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Antecedents of willingness to pay for organic food - The role of individual personality traits

Supervisor

Ch. Prof. Andreas Hinterhuber

Assistant supervisor

Ch. Prof. Francesco Ballarin

Graduand

Aurora Colla

Matriculation number 868852

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ABSTRACT

Health concerns and environmental problems are becoming topics always more important in our society and are pushing people to pay more attention to what they eat and the consequences on their body and also on the environment.

Conventional food production is one the most important players in the creation of pollution because of the use of various chemical agents for mass production.

The main disadvantage of organic products is that they cost on average 20-60% more than conventional food but, despite this, the rise in worry for health and environmental problems is making the organic food consumption grow exponentially all over the world.

The aim of this study is to prove the relationship between the individual personality traits and the willingness to pay for organic food.

To analyze the consumers' WTP of organic food I took inspiration from the Theory of Planned Behavior and the Big Five Theory. I built a questionnaire on traits anxiety, impulsivity, health consciousness, tolerance for ambiguity, warm glow and empathy where impulsivity acts as the moderating variable. I distributed my questionnaire to my relatives, friends and acquaintances and I collected 230 answers.

After a deep analysis through the software SmartPLS 3, I discovered that the hypothesis of tolerance for ambiguity, anxiety and the direct effect of impulsivity are confirmed.

This study is one of a kind with unique outcomes that contribute to the latest marketing literature on the WTP for organic food.

INTRODUCTION

Health and environmental problems are pushing people to be more aware of the consequences on their bodies and on the environment. This is making the organic food market growing as never before in particular in the developed countries.

Agriculture throughout history has always been organic because food was produced in the country to feed the people in the cities so the amount of food needed was not so big to create the necessity to use fertilizers to increase its amount. The problem started in the 20th century when the necessity of food increased and new products were introduced in the production process. In particular the economies of scale changed everything because they started practicing mass production and cultivating the food with chemical agents to produce more. This created a long series of environmental problems and obviously health problems for humans. As reported in the research made by Hannah Ritchie and Max Roser (2018) it is important to underline that food accounts for over a quarter (26%) of global greenhouse gas emissions, half of the world's habitable land is used for agriculture, 70% of global freshwater withdrawals are used for agriculture, 78% of global ocean and freshwater pollution with pollutants rich of nutrients is caused by agriculture, 94% of mammal biomass (excluding humans) is livestock. This means that livestock outweigh mammals by a factor of 15 to 1.4.

A solution to both problems would be organic agriculture which is done through natural fertilizers and pesticides and doesn't contain chemical agents which are dangerous in big quantities for the human body and increase the pollution.

A big part of the problem which is what makes it difficult to buy organic food is for sure the price. Organic products cost more than conventional food, depending of course on the food category and the country of origin. The other important limitation is the fact that still today lots of people don't properly know what organic food is and what are its properties. A big role is also played by the scarce trust in organic food labels.

But there are also many reasons to buy organic food, starting from the fact that it is healthier because it does not contain chemical agents, continuing with the fact that it has more nutrients and arriving at the environmental benefits of organic agriculture that doesn't have a negative impact on the soil.

Lots of research has been made by different authors about the WTP for organic food and we can affirm that most consumers are willing to pay up to 10-20% more for organic food than

conventional food but this price premium consumers are ready to pay depends obviously on the food category and the country of origin.

The aim of this study is to prove the relationship between the individual personality traits and the willingness to pay for organic food.

To analyze the consumers' WTP for organic food I took inspiration from the Big Five Theory because it is the most used when talking about personality traits and Theory of Planned Behavior (TPB) because it is the most used when talking about the WTP for sustainability.

Even if it has been discovered that some of the component of the "Big Five" Theory and TPB can predict the consumers' WTP for sustainable products, I found that the literature is already saturated with these of pre-examined models and I personally think that they are too generic and don't analyze correctly the specific situation of organic food.

So for my thesis I decided not to rely on these two models taking something from both but to create a new one which is designed specifically for the WTP for organic food and has been created analyzing all the literature and taking different personality traits from various research to choose just the ones that better fit my model.

I decided to analyze the antecedents of the WTP for organic food which represent the traits of anxiety, impulsivity, empathy, warm glow, tolerance of ambiguity and health consciousness. In particular I assumed that anxiety, empathy, warm glow, tolerance of ambiguity and health consciousness positively are the independent variables which influence the consumers' WTP for organic food. Instead I assumed that impulsivity is the moderating factor that has both a negative moderating effect on the relationship between anxiety and the WTP and a direct negative effect on the WTP for organic food.

Anxiety influences the WTP for organic food because people who are aware and worried about the environmental degradation, the increasing pollution, the CO₂ emission and so on will definitely be more inclined to buy products that don't hurt the environment because they are anxious about their future.

On the opposite side of impulsivity there is anxiety and if anxiety has a positive effect on the consumers' WTP organic food because anxious people will think more about the future and the consequences of their actions, on the other side impulsivity pushes the consumer to buy food randomly without paying attention. For these reasons we can affirm that impulsivity has a negative impact on the positive relationship between anxiety and the WTP organic food.

Impulsivity also has a direct negative impact on the WTP for organic food because impulsive personalities don't think about the consequences and will act irrationally.

As reported by Lee (2016), empathy could increase the weight given by consumers to the organic factor of products in the purchase decision because it induce consumers to behave altruistically towards products with social claims and because it stimulates consumers' prosocial motivation so it positively influences the WTP for organic food.

Health consciousness promotes a positive inclination in organic foods and the intention to purchase healthier products. Individuals who are less health conscious of course don't know which kind of problems they could have through a wrong and dangerous diet because they are not aware of all the possible damages that unsafe food choices can cause.

Individuals with a high tolerance for ambiguity do not feel constrained to acquire new information to buy it because they are comfortable even in a situation of confusion and will catch every opportunity even the riskier ones so since the organic market is in constant change, the consumers' WTP for organic food is high.

The expectation of warm-glow feeling which represents the feeling of "doing something good" and is experienced with eco-friendly and social activities. This is a key factor that pushes the consumers to buy sustainable products and influence their attitude and behavior by repeating that action (Hartmann, 2017; Ma and Barton, 2016).

This current research provides several fundamental insights as well as practical and managerial implications regarding the creation and use of green marketing messages based on the findings to enhance consumers' WTP for organic food.

More specifically, my study strives to address the following research questions:

RQ1. *What are the personality traits that influence positively or negatively the consumers' WTP for organic food? And why them?*

RQ2. *Why do lots of people still not buy organic? How can we promote organic food consumption given our findings?*

I started analyzing my research with the literature review where I explained the meaning of organic food, the environmental problems, the health concerns, the WTP for organic food with its limitations and its strength points and I explained the meaning of personality traits. All this information is essential to be able to understand the hypothesis and the contents of my research. In Chapter n. 2 are presented and explained in detail all the hypotheses based on the relationship between the WTP for organic food and personality traits. Moreover are described the theories which inspired the compilation of the thesis. In Chapter n. 3 I explain the research methodology so I describe the questionnaire I made and sent to all my family/friends/acquaintances, how I collected the data and the marketing scales that I used to develop it. Chapter n. 4 is about the data analysis and results where I explain all my findings from the measurement model to the structural model. In the last chapter I discuss my results and I expose all the implications of the results and the limitations of my study that could be useful for future research.

1. LITERATURE REVIEW

1.1 Organic food introduction

The Department for Agriculture and Rural Affairs (**DEFRA**) states that:

'Organic food is the product of a farming system which avoids the use of man-made fertilizers, pesticides, growth regulators and livestock feed additives. Irradiation and the use of genetically modified organisms (GMOs) or products produced from or by GMOs are generally prohibited by organic legislation.

Organic agriculture is a systems approach to production that is working towards environmentally, socially and economically sustainable production. Instead, the agricultural systems rely on crop rotation, animal and plant manures, some hand weeding and biological pest control'.

The regulations on organic food production vary from country to country but in any case when talking about organic food we refer to the way agricultural products are grown and processed and the way in which they conserve biodiversity, cycle the resources and reduce the use of pesticides, fertilizers, food additives or any other chemical agent. Organic food products are not just about the food itself but it's a combination of factors starting from how the food is produced and going on with how it is distributed, how it is packaged and finally how it is consumed.

The organic production and organic label is regulated by governmental food safety authorities, such as the **National Organic Program of the US Department of Agriculture (USDA)** or **European Commission (EC)** that carry out regular inspections to ensure that the food meets the standard stabilized related to the production methods, the conservation, transportation and the labeling.

The same high quality standards are respected all over the EU thanks to the European Commission that promotes **EU regulation**. In particular organic farmers in the EU promote animal wealth, contribute to maintaining biodiversity and both water and soil quality, and use natural resources and energy in a responsible way.

As reported by USDA and the EC, to be labeled “organic” ,at least **95%** of the ingredients of the food must come from organically produced plants or animals. The other 5% of ingredients must be non-GMO and included on the National List of non-organic ingredients permitted in certified organic agriculture and processing.

While in the United States there is the distinction between “100% Organic”, “Organic” and “made with organic”, in the European Union this distinction doesn’t exist. Products which are labeled “100% organic” in the US meaning that the product must be produced and processed using only organic methods and organic ingredients in the EU will be found as “organic”.

Instead products labeled with “made with organic” in the US meaning that they contain at least **70%** organically produced ingredients, in the EU do not have the label of “organic” but just a percentage statement of organic content is displayed in the package.

As reported by the “News European Parliament” (2018), organic farming practices in the EU include:

- Crop rotation for an efficient use of resources
- A ban of the use of chemical pesticides and synthetic fertilizers
- Very strict limits on livestock antibiotics
- Ban of genetically modified organisms (GMOs)
- Use of on-site resources for natural fertilizers and animal feed
- Raising livestock in a free-range, open-air environment and the use of organic fodder
- Tailored animal husbandry practices

When talking about sustainable farming practices we have to keep in mind that the food production has to be profitable otherwise that farmers would go out of business. This doesn’t mean that the only way to be profitable is mass scale production. In fact sustainable production aims to increase or at least maintain the output while increasing the environmental benefits. It also aims to avoid damaging or wasting natural resources . In general any negative impact on the environment is minimized from the reduction of pesticides to the decrease of transportation and storage.

