number one is that the overall evaluation must be green. There is no need for me to buy mediocre products since there are so many choices.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I7: the app

R: Why did you start to use the scanning app?

I7: I didn't want to buy products with bad ingredients anymore

R: How do you feel when you use the app in a store?

I7: I am more confident about the choice I make. I know what I buy and for this reason I feel more at peace**.** The nicest thing… is that I feel the power of being able to decide.

R: Do you think to use the app to remember information that otherwise you would not remember?

I7: I definitely would not be able to remember all the ingredients or to evaluate them. For this reason the app is a great help. In this way I have no excuses, I have to make the good choice. The app is great… really… I wanted to buy healthier products and I remember I start to search for ingredients online… but it was hell… so much time to enter each ingredients… the app is magical

R: Do you think your knowledge about products has increased over time thanks to the app?

I7: At the beginning I was using the app much more often. Now I know the products I like and I tend to stick with them

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I7: I don't look at the brand as first thing anymore. I have started thinking that more famous is the brand, less reliable is the information it provides.

R: What about advertisement and "on trend" products?

I7: absolutely, I don't believe to all those ads. After having seen what certain famous products had inside… literally I don't believe at anything anymore

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I7: I would go for the product with the good rate. However if a product suggested by the app is on promotion I would buy it for sure**.**

R: and what about promotions selling products in bundles?

I7: mmm… no it is annoying… very often they mix products… and even if they are of the same line, products may have vary different scores

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I7: I must admit that I do not check some products in cosmetics … If I know the bio product is not performing as well… but If I want high-performance… it is because I use them for special moments.. not on a daily basis

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I7: maybe… there are some products I really like and I honestly think I would have difficulties to find valuable substitutes.

R: Imagine to be in front of two equally good products, why would you choose one brand instead of another? For example, you can think about a new brand you have discovered recently

I7: for example I use Winni's as a brands… it is natural, it does not provoke any bad allergy… and they offer the possibility to buy refills so to avoid you to rebuy everything

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I7: I think I would feel betrayed, it would not be impartial

R: Hello Ninon,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I5:I am Ninon, I am 23 years old and I am a Marketing intern.

R: Since when are you using these apps?

I5: 2 years

R: Could you describe a typical situation when you would use the app?

I5: Yuka in supermarkets, mainly for snacks and products I know are not very healthy, to know how unhealthy they are and if there are any alternatives available. Actually… I use it also for very common products, but I will only do it once, and then get on with the results I got and try to change my habits. I also use INCI Beauty for cosmetics and hygiene products, in all types of stores (even if I mainly buy cosmetics in supermarkets too), because I think it is very difficult to understand the ingredients and their toxicity.

R: Which are the most important pieces of information you search for?

I5: I look first for the alternatives they propose. Most of the time, I kind of already know when a product is problematic, but I just want to know if others in the same category can be satisfying. However, I think Yuka could be better if it rated too the sourcing of the products and their sustainability. For instance, it could give a warning when a product is not ethical and offer fair trade alternatives. I guess in the future (but that is a whole other level), it could also offer recipes or ways to make the product you're looking for. For instance, if I'm going to buy cookies that are not healthy (fat, sugar, etc.), it could offer me a recipe with natural and organic ingredients, as the ones you can find easily online. It could make a partnership with online cooking websites.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I5: the app

R: Why did you start to use the scanning app?

R: I started using it when I first lived alone and I realized I did not really know anything about the products I was buying. And when I lived abroad, it was super helpful since I did not understand all the ingredients.

R: Do you use to search for product ingredient information before?

I5: Not really… how should I have done it? Searching on google would have required too much time… and information on packaging…I could read it, but it would not make sense to me

R: How do you feel when you use the app in a store?

I5: It's not about being reassured but about getting help choosing the right products for me. Sometimes I feel kind of proud about myself when I chose a good product and the app confirms that choice

R: Do you think to use the app to remember information that otherwise you would not remember?