For what concerns the livestock they are fed with pasture grazing and are allowed to move freely so no animal is confined to a cage because all the animals have to be treated with respect. Organic farming also aims to reduce the pain and suffering of the animals as a part of

the food production process. Another important part for organic farming is that sustainable food brands like for example Fair Trade pay their workers the minimum wage and safe, hygienic and fair working conditions.

1.1.1 Organic food history

Agriculture throughout history can be described as having always been organic because food was produced in the country to feed the people in the cities so the amount of food needed was not so big to create the necessity to use fertilizers to increase its amount.

The problem started in the 20th century when the necessity of food increased and new products were introduced in the production process.

In 1940 began the firsts organic farming movements due to the industrialization of the agricultural industry. These movements began in particular after the publication of the book “Look to the Land” in 1940 written by Lord Northbourne who coined the term “organic farming”. In his book he talked about the farm as an organism because of its natural and ecological approach to farming. In 1940 also J.I. Rodale, the founder of the Rodale Institute which is an organization for the research on organic farming, gave his contribution to organic farming with his book “Organic Gardening and Farming” and described how bad was the damage caused by chemical farming. Sir Albert Howard was an inspiration for all the scientists of those years because he lived many years in India to test and take inspiration from the traditional and sustainable farming practices and he also wrote a book named “An agricultural Testament” trying to influence the West to use animal waste to maintain soil fertility.

In the 1960s the agricultural movement started to become stronger due to the increasing environmental concerns and the book “Silent Spring” by Rachel Carson which highlighted the effects of the chemical fertilizers and pesticides on the environment and on humans. The sustainable agriculture movement and Silent Spring both had a major impact on the progression of the organic farming movement.

After the strengthening of the agricultural movement and the spread by the news of the environmental concerns, in the 1970s a national marketplace for organic foods was born. In fact this era is known as the polarization of agriculture into organic and non-organic

categories. Another step forward was done in 1972 when IFOAM was founded in France to assist farmers in the process of transition to organic agriculture and to spread capacities and information and to inspire countries to introduce regulations on organic farming.

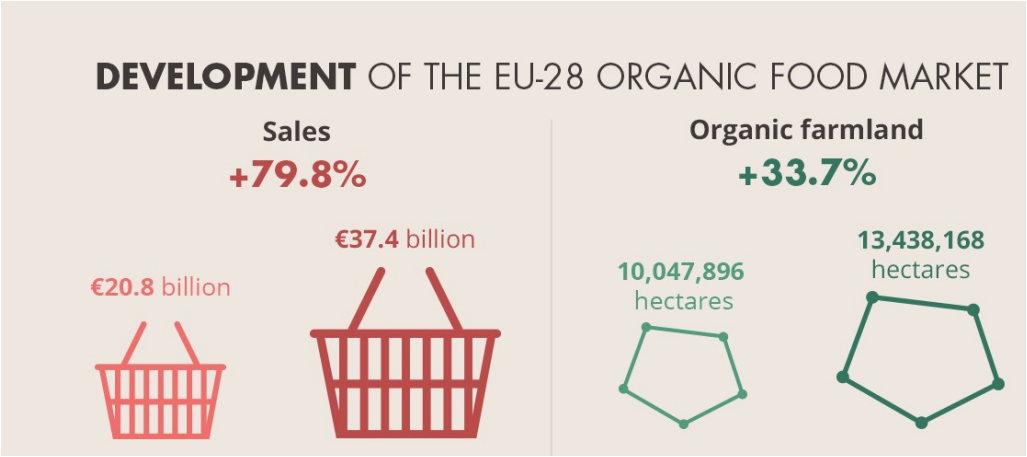
In 1980 finally organic farming received national recognition within the United States thanks to the movements of the various organizations and the release of the **Report and Recommendations on Organic Farming** by USDA.

In the 1990s the creation of the **certification standards** was enacted and both in the United States and in the European Union the majority of the aspects of organic farming were regulated by the government. The USA founded the Organic Foods Production Act (OFPA) to develop a national standard for organic food production which resulted in the creation of the National Organic Standards Board.

After this period the global retail market for organic food expanded exponentially year after year thanks to the increase of the consumer demand. This exponential increase is due to the spread of awareness of the effect of preservatives/fertilizers on the human body and in particular on the environment. Moreover the certification standard helped a lot to understand his phenomenon. In the 2000s the worldwide consumption of organic food grew even more rapidly than in the 1990s, this increase was also due to the fact that between 2000 and 2010 more countries all around the world implemented organic food certifications regulated by the government.

If we look at the situation in Europe in **Figure 1** we realize that sales grew 79.8% in 6 years going from 20.8 billion in 2012 to 37.4 billion in 2018 instead organic farmland increased of 33.7% in 6 years starting with 10 million hectares in 2012 and ending up with more than 13 million hectares in 2018. Europe can count on 4 countries which are Spain, France, Italy and Germany for the production of 55.5% of the EU organic food.

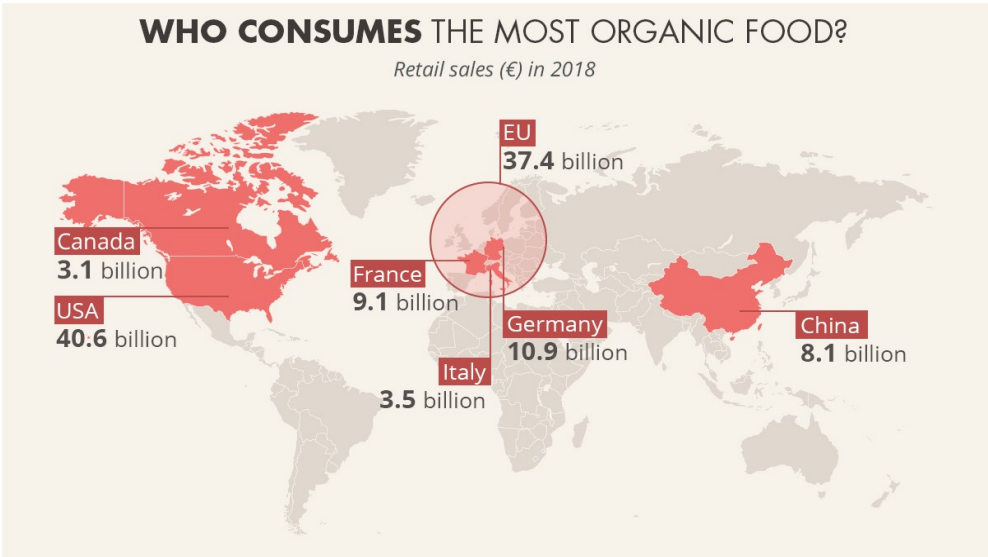
Figure 1 Development of organic food market



Source: <https://www.europarl.europa.eu/portal/en>

If we look instead to the world in general we know that the global market of organic products in 1999 was about 15.4 \$ billion and increased in 2014 to 80 \$ billion. Moreover organic farmland in 1999 occupied 11 million hectares instead in 2014 this number grew to 43.7 million hectares counting for approximately 2.8 million organic producers all around the world in 2014. In 2018 the global organic market was greater than 100 \$ billion and as we can see in **Figure 2** the leading country for the consumption of organic food was the USA followed by the EU and China.

Figure 2 World leading organic food consumers



Source: <https://www.europarl.europa.eu/portal/en>

1.2 Environmental Problems caused by conventional food production

The conventional way of producing food causes large-scale environmental degradation.

In particular to produce a large amount of food it is necessary to use chemical fertilizers and pesticides that go directly into soil and waterways. This is valid not just for agriculture with the monocropped operations but also for the concentrated animal feeding operations that results in an excess of animal waste that pollutes soil, water and air.

Agriculture contributes to climate change through emission of greenhouse gasses and reduction of carbon storage in vegetation and soil. Locally, agriculture reduces biodiversity and affects natural habitats through land conversion, pesticide inputs, irrigation and drainage.

All these methods use the resources as if they were infinite and contribute to global climate change but the most important thing to take into consideration is that these effects have a huge impact on the food system because of flood, extreme heat, extreme cold and drought impact crops.

As reported in the research made by Hannah Ritchie and Max Roser (2018), these are the main global impacts:

- Food accounts for over a quarter (26%) of global greenhouse gas emissions
- Half of the world's habitable land is used for agriculture
- 70% of global freshwater withdrawals are used for agriculture
- 78% of global ocean and freshwater pollution with pollutants rich of nutrients is caused by agriculture
- 94% of mammal biomass (excluding humans) is livestock. This means that livestock outweigh mammals by a factor of 15 to 1.4. Agriculture and aquaculture is considered as a threat for 24000 of the 28000 species evaluated to be threatened with extinction.

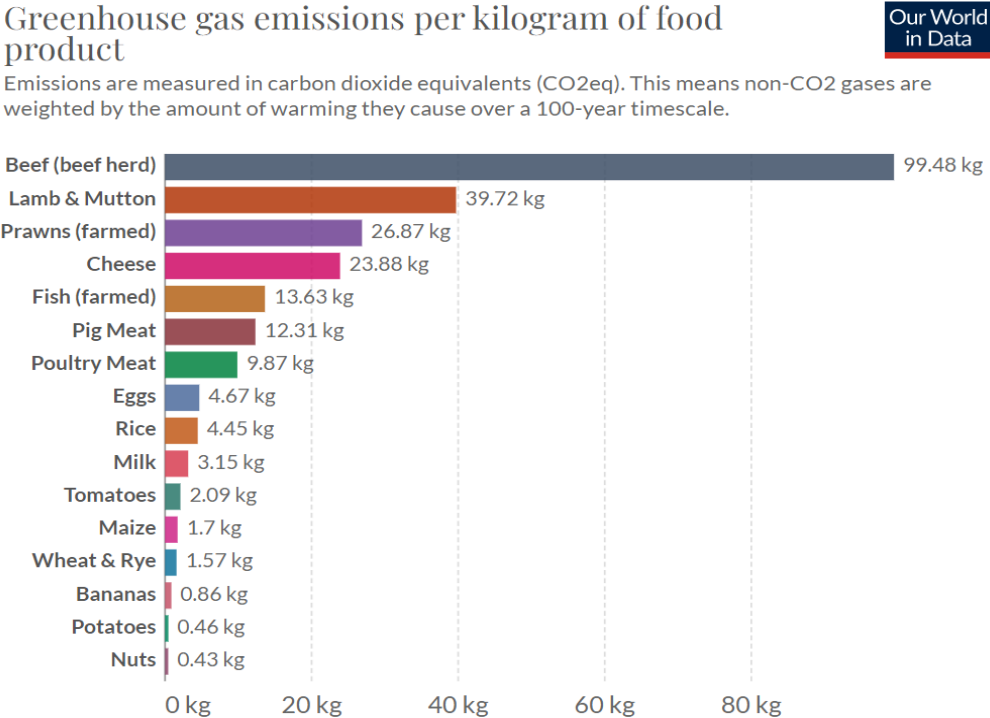
As you can see in **Figure 3**, at the first place of the list for carbon emission there is beef, followed by dairy products, fish and at the end we can find vegetables and fruit. This is also the reason why organic meat is the one with the highest premium price instead the premium price of most vegetables and fruit go around 10-20%.

Meat, eggs, dairy and fish are the most polluting foods. In particular ruminant livestock produce methane through their digestive processes. Fish also fall into this category because fishing vessels consume a lot of fuel. Moreover, there are both manure and pasture management costs for fish.

Crop production accounts for 27% of food emissions. In particular the crop production for human consumption produces 21% of food’s emissions instead the production of animal feed produces the other 6%. They are the direct emissions which result from agricultural production caused by the use of fertilizer which produces nitrous oxide and the use of agricultural machinery which produce carbon dioxide.

Land use accounts for 24% of food emissions in fact the agricultural expansion results in the conversion of forests, grasslands and other carbon ‘sinks’ into cropland or pasture resulting in carbon dioxide emissions. Obviously also food processing, packaging, transport and retail of the food products play an important role in the gas emission because they require energy and resource inputs.

Figure 3 Greenhouse gas emissions per kg of food production



Source: Poore, J., & Nemecek, T. (2018). Reducing food’s environmental impacts through producers and consumers.
 Note: Greenhouse gases are weighted by their global warming potential value (GWP100). GWP100 measures the relative warming impact of one molecule of a greenhouse gas, relative to carbon dioxide, over 100 years.
 OurWorldInData.org/environmental-impacts-of-food • CC BY

The consumption and production of organic food will reduce the gas emission because its production is based on the concept that the resources in our world are finite and we have to

respect the environment. In particular, new technologies in sustainable agriculture are based on regenerative practices for an ecosystem approach.

Lots of investments are made to protect the environment, building clean water systems, soil health with multi crops and other techniques and promoting biodiversity.

1.3 Health problems related to chemical agents

The first thing to keep in mind is that chemicals are essential building blocks for everything in the world so people, animals and also plants. Chemicals in food are harmless and useful for the human body because all the nutrients like proteins, fat and fiber are composed of chemical compounds.

As reported by the EFSA (2022) chemicals can have a variety of toxicological properties that might cause effects in humans and animals if we are exposed to them for a long time and at high levels. For this reason safe levels should be established by the government.

The danger caused by an excessive level of chemicals is one of the main causes of food contamination which is associated with foodborne disease outbreaks (Faille et al., in press).

Food contamination has always been a threat for humans since prehistory when the food was hunted and eaten directly. The growth of scale industries with mass production increased the problem enormously because of the use of pesticides and fertilizers to store the products and globalization spread it all over the world. In particular the symptoms of foodborne infections due to chemical contamination go from mild gastroenteritis to fatal cases of hepatic, renal and neurological syndromes.

The contamination can happen in the first stage hence in the cultivation of the products through the use of chemical fertilizers, additives or pesticides. It can also happen during the transportation stage because the vehicle has a loss of gasoline/diesel or because of the cross-contamination with other products or materials in the vehicle or even because additives and chemical agents are given to the products to not waste in long distance trips. It can happen in the cleaning stage of food production and preparation because chemical agents can also be caused by the residues left by disinfectants on the surface of the table or cooking equipment (Nageli and Kupper, 2006; Villanueva et al., 2017). Heating phase is another source of contaminants because a lot of chemical bacterias are formed during food processing

methods like heating or baking (Nerin et al., 2016). Very important is also the packing stage because even if it protects the products, it uses several additives like stabilizers and plasticizers to improve the packing material properties. The last step is the food storage which could also lead to toxins in the food because of direct sunlight that speeds the deterioration of food and packing unwanted off-odors. We also have to keep in mind that food with a longer deadline contains additives and chemical agents that compromise the nutritive value of food.

Organic food should be chosen to avoid health problems because in the cultivation phase no chemical agents are introduced but are used just natural fertilizers and pesticides. Instead in the processing, transportation, packing and storage phase also chemical agents are not present or are present just in little percentage because they are transported alone without the contamination of other food and they do not contain preservatives so are consumed in most cases locally and don't take long trips to arrive in the supermarkets. Moreover because they do not contain preservatives, they are present in the shelves not in a big quantity. For what concerns the packing normally the packaging of organic food is made by organic materials so there is no risk of contamination.

1.4 What determines the WTP for organic food?

The Willingness to pay (WTP) is the maximum price at or below which a consumer will definitely buy one unit of a product. It can be expressed as a price or a range of prices.

A person can decide to buy or not to buy an organic food based on an innumerable number of internal and external factors that can influence his/her decision.

The price above which the consumer is willing to pay is called **price premium** and it can be defined as the excess price paid over and above the “fair” price that is justified by the “true” value of the product (Ro and Burgen, 1992).

The WTP more for organic food products represents the percentage of money a consumer is willing to pay more than conventional products for environmental reasons or safety reasons or quality/health reasons or even social reasons.

Lots of research has been made by different authors about the WTP for organic food and we can affirm that most consumers are willing to pay **up to 10-20% more for organic food** than conventional food but this price premium consumers are ready to pay depends obviously on the food category because consumers may be interested in organic vegetables and not on organic meat or vice versa and the country of origin because some countries have an higher percentage of consumption of organic products given, among other reasons, by an higher consciousness of the problem like for example Swiss.

But there are also lots of other factors influencing the WTP for organic food and the first one is the perceived higher quality given by the perception that organic food is healthier because it has more nutrients and as a consequence it is tastier. The choice is also affected by the level of environmental awareness hence the fact of being conscious of all the environmental problems caused by the conventional food production through chemical agents and this contributes to the environmental concerns that pushes people to be more responsible and feel good just buying organic food. Another important reason is the brand trust which could be given by past experiences or the organic label. This helps people understand if a product is really organic and if the certification of origin is respected. In some cases, as in the one of “Fair Trade” , it can be an insurance that the working conditions are respected. It is also important to take into consideration the ethical norms which are norms that define what is wrong and what is correct for all of us and the level of social pressure because a person who is worried about what other people think will always try to do the right thing.

1.4.1 Reasons why people still struggle to buy organic

There are people who are still reluctant to buy organic food and I decided to collect the thoughts that influence consumers not to buy organic food:

1. *“It’s too expensive”* The main reason why people don’t buy organic is without any doubt the higher price with respect to conventional food. Organic food is on average between 20% and 60% more expensive than conventional food, depending on the food product. It is given not just by the higher production costs but also on the distribution and storage.

2. *“It goes off more often than conventional food”* It wastes before conventional food because it does not contain preservatives that are properly made to make it last more so it should be bought in small quantities to avoid wastes. This is obviously a disadvantage in particular for singles or couples that are not able to consume in just one meal a big amount of fresh products.
3. *“There is low choice of products in the supermarket”* This is due to both the fact that organic food does not contain preservatives so it can't be kept in shelves for days so the owners of the supermarkets prefer focusing on the most requested products and not keep a lot of choice and also because even if this is a growing market, organic food choice is way lower than the one for conventional food which is an industry that exist since ages.
4. *“It's hard to find”* Organic food is present nowadays in big supermarkets but in the small ones it's still difficult to find, in particular if a person lives in the countryside instead of a big city. Supermarkets can decide to keep a limited amount of organic products or just maybe limited to organic vegetables and fruit, limiting the amount of organic burgers or chicken which have a higher price premium to pay.
5. *“It's not tastier than conventional food”* There is no formal research conducted to prove or disprove if organic food tastes better than conventional food because it would be too subjective since every person has different tastes from the others. However, following a research made by the Pew Research Center overall 59% of Americans say that organic food tastes about the same as conventional food but regular organic food consumers affirm that the major reason for purchasing organic fruit and vegetables for them is that it has better taste.
6. *“Organic food is not healthier than conventional one”* Organic farms also use fertilizers and pesticides. The difference is that they only use naturally-derived pesticides, rather than the synthetic pesticides used on conventional commercial farms. Natural pesticides are believed to be less toxic, however, some have been found to have high health risks but this is still a new world that needs to be discovered.

7. *“I don't really know what organic food means“* The fact of not knowing what organic food means and what are its differences with respect to the conventional food products, is given by a high **food illiteracy**. People don't have enough information and capability to understand what they are eating and if effectively that food will impact their body in a positive or negative way. It translates in the insufficient ability to participate in planning, designing and delivering health services because not knowing the meaning and benefits, people will prefer less expensive food products.
8. *“I don't trust organic food and its benefits“*. Being a market which keeps growing every day, new products are introduced and modifications are made to old ones. This continuous change can create confusion in the consumer and can lead to mistrust in the organic labels. Consumers and in particular elderly people will prefer not to spend extra money on something they don't completely understand and/or believe in. Moreover since organic foods have a higher price and have become quite popular in our society nowadays, many producers may want to exploit this fact. Therefore, they often use self-made labels or other tricks in order to pretend that their food is actually eco-friendly and organic. This is caused by a problem named **food fraud** and the most common form of food fraud is the mislabeling which occurs when a product's label does not reflect its actual attributes.