I5: I guess it is some kind of external memory, especially for all the chemical ingredients I know close to nothing about.

R: Do you think your knowledge about products has increased over time thanks to the app?

I5: I sure know more about the products now that I use the app, but it is not entirely because of the app. I've started to get interested in those attributes and to do some research also without the app. But it fits into a more "healthy" lifestyle, a more conscious consumer behavior. Or at least I'm trying !

R: What about advertisement and "on trend" products?

I5: I've never been too sensitive to advertising when it comes to food, I do not buy that much transformed products, and there are far less promotions on fresh and healthy products

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I5: I'd choose the better scored product, for sure. Food is really important to me, so I do not consider it is something I want to discount.

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I5: I mainly scan the products I already know are not healthy, to find alternatives, so not that much.

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I5: For sure, there are some brands I've started buying more since I've been using the app. However, in the food case, I have not totally quit buying other unhealthy brands, pleasure in food is still important to me, so I give myself some slack

R: In front of two good-rated products, what would you make choose one instead of the other?

I5: Assuming a small difference in price… I would say a "smart" packaging… so if it is nice and it facilitates the use of the product… and also, I would appreciate a nature-friendly packaging seen all

the environmental discussion… and If one of the two brands is known for taking great care of the society, I would go for that one

R: You are working in marketing so I guess you know what CSR is… but do you think an average consumer is aware about companies' initiatives?

I5: probably not….I guess people become aware of what companies do just when a scandal happens… But with all the social media and staff, companies have the means to talk to people… I think they should work in that direction

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I5: I would totally think the app is biased and I would not trust it as much

R: Hello Pauline,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I1: I am Pauline, I am 33 and I am an employee.

R: Since when are you using these apps?

I1: 3 years

R: Could you describe a typical situation when you would use the app?

I1: Mainly in supermarkets when I need to buy things I cannot buy in a farm/small shops for example. Like creams. Or when I need something urgent. or Yogurts, I normally do them by myself, but sometimes I have not time for that. I go on and check if the product is good. or if I go to a party and I buy something to share I would check. Food and self-care products and cosmetics. I really care about organic and natural products.

R: You mentioned organic products. Do you think you buy them more for your personal health or for the environment?

I1: I buy organic for myself and for the environment but maybe slighty more for the environment. Bio it is a little bit expensive but there are other things behind "bio". I prefer bio-coop for food. In general, I stick to certain stores where, for example, I can bring my own tissue bag. I go there because I am sure about the products I am buying, whereas in supermarkets I am not. For this reason I try to avoid them or I use the app to check products.

R: Which are the most important pieces of information you search for?

I1: composition, country of origin. This last one, it is normally not included but I would like it. I would also like an overall judgment about the eco/bio production

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I1: The app

R: Why did you start to use the scanning app?

I1: because I had enough. there are so many things inside products, we are starting to get sick because of their composition. when talking about cosmetics, it is mainly for the environment… and obviously for my skin... they add things to make products "better", but in fact they are not. we are vulnerable and we are changing our nature. And for the food, I really care about my body.

R: How do you feel when you use the app in a store?

I1: I feel definitely "reassured". I try to believe that it works. I like the fact that when you scan something they propose another solution and it makes things easier since you don't need to scan all the products. I don't care if the option is more expensive, I prefer to pay a little bit more. I spend more but I buy less because I am more satisfied.

R: Do you think to use the app to remember information that otherwise you would not remember?

I1: It definetly helps me to process information and it makes it easier

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I1: yes primary attributes are ingredients. Then, I take in consideration certifications and country of origin. Certifications for the environment and fair trade.

R: Did you use to search for information about products' ingredients before?

I1: I started to get interested into main issues regarding health… when I discovered how much my consumption choices were affecting my health, I decided to take charge of the situation and I started to use the app to change my habits… then I switched to almost fully bio

R: What about advertisement and "on trend" products?