1.4.2 Why does organic food cost so much more than conventional food?

The main reason why people don't buy organic food or buy just a limited amount of organic food is that on average it is between **20% and 60%** more expensive than conventional food, depending on the food product. But why all this price premium?

Starting from the fact that a product to be sold in shops and supermarkets as organic need to have the certification and the cost for organic certification for example in the USA can vary often upwards 1500 \$ that for big retail companies is not a big deal but for a small farmer means a lot.

Certified organic products are more expensive than conventional ones because:

- **Organic food supply** is limited as compared to demand which is growing exponentially year after year. This is given by the fact that there are not big

firms in organic agriculture but mainly small farmers. When the supply and demand of organic food is balanced, prices of organic food are on average more than 50% higher than prices of conventional food. A price reduction of organic food would encourage its purchase and a fall in prices would definitely increase the demand for organic food. The country of production of organic food, the type of organic products and the length of the supply chain are important elements that make the prices of organic food vary significantly.

- **Production costs** are typically higher because of greater labor inputs per unit of output due to the fact that in organic farming weeding is often done by hand. Pests are controlled with the use of natural fertilizers or introducing natural predators of those pests into the crop. The fact of not using chemical products leads to an increase of the rate of waste in the harvest because natural fertilizers are not as powerful as chemical ones. Another cause is a greater diversity of enterprises which means economies of scale cannot be achieved and the cost of production is consequently higher.

- **Post-harvest handling** of relatively small quantities of organic foods results in higher costs because organic and conventional food products can't be mixed together because this would ruin the equilibrium and the infection by chemical products of the organic products and this makes both the processing and the transportation costs increase. Processing organic food is expensive because it can't be worked in contact with other foods so it needs its own machinery and to be qualified as organic, processed foods must be processed in certified facilities. The transportation of organic food is the main problem because other than the fact that organic food can't be transported with conventional one, it is produced in smaller quantities so the transportation cost per unit will be higher and it can't go through long distance trips because it doesn't contain preservatives to make it last more.

- **Marketing** and the **distribution chain** for organic products is relatively inefficient and costs are higher because of relatively small volumes. Ten years ago organic food sales were made for 95% by specialty stores and the remaining by mainstream stores but in the last few years the trend has been

reversed and now organic products are mainly sold in big/medium supermarkets. But the distribution of organic food can't compete with the one of conventional food where the economies of scale are used and the prices are low. An other important thing to take into consideration is that organic food do not contain preservatives so the amount of products exposed in the supermarket can't be too big because can not remain for a long time in shelves of supermarkets as conventional food

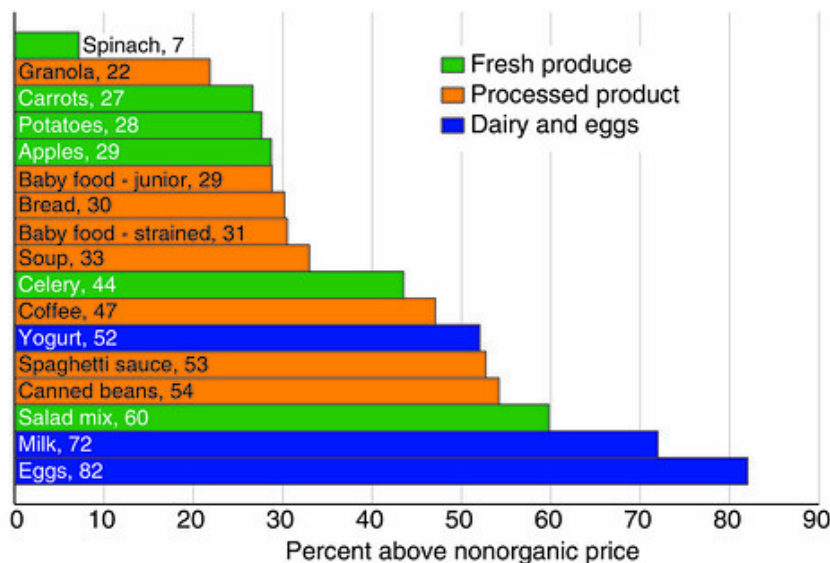
Even if is known that organic food costs more than conventional one, there are also non-organic foods that are more expensive than organic ones:

- oatmeal
- brown rice
- various other grains

In particular organic oatmeal costs 6% less than conventional one and organic brown rice costs 10% less than the conventional counterpart. On the other side of the medal, meat occupies the first place because it has the highest price premium that can also reach 134% more than conventional one for chicken or beef burgers.

Figure 4 Price premiums for organic food

Retail price premiums for selected organic foods, 2010



Source: USDA, Economic Research Service using 2010 Nielsen Homescan data.

As you can see in **Figure 4** taken by the U.S. Department of Agriculture, milk and eggs have also an high price premium 72% for milk, 82% for eggs and 52% for yogurt because eggs and dairy products have high production cost since chicken and cows must also be fed with organic food and have access to the outside and have enough space and do not contain hormones or any kind of antibiotics. For these reasons it has a higher price premium of on average 68%.

Instead for organic vegetable and fruit the price premium goes from 7% for spinach to the 60% for salad mix but the mean is a 20% price premium for vegetables and fruits. This price premium is lower than the others also because organic fruits and vegetables can be bought at a local store where prices are lower than the ones you find at the supermarket because there is no transportation and distribution costs.

For organic processed foods, price premiums ranged from 22 percent for granola to 54 percent for canned beans but the price premium is about 30%.

The reasons for the higher price of organic food over conventional food can be explained with respect to different points of view. Some experts state that organic food is not too expensive, but that conventional food is too cheap because the price of the product does not include indirect ecological, social and other costs. Furthermore, experts believe that for the reduction in price of organic food the supply chain should be better organized. The spatial distance of organic producers and the limited amount of available products cause additional costs in the supply chain, primarily the transportation costs, which significant-ly burden the final price of organic food

1.4.3 The silent epidemic : Food illiteracy

The food literacy can be defined as the minimum degree of individual “...*knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgments and take decisions in every-day life concerning health care, disease prevention and health promotion*” (Kickbusch et al., 2013: p.4).

In our society full of different kinds of food products it is becoming more important to understand and comprehend what we are going to buy not just for our health but also for the community and the environment. In fact choosing an apple is not as easy as it looks because

lots of factors enter in game like for example if it's locally produced or is imported or if it is produced with or without preservatives/pesticides or also if this apple contains enough nutrients and fibers.

Food illiteracy is worrying because it's the major cause of the increasing number of weight problems in the 21st century which increased exponentially in the last 10 years. This phenomenon is growing so fast that it has been defined as a silent epidemic.

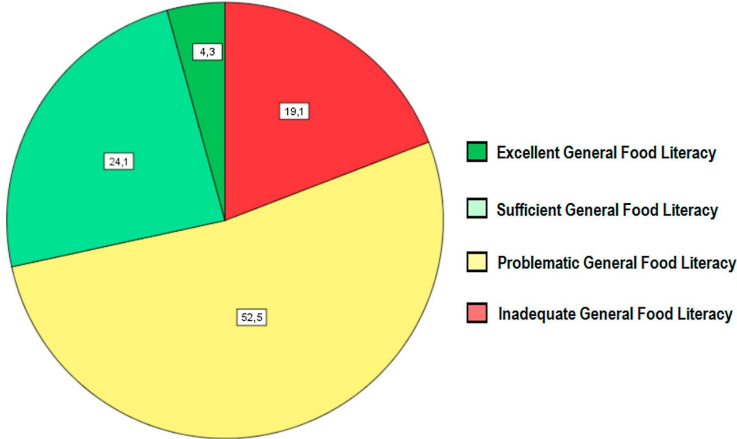
This is because people don't have enough information and capability to understand what they are eating and if effectively that food will impact their body in a positive or negative way. It translates in the insufficient ability to participate in planning, designing and delivering health services.

Following research published by Science Direct and conducted on the Italian population, as reported in **Figure 5**, it has been discovered that more than half of respondents had problems with basic food literacy. This means that 1 in 2 Italians are likely to meet significant challenges in making appropriate choices during grocery shopping. 19% of respondents have inadequate food literacy hence they are completely unaware of the difference between what's good for humans and the environment and what is and the consequences that this derives.

24% showed sufficient general food literacy, showing of being able to make a healthy and safe choice in different alternative food options. Only 49 people (4.3%) had an excellent food literacy being completely aware of their choices and the relative consequences.

In sum, more than 2 in 3 respondents were found to live with limited general food literacy competencies.

Figure 5 Italian food literacy



Source: <https://www.sciencedirect.com/science/article/pii/S0306919218302148>

It has been discovered that this “silent epidemic” is present not just in developing countries but also in developed ones like Italy in this case. This discovery is worrying considering the fact that Italy is one of the main producers of organic food in Europe.

Food illiteracy is clearly more diffused in elderly people with low education levels and suffering from financial problems.

To improve food literacy, large-scale intervention should be done starting from educational programs in schools to teach to the new generations the importance of eating healthy and then healthy and sustainable behaviors should be promoted also in adult consumers.

Just with all these interventions we will be able to establish a sustainable food system.

1.4.4 The cause of the mistrust in the organic label: Food fraud

According to Spink and Moyer (2011), *“Food fraud is a collective term used to encompass the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, food ingredients, or food packaging; or false or misleading statements made about a product, for economic gain.”*

Despite the limitations that go against the consumption of organic food, it is a market which is growing exponentially and with it is also growing the rate of food fraud. The fault can be attributed also to the “popularity” of organic food consumption because it is becoming something cool as sushi was a few years ago so people take advantage also of this thing because don’t probably think that consumers of organic food do it for health and environmental concerns but that they do it mainly because it is cool.

The most common form of food fraud is the mislabeling which occurs when a product’s label does not reflect its actual attributes so in the case of organic food, the food is cultivated regularly with chemical agents like fertilizers and pesticides but in the properties written in the packaging these chemical agents are not present or are substituted with other attributes. This happens because sellers in this way can increase the price of a product increasing their revenues because people are willing to pay more for a certified organic food.

The food fraud leads to damages on the finance but also to the health. These damages can be light or can even lead to death.

There are 2 main type of food fraud:

- The first one is related to health risks (Marchand *et al.*, 2010; Barnhoorn *et al.*, 2015). It comprehends all the practices that omit or change some ingredients of the products and this can lead to health problems. The most impressive example is in the case of organic food which is cultivated without any kind of chemical agents but just natural ones and these practices include the illegal spraying practices which violates organic agriculture, may be related as health risks
- The second one is related to the violation of environmental ethics and values (Gutman, 1999; Clarke *et al.*, 2008). In this case the damage is not related to the health status of an individual but to his/her ethic sphere. An example could be the misrepresentation of regular eggs as free range eggs which would be damaging for vegans that for ethical reasons do not buy regular eggs.

An example of the effect of food fraud could be given by the study of Inna Levy, Pamela Kerschke-Risch (2020) about the Attitudes toward food fraud in Israel and Germany who discovered that there is a significant effect on individuals depending on type of fraud, country of residence, and gender.

1.4,5 *What influences the individual WTP for organic food given higher prices?*

Even if organic food is at least 10% more expensive than conventional food, its demand is growing exponentially all over the world and in particular in developed countries.

But what influences the consumers' WTP for organic food? After a long research I collected all the beliefs that influence people to buy organic food instead of conventional ones:

1. *"It is healthier and safer"*: This is the main factor influencing the WTP for organic food because organic products do not contain chemical fertilizers or pesticides, conservatives, hormones, GMOs and antibiotics because they are produced just with natural fertilizers and avoid any kind of chemical agent. Health factors are becoming more important in our society because of all the illnesses caused by food. Organic food not just has lower levels of chemical agents, but it also has higher levels of nutrients which makes it twice as safe for humans.

2. *“It’s tastier than conventional food ”* There is no formal research conducted to prove or disprove if organic food tastes better than conventional food because it would be too subjective since every person has different tastes from the others. However, following a research made by the Pew Research Center overall 59% of Americans say that organic food tastes about the same as conventional food but regular organic food consumers affirm that the major reason for purchasing organic fruit and vegetables for them is that it has better taste. Since organic food is healthier and contains more nutrients, the consumer perception that organic food is tastier than conventional one is higher.
3. *“It contains more nutrients”* The second most important reason why people buy organic food is because it contains more nutrients. This is due to the fact that with organic farming crops are bigger and plants have more distance one with each other and this lets them take from soil more nutrients. As reported by healthline, multiple studies show that organic food provides significantly greater levels of vitamin C, iron, magnesium, and phosphorus than non-organic food. While being higher in these nutrients, they are also significantly lower in nitrates and pesticide residues. These values obviously vary from farmer to farmer.
4. *“It’s good for the environment”*(env. awareness and concerns) Another important reason is without any doubt the respect for the environment. As reported by the European Commission, organic farming contributes to the protection of the environment and the climate, the long-term fertility of the soil, high levels of biodiversity and a non-toxic environment. So the aim of organic farming thanks to the no use of man made pesticides is to produce food but thinking about tomorrow and the next generations. This represents a strong push in particular for people that have environmental awareness and concern. If a person is aware of all the climate changes, global warming and all the relative problems and is worried about this situation it will be easier to choose organic products instead of conventional ones.
5. *“It assures safer working conditions for farmers”* Thanks to organic farming and the use of just natural products there is the avoidance of health risks to farmers due to inappropriate handling of pesticides and in many organization which promote organic

farming like for example Fair Trade the minimum wage is assured to farmers in particular in developing areas

6. *“It has higher standards of animal welfare”* All animals grown in organic farming are fed just with organic fodder and they are raised in an open-air environment without cages, moreover organic farming also aims to reduce the pain and suffering of the animals as a part of the food production process.
7. *“I trust the government certified brands”* All brands certified as organic by the government respect determined and strict standards and have been checked before putting on the organic logo. People rely on the certification to understand if a product is really safer than the others so it works as a guarantee. An example could be the Fair Trade certification which became the symbol of fair working conditions for farmers all around the world.
8. *“I feel better with myself choosing organic products”* Another important factor to not underestimate are moral norms of people. Moral norms are the principles or guidelines that tell us how to behave in a given morally relevant situation. Health concerns and food taste are egoistic reasons to choose organic food but there are also altruistic reasons like environmental concerns or animal welfare concerns which are pushed by the personal moral norms of everyone. These norms will let us understand that we don't have to think about our health but also to the environment which represents public health. More sensitive and environment concerned people will of course choose organic products because they will make them feel better with themselves and like if they behave correctly.

1.5 The role of personality traits in the WTP for organic food

Given all the factors that influence the WTP of organic products of the consumers, it would be impossible to measure and analyze every single one of them so it's important to focus on the personality traits which are present in every human in a stronger or lower degree and reflect people's characteristic patterns of thoughts, feelings, and behaviors.

Personality is the physical, emotional and cognitive qualities of every individual (Rahimi, 2007) and is also one of the human unique factors (Fiest and Fiest, 1998). Each individual is unique and can't be compared to others and this is due to their personality. Personality is unique and different in every single individual due to genetic and environmental factors.

Personality comes from the Latin word “**persona**” which means mask. The mask is used by Greek actors to act on stage. According to Ryckman (2004) personality can be defined as “*a dynamic and organized set of characteristics possessed by a person that uniquely influences his or her cognitions, motivations, and behaviors in various situations*”.

The study of personality has a long history, starting from Plato, continuing with Macchiavelli and arriving at the contemporary authors.

Plato saw the human soul as the seat of personality and in particular he said that the soul consists of three basic forces guiding human behavior: reason, emotion, and appetite. Aristotle referred to the seat of personality as the psyche and proposed that the psyche is the product of biological processes. René Descartes viewed human personality as the product of the interaction of divine and primal forces. She saw the essential force behind human personality as the pure, perfect, intangible and immortal soul. Niccolò Machiavelli believed that personality is best understood in a social context and people are essentially selfish, greedy, ungrateful, and vengeful.

It's important to understand personality because it helps to predict how people will respond to some specific situations and the kind of things they prefer and value related to organic food consumption. It reflects people's thoughts, feelings, and behaviors about the willingness to pay more for sustainability.

When talking about personality traits the first connection that is made is the one with the “**Big Five Theory**” which is the most popular and widely used. It offers a universal and comprehensive framework for the description of individual differences in personality. This theory affirms that all the characteristics and shades of the personality fall inside 5 different personality traits: Agreeableness, conscientiousness, extraversion, neuroticism and openness.

For example, according to the literature, people who demonstrate to have personality traits of

openness and agreeableness are more concerned about the environment and for this reason people with higher levels of these traits will be willing to pay more for organic food.

When we talk about the consumers' WTP for organic food, the first model which is proposed is the **“Theory of Planned Behavior”** which suggests that human behavior is the result of thoughtful planning, and that behavioral intentions directly predict behaviors. This model has been re-examined in various ways because it is easy to add new variables to the ones already present. The original components are: attitude, perceived behavioral control and subjective norms.

Literature confirmed us that in particular attitude but also the perceived behavior control have a positive high impact on the consumers' WTP for sustainable products.

Even if it has been discovered that some of the components of the “Big Five” Theory and the “TPB” can predict the consumers' WTP for sustainable products, I found that the literature is already saturated with these pre-examined models and I personally think that they are too generic and don't analyze correctly the specific situation of organic food.

So for my thesis I decided not to rely on these two models taking something from both but to create a new one which is designed specifically for the WTP for organic food and has been created analyzing all the literature and taking different personality traits from various research to choose just the ones that better fit my model.

Table 1 Scientific articles related to organic food, WTP, personality traits and environment/health concerns

Title and author	Main Topic	Type of analysis	Content and purpose	Results and conclusions
“Big Five personality traits and green consumption:	This article explores the organic food consumption and Attitude-	A quantitative research based on a survey administered to 611 consumers	This aim of this study is to examine the roles of Big Five personality traits, including	The study revealed that in addition to extraversion, other personality traits (agreeableness,

<p>bridging the attitude-intention-behavior gap”</p> <p>Cong Doanh Duong (2021)</p>	<p>Intention behavior gap through the Big Five theory</p>	<p>was collected by means of mall-intercept in major Vietnamese cities.</p>	<p>conscientiousness, agreeableness, extraversion, neuroticism and openness to experience, in shaping green consumption behavior, as well as bridging the attitude-intention-behavior gap in environmentally friendly consumption and testing the gender differences between these associations.</p>	<p>conscientiousness, openness to experience and neuroticism) were strongly associated with green consumption. Moreover, attitude towards green products and intention to buy environmentally friendly products were determined to have key roles in explaining consumers’ pro-environmental behavior. There was also a notable difference in the impact of personality traits on men’s and women’s green consumption.</p>
<p>“Consumers’ willingness to pay for organic food: Factors that affect it and variation per organic product type”</p> <p>Athanasios Krystallis and</p>	<p>This research explores the factors that influence the WTP for organic food based also on the food category</p>	<p>Purchasers were approached during their food shopping in retail chains in Athens in July 2003. Overall, 250 people were approached, 164 of which were qualified for</p>	<p>This study aims to provide answers to two questions: is willingness to pay (WTP) for organic products influenced by the same set of factors that affect purchasing of conventional foods? Does WTP for organic</p>	<p>Consumers’ stated WTP and the type and magnitude of factors that affect it differ according to the organic food category. These factors include food quality and security, trust in the certification, and, for some products, brand name. Organoleptic characteristics, prices</p>