I1: I am still sensible…. But I am more aware of what I buy too

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I1: No i would not care about the price discount if the other is less good. I would go for the thing it is good…

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I1: During the years I changed my mind on many brands. I eat better and I care about the environment. If I know that the product is bad I would not buy it anymore.

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I1: Yeah I feel more attach to them. Since I don't have to scan everything all the time… In supermarkets there are too many products…I tend to stick to products that I know are good and use the app just to scan the new products

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I1: I would be really disappointed. I would feel betrayed. they would tell me how to do.

R: Hello Sophie,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, Can you please present yourself?

I9: I am Sophie, I am 30 years old and I am a French teacher

R: Since when are you using these apps?

I9: more than one year. One year and half I would say.

R: Could you describe a typical situation when you would use the app?

I9: I use apps for food and self-care and cosmetics products. For food, I use one app called Yuka and I use it when I go to supermarkets; if I can, I prefer to shop in little shops that sell organic stuff… in this case I would not use the app. I tend not to buy anything that is transformed and I tend to cook everything myself. But if I have to buy something that is transformed by the industry, I use the app to make sure that there is nothing too toxic or that would harm my body and my health.

R: Which are the most important pieces of information you search for?

I9: "if there is any chemical that it is bad for my health and for the environment. Maybe even more for the environment, because if I do something bad for myself, it is "my problem"… but I really don't want to do something bad for the world. For example, when I use Yuka I don't really care about the nutrition information, like if it is too fat or too salty, because I already know it and I think it is a bit of common sense; but I look at chemicals and if there is anything that it is toxic. Then… for example…I try to avoid products containing silicone, since the transformation needed to obtain it provokes enormous pollution or, in food, palm oil.

R: Why did you start to use the scanning app?

I9: I remember I read about the app on the Internet and I thought it was a great idea. I really wanted to see what was inside the things I used to buy. And…it is so hard to read the labels on products. Yuka for example tells you exactly what's inside and the colors are so helpful to understand what it is good or not. If I see something red or orange, I don't buy the product**.** Then, I started to buy full organic too. They haven't bad ingredients and it is better for the people that are producing them and the entire industry.

R: How do you feel when you use the app in a store?

I9: I don't trust what's written on packagings. They hide a lot of things behind really complicated information. I cannot read them and for this reason I don't trust the labels. The app is very interesting because it explains what's inside, the effect and why it is there. I think I would also like to know where the product comes from. I don't want it to come from too far away, I prefer local. Or I would like to know where certain ingredients are grown… if naturally or in a laboratory. I don't know… but this is the kind of information I would find really useful. I would help to know if the product is really sustainable.

I think I felt better about myself. I feel like I am doing everything I can to have a small impact on the world around me.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I9: I would say the app. Because the app… maybe I am wrong.. it has no interests in lying… the sales person may say things just to sell me a product… the same for labels. I would trust the app because of its "independence"… the app should be independent.. I find this important. Maybe I am wrong, I don't know… in any case I don't trust anything that it is on the app… this is why I tend to buy organic products and cook everything…. So to be sure about what I am eating and what I am using on myself.

R: before the app, did you use to look for information through other means?

I9: yes, I started with a website…I don't remember the name… but it was less convenient because you had to enter every components written on cream containers for example… so it was a very very long process. I started with that and I realized I had a lot of bad products… I have thrown away everything.

R: Do you think to use the app to remember information that otherwise you would not remember?

Me: Do you think your knowledge about products has increased over time thanks to the app?

I9: the app has helped me to choose among different products and… to find the products that really match my expectations. Then… Yuka for example… if there is a product I want, but it is bad, it provides recommendations for finding better alternatives. Moreover.. I found out many valuable alternatives,.. and not that much expensive.