George Chryssohoidis (2005)		sample inclusion in the questionnaire which is based on real awareness of the term “organic”.	products vary according to different food categories?	and consumers’ socio-demographic profiles do not constitute determinants of organic WTP. Consumers have a higher WTP for organic vegetables and fruits.
“Meta-analyses of consumers' willingness to pay for sustainable food products” Shanshan Li, Zein Kallas (2021)	This research analyzes the consumers' WTP price premiums for organic food	This research used a meta-analysis of 80 worldwide studies. The meta-analysis focuses on the literature of consumer behavior with respect to average WTP estimates towards sustainable food products.	The aim of this study is to calculate the average WTP for sustainable products using meta-analysis from a wider perspective by jointly including different sustainable attributes. It attempts to fill the gaps in meta-analysis for a common consumers' WTP for sustainable food products.	The results suggest that the overall WTP premium for sustainability is 29.5% on average. Furthermore, gender, region, sustainable attributes and food categories influence the average WTP estimates and their heterogeneity. Results also indicate that the WTP estimate conducted by hypothetical approach is higher than non-hypothetical one due to hypothetical bias. Additionally, the WTP value of organic attributes is higher than the other sustainable attributes.
“Unearthing the effects of	This study examines the	Datas have been collected with a	Consumer’s green buying behavior	The results indicated that the personality traits of

<p>personality traits on consumer’s attitude and intention to buy green products”</p> <p>Ying Sun, Shanyong Wang, Lan Gao and Jun Li (2018)</p>	<p>connection between the personality traits and green buying intentions through the Big Five theory</p>	<p>questionnaire with 2 methods. In the first one, the questionnaire was distributed in the college town in Hefei and got 360 respondents. In the second method 503 respondents were collected online through a Web site.</p>	<p>has a significant effect on achieving global sustainable development. Based on this condition, the present study aimed to explore the effects of individual’s personality traits on consumer’s attitude toward green buying and intention to buy green products.</p>	<p>extraversion, agreeableness, openness to experience and conscientiousness positively affect consumer’s attitude toward green buying. Consumer’s attitude, conscientiousness, openness to experience and extraversion affect consumer’s intention to buy green products positively and significantly.</p>
<p>“Influence of Altruistic Motives on Organic Food Purchase: Theory of Planned Behavior”</p> <p>Kirubaharan Boobalan, Nishad Nawaz, Harindranath R.M., Vijaiakumar</p>	<p>This study uses the extended theory of Planned Behavior to understand the influence of warm glow on the organic food purchase</p>	<p>Amazon’s Mechanical Turk (MTurk)—a crowdsourcing platform for market research, was used for accumulating responses to the questionnaire from India (<i>n</i> = 700) and USA (<i>n</i> = 700). Finally, 692 and 640 data points were screened for further</p>	<p>In order to study the purchase intention of organic food, the authors developed a model using antecedents like warm glow, subjective norm, attitude and perceived behavioral control because marketing campaigns of organic food emphasize utilitarian benefits and psychological benefits as well as</p>	<p>In this study, the attitude of perceived behavioral control and the subjective norm are significantly related to the purchase intention of organic food. Further, this work has found that the factor “warm glow feel” that resulted from engaging in any pro-social activities like buying of organic food significantly affected the constructs of TPB (i.e., attitude, perceived behavioral control and subjective norm).</p>

Gajendran (2021)		analysis from India and USA.	consumer culture to enhance environmental sustainability.	
“Behavioral intention to purchase organic food: Bangladeshi consumers' perspective” Mohammad Rokibul Kbabir, Saima Islam (2021)	The study measures the consumers' intention to purchase organic food through the extended theory of Planned Behavior	The survey questionnaire followed an entirely web-based distribution procedure and a total of 108 respondents were collected to analyze the factors influencing the consumption of organic goods.	This research aims to assess the consumers' intention to purchase organic foods for balanced physical and mental growth. It examines the decision-making process in buying organic products built on the extended Theory of Planned Behavior (TPB).	Findings indicate that among the four antecedents called social norms (SN), personal attitude (ATT), perceived behavior control (PBC) and health consciousness (HC), three (ATT, PBC and HC) have a significant influence on the intention to consume organic food in Bangladesh. The only cognitive variable called social norm (SN) has no statistically significant impact.
“Convenience food with environmentally-sustainable attributes: A consumer perspective” Stefanella Stranieri, Elena Claire	This research analyzes the consumer behavior towards environmentally friendly food thanks to the extended TPB	Data were collected by means of face-to-face interviews with 550 consumers in charge of grocery shopping in the metropolitan area of Milan, in northern Italy.	The aim of the work was to explore the determinants of consumer behavior towards health convenience food with environmentally-friendly attributes. The analysis refers to	The results of the analysis confirm the constructs of Ajzen's theory and reveal that also the habitual actions adopted during food purchases, like the search of labeled product information. Secondly, this result stresses also the fact that the decision-making process

Ricci, Alessandro Banterle (2017)			minimally-processed vegetables with voluntary labels attesting a reduced use of pesticides in agricultural production.	for convenience food does not depend only on rational processes, but also on others factors, like repetitive behavior during food purchases.
“Increasing organic food consumption: An integrating model of drivers and barriers” Ralph Hansmann, Ivo Baur, Claudia R. Binder (2020)	This study proposes the determinants of purchases of organic fruit and vegetables with the extended TPB	The survey was conducted online. Invitations were sent out by conventional mail to a stratified random sample of 3000 Swiss households and got 620 responses.	An integrative model using psychological and socio-structural variables was applied in this study to explain self-reported purchases of organic fruits and vegetables and thus improve our understanding of the determinants influencing corresponding consumer choices.	Financial and environmental justifications for purchasing non-organic food resulted as the most important predictors, followed by recent consumption changes, health-related aspects of attitudes and social norms, perceived behavioral control, environmental values, income, and education level. The participants considered more knowledge and information and having more money at their disposal to be important requirements for achieving more organic food consumption.
“The role of attitudes and tolerance of	This research examines the WTP for organic wine	A lab experimental auction where participants	This study addresses the “attitude-behavior gap” by suggesting	Results show that the positive influence of consumers’ healthy attitude (the belief that

<p>ambiguity in explaining consumers' willingness to pay for organic wine"</p> <p>Eloi Jorge, Ernesto Lopez Valeiras, Maria Beatriz Gonzalez Sanchez (2021)</p>	<p>when influenced by the tolerance for ambiguity and analyze the "attitude-behavior gap"</p>	<p>made a monetary evaluation was conducted to test the hypotheses. Additionally, participants answered two questionnaires. The resulting sample included 85 university students.</p>	<p>this relationship depends on consumer tolerance of ambiguity.</p>	<p>organic food is healthier) on their willingness to pay for organic wine is weaker in individuals less tolerant of ambiguity. These findings highlight the role of consumer tolerance of ambiguity in explaining organic wine purchase behaviors.</p>
<p>"Sustainable food literacy: A measure to promote sustainable diet practices"</p> <p>Chih Ching Teng, Chueh Chih (2022)</p>	<p>This study proposes food literacy scale that can be employed as a tool for measuring an individual's ability to practice sustainable diets</p>	<p>Performed web-based questionnaire surveys to develop a sustainable food literacy scale. A total of 968 valid questionnaires collected from Taiwanese residents were received.</p>	<p>This paper tries to shed light on the issue of food literacy, proposing a measurement approach to assess the food literacy skills of a representative sample of the Italian population.</p>	<p>The research findings suggest that problematic food literacy is prevailing: elderly, people with low education, and those suffering from financial deprivation are more likely to show limited food literacy. Inadequate food literacy concurs in producing impaired health status.</p>
<p>"Consumers' Willingness to Pay for Organic</p>	<p>This article analyzes the consumers' WTP for organic</p>	<p>The data were collected during October and November 2008 from a stratified</p>	<p>The aim of this study is to shed light on consumers' perceptions about</p>	<p>The study revealed that all respondents are willing to pay price premium, but the level of</p>

<p>Products: A Case From Kathmandu Valley”</p> <p>Kamal P. Aryal, Pashupati Chaudhary, Sangita Pandit and Govinda Sharma (2009)</p>	<p>products</p>	<p>random sample of 180 consumers in Kathmandu valley based on six types of consumers with different professions</p>	<p>organic products and their willingness to pay for such products to increase understanding of consumers' awareness, attitude and perceptions towards organic products,</p>	<p>acceptability varied considerably. A total of 58% of the consumers are WTP 6- 20% price premium, whereas 13% are WTP to 50% premium. The average premium was estimated to be about 30%. 39% of the respondents feel the extra cost for organic products is reasonable, while 27% considered it too high.</p>
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2. HYPOTHESIS DEVELOPMENT AND RESEARCH MODEL

2.1 Hypothesis introduction

The hypotheses discussed in my study are based on the personality traits that affect the consumers' WTP for organic food.

The literature usually considers the Theory of Planned Behaviors and the Big Five Theory when the aim of the research is to analyze the effects of personality traits on organic purchasing behaviors.

I decided not to follow a specific theory because the literature is saturated by academic articles which analyze the typical connection between attitude, subjective norms and perceived behavioral control with the purchasing behavior and the WTP for organic food. Moreover I wanted to create my own hypothesis to be able to identify personality traits that fit better with the topics of the organic food consumption, health concerns, food safety and environmental concerns and that are linked to the organic purchasing behaviors and the WTP for organic food.

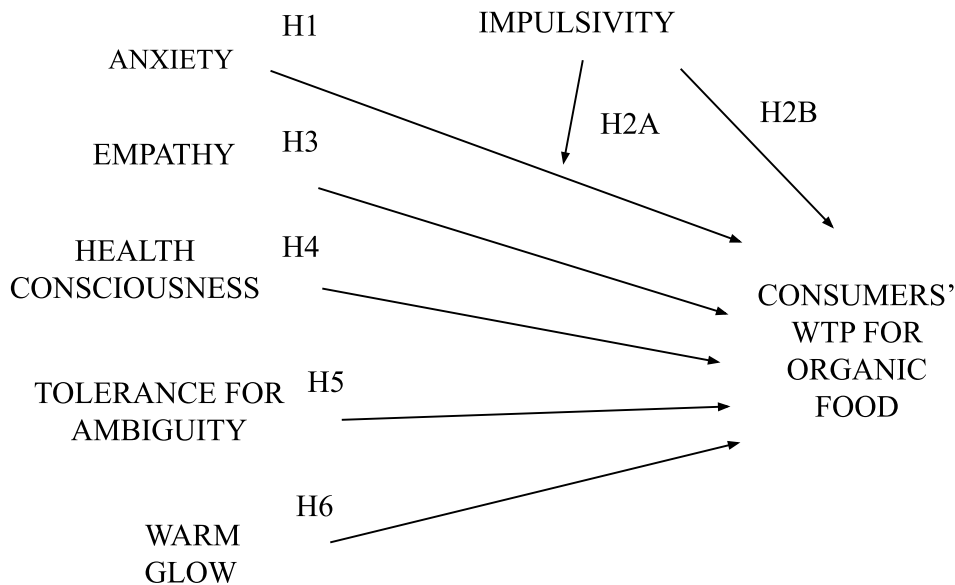
The personality traits essentially represent the antecedents of the WTP for organic food because they have a positive or negative impact on the WTP.

The personality traits that I found are: anxiety, empathy, health consciousness, tolerance for ambiguity, warm glow and impulsivity. The representation of these traits can be seen in **Figure 6**.

In particular the Willingness To Pay for organic food is the **dependent variable** because it depends on the effect and the influence of the independent variables.

Anxiety, empathy, health consciousness, tolerance for ambiguity and warm glow are the **independent variables** which positively influence the consumers' WTP for organic food. Instead impulsivity is the **moderating variable** and it has both a moderating effect because it negatively moderates the positive effect that anxiety has on the consumers' WTP for organic food and it has a direct effect on the dependent variable because it negatively influences the WTP for organic food.

Figure 6 Hypothesis graph



2.2 Theories which inspired my thesis about the WTP for organic food

The **Willingness to pay (WTP)** represents the dependent variable which is the variable that changes as a result of the independent variables manipulation. The measurement data is needed to check if and to how much the independent variable influences the dependent one.

The WTP more for organic food products represents the percentage of money a consumer is willing to pay more than conventional products for environmental reasons or safety reasons or quality/health reasons or even social reasons.

When we talk about the consumers' WTP for organic food, the first model which is proposed is the **“Theory of Planned Behavior”**. It was developed in 1967 by Ajzen and Fishben under the name of theory of reasoned action and was composed just by attitude and subjective norms. It was later revised and expanded by the two theorists in the following decades to overcome any discrepancies in the Attitude - Behavior relationship with the Theory of Planned Behavior thanks to the addition of the third component hence the perceived behavioral control.

It can also be described as a psychological theory that links beliefs to behavior and its aim is to predict the consumers' purchasing intentions that leads to the purchasing behavior. This model has been re-examined in various ways because it is easy to add new variables to the ones already present and it takes the name of Expanded Theory of Planned Behavior. The original components are: attitude, subjective norms and perceived behavioral control. Attitudes tell us how much an individual agrees or disagrees with a determined behavior and in which probability he will commit the related action. Subjective norms indicate the fact of being worried about what other people think about engaging in a determined behavior and the fulfillment of the behavior depends on the approval or disapproval of other people.

Perceived behavioral control indicates the degree of difficulty an individual perceives in performing a determined behavior. The perception of the difficulty is not always the same but it changes depending on the situations and actions an individual meets.

Literature confirmed us that attitude is the strongest factor because it has a high influence on the consumers' WTP for sustainable products.

For example the study of Kirubaharan Boobalan, Nishad Nawaz, Harindranath R.M. (2021), analyzes through the Extended Theory of Planned behavior the influence of warm glow in the purchase of organic food and found that the attitude of perceived behavioral control and the subjective norm are significantly related to the purchase intention of organic food and the factor "warm glow feel" that resulted from engaging in any pro-social activities like buying of organic food significantly affected the constructs of TPB.

Instead in the study of Cristina Zerbini, Donata Tania Vergura, Sabrina Latusi (2019) which analyzes the role of empathy in the purchase behavior of fair trade products through the extended TPB, has been found that attitude towards the product and personal norms positively affects purchase intention and also empathy creates moral obligation that pushes the consumer to buy fair trade products to feel better with himself.

When talking about personality traits the first connection that is made is the one with the "**Big Five Theory**" which is the most popular and widely used. It offers a universal and comprehensive framework for the description of individual differences in personality. This theory affirms that all the characteristics and shades of the personality fall inside 5 different personality traits: Agreeableness, conscientiousness, extraversion, neuroticism and openness.

In particular extraversion is associated with sociability, talkativeness and the tendency to enjoy and take inspiration in the company of others. Agreeableness is the tendency to feel compassion for other people and trust others. Conscientiousness is about organization,

self-discipline, and the ability to work hard to achieve goals. Openness to experience is associated with curiosity, creativity, and preference for variety and novelty. Neuroticism is the degree to which an individual responds to psychological stress and if he remains calm or stresses himself.

For example, according to the study of Ying Sun, Shanyong Wang, Lan Gao & Jun Li (2018) on the effects of personality traits on consumer's green buying intention it has been discovered that conscientiousness, openness as well as extraversion predict the consumers' buying behaviors.

There are also other interesting theories that lead to the analysis of the WTP like for example in article written by Dayu Cao, Yan Zheng, Chunnian Liu, Xiaoying Yao, Shiyue Chen (2021) about anxiety has been made through the theory of consumption values but the TPB and the Big Five Theory have been the most important and inspirational to my study related to the topic I choose.

As you can see in **Table 2**, I reported all the scientific articles which have had the most relevance for me and inspired my thesis and in particular the formulation of my hypothesis.

In the first column are written all the different personality traits analyzed and in particular in the last two rows are described the personality traits different from the ones analyzed but are also important because analyze the traits through the big five theory which gives us an important example to take into account. In the second column are selected the different theories that inspired me and in detail the theory of Planned Behavior, the Big Five theory and other theories that had as aim the one to analyze the WTP for organic food. Finally in the third column there is the main topic of interest of the scientific articles which is divided in the specific category of organic food and in the general one of organic products to have a wider vision of the case.

Table 2 The most relevant scientific articles for my thesis

<i>Author and year of publication</i>	Personality traits	Guiding theories			Topic of interest	
	<i>Name</i>	<i>TPB</i>	<i>Big Five</i>	<i>Other theories</i>	<i>Organic food</i>	<i>Organic products</i>
Dayu Cao, Yan Zheng, Chunnian Liu, Xiaoying Yao, Shiyue Chen (2021)	ANXIETY			✓	✓	
Patrick de Pelsmacker, Liesbeth Driesen, Glenn Rayp (2005)	EMPATHY			✓	✓	
Cristina Zerbini, Donata Tania Vergura, Sabrina Latusi (2019)	EMPATHY	✓			✓	
Auroomooga Putten Yuvraj Yogananda, Praveen Balakrishnan Nair (2017)	HEALTH CONSCIOUSNESS	✓			✓	
K.D.L.R. Kapuge (2016)	HEALTH CONSCIOUSNESS			✓	✓	
Violeta Stancu, Liisa Laehteenmaeki (2022)	IMPULSIVITY			✓	✓	
Abaid Ullah Zafar, Jie Shen, Mohsin Shahzad, Tahir Islam (2021)	IMPULSIVITY			✓		✓

Eloi Jorge, Ernesto Lopez Valeiras, Maria Beatriz Gonzalez Sanchez (2021)	TOLERANCE FOR AMBIGUITY			✓	✓	
Kirubaharan Boobalan, Nishad Nawaz, Harindranath R.M., Vijaiakumar Gajendran (2021)	WARM GLOW	✓			✓	
Ying Sun, Shanyong Wang, Lan Gao & Jun Li (2018)	OTHER TRAITS		✓			✓
Cong Doanh Doung (2021)	OTHER TRAITS		✓			✓

2.3 Anxiety and WTP for organic food

Individuals with anxiety trait have a constant inclination to judge the events that for other people are not a source of stress, as potentially threatening (Performance Psychology, 2011), moreover this trait of the personality is considered a stable long-term emotional experience for an individual because it can increase or decrease based on the stress level but is always present in the life of anxious people.

Anxious personalities are more likely to develop the anxiety state which is a temporary emotional state which changes over time and in response to different situations. For example, a person might experience state anxiety when they are late for work but calm down once they get there on time. This anticipatory anxiety is typical, and it reduces once the situation resolves.

Anxiety is associated with **uncertainty** because it occurs primarily in situations where people feel uncertain about potentially harmful outcomes (e.g., unhealthy foods harming the body).

The possible situations that can increase the level of state anxiety are food safety concerns and environmental concerns because people feel that they are uncertain about the future and have a low level of control. These concerns affect the anxiety state of a person independently from the place of origin or the personality because it is extended to all the world.

Lots of risks are associated with food safety concerns such as bacterias, chemicals and genetic modification of food. Risk assessment is subjective because it depends on people's characteristics and their perception of risk which could be extremely high for a person and at the same time extremely low for another one. Perceived risk is measured in various dimensions including psychological, social, financial, physical, performance and time related (Stone and Grønhaug, 1993).

Obviously the lack of confidence in the food safety of conventional food, given by the anxiety trait, increases consumers' purchase intention of organic food

Harper and Makatouni (2002) showed that food safety concerns that impact the health of an individual are the main motives for organic food purchase compared to ethical concerns and animal welfare standards, as also shown in more recent studies (e.g. Cembalo *et al.*, 2016).

The anxiety level in the last decade increased a lot because of the quantity of health problems related to the use of pesticides and chemical agents not just in agriculture but also in the feed of animals and in particular red meat. This phenomenon pushed people to buy more organic food, hence grown without the use of synthetic chemicals, such as human-made pesticides and fertilizers, and food that does not contain genetically modified organisms (GMOs).

Moreover COVID-19 increased not just the anxiety trait but also the anxiety state and made people worry a lot more about their health and their purchasing habits.

The increase in the environmental concern obviously has a big influence because people who are aware and worried about the environmental degradation, the increasing pollution, the CO2 emission and so on will definitely be more inclined to buy products that don't hurt the environment and don't increase their state of anxiety.

The problems related to food safety and the environmental problems definitely affected in a positive way the WTP more for organic food because people who are worried about the future on our planet and are concerned about their health status are willing to pay more not just

money but also time and attention in choosing the right food with less pesticides and more nutrients even if this means paying a little more money.