I think using the app is a bit of a time investment at the beginning… but then it becomes better and better… once a product results to be bad, I exclude it from my list… sometimes it has been hard, because it had happened also with products I used to love… but I gave up on them anyways. I also admit that lately I don't use the app that much, because I have developed some habits and found out my favorite products ... or I have switched to 100% natural methods… but if I need to buy products that I have never tried before, I use the app.

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I9: I think now I put less importance to price. Now, with the app, I am more likely to buy something more expensive... because I know it is better for me and the app shows me that… I am more ok with that. I really don't care about the brand, but about ingredients and about how the product was made. Of course, If I can choose between two good products I would choose the cheaper one.

R: What about advertisement and "on trend" products?

I9: I am definitely less sensible

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I9: I would go for the good product even if the other is on price promotion

R: Are there any products you voluntary decide to not scan and that you buy because you particularly like the brand?

I9: No, because I am not fund of brands… I care about the values of the brands, I want the brand to be good to the environment

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I9: of course. There are few brands that I know and I really like. For example for cosmetics... there is one brand "Comme avant"… a small factory in Marseille…I really love them because they are quite transparent… they explain everything they do and if you send them a critique, they quickly answer you back by explaining you why they had to do a certain thing etc… If I could not find their products anymore I would certainly be really sad**.**

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I9: I would be angry and disappointed. I would feel betrayed.

R: Hello Stefania,

Thanks for accepting to be part of my research and to do this interview with me. You have been selected since you have stated to be an active user of at least one app able to scan products and

able to give you information about them at a retail point. I guarantee that your participation will remain anonymous

R: First of all, could you please present yourself?

I4: I am Stefania, I am 25 years old and I am a housewife.

R: Since when are you using these apps?

I4: I have used the app since 5 years

R: Could you describe a typical situation when you would use the app?

I4: I use an app to scan self-care and cosmetic products. It helps to read the ingredients of the products and to know-which substances are dangerous and which ones are good. On the app it is possible to read reviews and rates also from other users. However at the point of sale, I mainly use it to do product comparisons.

R: Which are the most important pieces of information you search for?

I4: Ingredients. I try to buy good products for me and for the environment.

R: If you had to choose one and only source of information among the app, a salesperson or written information on the packaging/information sheet, which one would you choose?

I4: the app

R: Why did you start to use the scanning app?

I4: because I wanted to understand the composition of the products I was using. I was not able to understand the information, ingredients and certification symbols written on the packaging**.** The app is easy to read and immediate.

R: How do you feel when you use the app in a store?

I4: Sometimes I feel a bit uneasy because I take some time or because it may seem I want to compare prices with other points of sale**.** Except for this, It helps me to make the right choice. I like to change brand, quite often… I discovered many good brands I would have never considered… or that did not look appealing at all to me.

R: Do you think to use the app to remember information that otherwise you would not remember?

I**4**: yes. I can save the information I need. I feel "reassured".

R: Do you think your knowledge about products, in your case food, has increased over time thanks to the app?

I4: Absolutely. In the long-term some of the information is memorized and it also become easier to recognize and memorize them.

R: Think about your purchase choice before and after having started to use the app. Do you think the first attributes you look at when choosing something have changed?

I4: I definitely look at the chemical composition and certifications. I look at prices but I am ready to pay a bit more to have a good product.

R: What about advertisement and "on trend" products?

I4: I don't care… when brand invests heavily in advertising… I think they just aim to make a lot of money

R: And what about price promotions? For example, if you are in front of two products you don't know. On one there is a price reduction, however the other one has a much better score. Which one would you choose?

I4: in general, I would go for the healthy option … sometimes I feel tempted to buy the cheaper products. More likely in the case of food products…because of the taste… For self-care product no.

R: Think about brands. Do you think you are more "attach" to the brands you buy now?

I4: yes I guess… because they are good and it would take me time to find new valuable products.

R: How would you react if you discovered that the app the you are using to scan your products was created by a specific brand?

I4: I guess I would not care that much if the information is not biased