Given this consideration, we can hypothesize that:

H1: Anxiety positively influence the consumers' WTP for organic food

2.4 Impulsivity and the WTP for organic food

Impulsivity in this study has the role of moderating variable which has a moderating effect between the independent and the dependent variable and it also has a direct effect on the dependent variable.

The buying behavior of a consumer can be divided into planned buying and impulsive buying. In particular in the first case there is the planned and intentional purchase behavior instead in the second case the purchase behavior tends to be unplanned but carried out because of the positive emotions and the immediate desire to have a particular item for the consumers as reported by Lee (2020). Wells and Veena (2011) defined instead impulse buying as the consumer being spontaneous and temporarily out of control because of the strong desire to buy. The consumer is under the stimulation of external factors considering the absence of any clear purchasing plan. Impulse buying tendency is explained as "both the tendencies to experience spontaneous and sudden urges to make on-the-spot purchases and to act on these felt urges with little deliberation or evaluation of consequence" .

The main determinant of whether people make impulsive buying decisions is people's impulsive buying tendency. This consumer trait, which refers to consumers' tendency to buy in a spontaneous manner, immediately, without reflection (Rock and Fisher, 1995), has a stronger impact on impulsive buying behavior than other traits, such as sensation seeking (Iyer et al., 2020).

On the opposite side of impulsivity there is anxiety and if anxiety has a positive effect on the consumer's WTP organic food because anxious people will think more about the future and so the consequences, on the other side impulsiveness pushes the consumer to buy food randomly without paying attention. If one side of the personality reflects a lot about what is wrong for the environment and the self health and want to make a right and conscious decision, the

other side just wants to buy something in a short time and make an irrational buy. For these reasons we can affirm that impulsivity has a negative impact on the positive relationship between anxiety and the WTP organic food.

In this case impulsivity, the moderating variable is connected to the dependent and independent variables by an arrow which points to the relationship between the independent variable, the anxiety, and the dependent variable, the WTP for organic food. There is a lot of literature that examines the role of impulsivity as a moderator like for example in the article written by J. Leigh Leasure and Clayton Neighbors (2014) where Impulsivity moderates the association between physical activity and alcohol consumption. Another example is the article written by Jennifer E. Fite, Jackson A. Goodnight, John E. Bates, Kenneth A. Dodge, Gregory S. Pettit (2008) about Adolescent aggression and social cognition in the context of personality where impulsivity acts as a moderator of predictions from social information processing

H2A: *Impulsivity negatively moderates the positive effect that anxiety has on the consumers' WTP for organic food*

But the moderating factor, impulsivity, has also a direct effect on the dependent variable because it negatively influences the WTP for organic food.

Impulse buying is an important factor to take into consideration because it accounts for 80% of product sales and the sales of a new product is basically an impulse purchase.

Impulsiveness negatively impacts the buying of sustainable products and increases the waste of food given by the fact of not thinking about the consequences. Educating the consumer in his daily lifestyle and habits to sustainable actions would be the key for a more green life. These actions could be considering ecological factors or social issues or even animal protection. Although not all unplanned purchases are necessarily impulsive purchases, for example, habitual purchases can be unplanned but not impulsive (Bhakat and Muruganatham, 2013, Verplanken and Herabadi, 2001).

As reported by Joshi and Rahman (2015), impulse buying has significant potential to harm the environment. In particular, online shopping might stimulate people to buy products in

more quantity and impulsively without considering its impact on the environment because it is easier to shop the product immediately without too many considerations.

After all these considerations we are sure about the fact that impulsivity impacts negatively the impulse buying tendencies of consumers and this lead to engage in more excessive buying which in turn is associated with higher food waste and the choice of random products without thinking about the importance of choosing organic food and transform it into a daily activity and hence an habit

H2B: Impulsivity negatively influence the consumers' WTP for organic food

2.5 Empathy and WTP for organic food

Empathy could be defined as the ability to share someone else's feelings or experiences by imagining what it would be like to be in that person's situation.

It comprehends actions of understanding other people and/or situations and being sensitive to the feelings and experiences of another person without the necessity to fully communicate it in an objectively manner.

Thanks to the studies of several scholars (Ajzen, 1991; Shaw, Grehan, Shiu, Hassan, & Thomson, 2005) empathy can be considered a predictor of moral obligation and behavioral intentions towards organic products. It is because the power to feel others' pain lets us create a list of moral obligations, hence a list of things we want and don't want to do because we think they are wrong and would hurt someone else.

The ethical behavior involves economic factors (fair price) and both ecological (environmental sustainability) and social (human rights and labor conditions) aspects. Fair-trade represents a particular case of ethical behavior: it contributes to sustainable development not just offering better trading conditions to workers and producers in developing countries but thanks to this label there is the protection of the environment because the products are produced with the minimum amount of necessary water, organic farming is favored and genetically modified products are not allowed.

In general the ethical consumers feel responsible as members of the society and express their feelings through his their purchasing behavior. Doane (2001) defined ethical consumption as the purchase of a product that concerns a certain ethical issue (human rights, labor conditions, animal well-being, environment, etc.) and is chosen freely by an individual consumer.

The benefits that derives from ethical consumption are divided in 2 marco categories:

- the ones that **benefit the natural environment** (e.g., environmentally friendly products, animal well-being, no polluting products)
- the ones that **benefit people** (e.g., products free from child labor, products made with fair working condion and respect of human rights fair-trade products).

Consumers can translate their ethical concerns in highlighting the positive qualities of an organic product like for example the fact that it doesn't ruin the environment or in highlighting products for their negative qualities like for example the use of fertilizers that can cause cancer. Consumers can decide to consider one or more ethical attributes when buying products.

The most important characteristics about empathy are the emotions of sympathy, compassion, concern and so on spread when another human being is in trouble and this can stimulate individuals' pro-environmental motivation. Enhancing empathy, is possible to decrease the psychological distance between consumers and environmental problems. It also affects people because thinking about the next generations and the future of everyone influences their consumption behavior on the ecological environment from an altruistic perspective.

As reported by Lee (2016), empathy could increase the weight given by consumers to the organic factor of products in the purchase decision because it induce consumers to behave altruistically towards products with social claims and because it stimulates consumers' prosocial motivation and reduce the weight to the price factor of products increasing the price premium of consumers' on organic food.

Since it has been discovered that empathy can enhance the connection between human and nature and that individuals with natural empathy are more likely to buy green products; we can strongly confirm that empathy in general positively influences the willingness to pay for organic food.

H2: Empathy positively influence the consumers' WTP for organic food

2.6 Health Consciousness and WTP for organic food

Health consciousness is the degree to which people care about their health and it is the psychological inclination that motivates them to take healthy actions. In particular there is an increase of consumers' awareness of healthy eating habits and healthy lifestyle because people are beginning to view the healthiness of food as one of the most important factors and are buying more products that are positively associated with their health and safety. This is due not just to the increase of life expectancy and the income levels but also to the increasing number of food problems all around the modern world that provoke long term illnesses.

Health consciousness in recent years is one of the most motivating factors to choose environmentally friendly products. In fact consumers care about their health and they want to enhance and maintain their health status by having healthy behaviors, starting from buying healthy products.

The most important factor for consumers which generates buying intentions of organic food is the safety as reported by Chinnici *et al.*, 2002; Makatouni, 2002; Padel and Foster, 2005; Squires *et al.*, 2001; Chen, 2009.

Following the study of McCarthy *et al.* (2022), the purchasing intentions of organic food are motivated by altruistic concerns hence environment and animal welfare concerns and self-interest hence personal and familiar health concerns, food safety concerns or by both the concerns.

People with a high health consciousness will probably be more concerned about their health and will be more cautious in the choice of the products to buy.

The health consciousness is influenced by:

- **Health Concern** is obviously the main cause and effect because the more a person is concerned with his/her wealth, the more he/she will be conscious about the food choices and vice versa. Moreover a person who is concerned about the health will

have an higher price premium for organic food and will always choose the product that will be better for his/her body

- **Safety Concern** is the most important reason to buy green food products because people and in particular families with small children want to be safe and don't want to run risks. Organic food contains fewer pesticides, chemical fertilizers, and additives and being conscious of what is inside the products eaten every day increases the health consciousness which motivates people to buy greener. In particular people are more motivated to consider food made from natural ingredients instead of synthetic and artificial additives.
- **Environmental Concern** is also an important factor because who is worried about his/her own health perfectly knows that the world is changing caused by the pollution and the global heating so to avoid this problem the only solution is to take actions for the self but at the same time also for the collectivity like for example making sustainable choices

Health consciousness promotes a positive inclination in organic foods and the intention to purchase healthier products. Individuals who are less health conscious of course don't know which kind of problems they could have through a wrong and dangerous diet because are not aware of all the possible damages that unsafe food choices can cause so they are less motivated to engage in healthy behaviors and are not willing to pay a premium price for an organic food so will obviously choose a conventional one.

After all these considerations we can affirm that the care about self health is positively associated with the willingness to purchase healthy and safe foods. Therefore, the following research hypothesis is proposed:

H4: *Health consciousness positively influences the consumers' WTP for organic food*

2.7 Tolerance for Ambiguity and the WTP for organic food

We can define the trait tolerance for ambiguity in a person as the stable and deliberate propensity to respond to ambiguity with more or less magnitude (McLain, Kefallonitis, and Armani 2015) and is also defined as “the tendency to perceive ambiguous situations as desirable” (Stanley Budner 1962, 29). Another definition by McLain (1993) is “a range, from rejection to attraction, of reactions to stimuli perceived as unfamiliar, complex, dynamically uncertain, or subject to multiple conflicting interpretations”.

Consumer tolerance can be associated with the consumer behavior in the process of making a decision. In particular tolerance describes how individuals process, understand and react to received information and of course the intensity of this feeling is different in every individual (McLain et al., 2015). Consumers with higher levels of tolerance of ambiguity need a lower amount of information given in less precise contents than those with lower levels of tolerance of ambiguity (Ghosh and Ray, 1997),

The action of buying new products involves strong ambiguity, the characteristic of organic food products is the fact of being new because it's still a field in expansion. Consumers in this case have to process a significant amount of information related not just to the process of production of organic food but also to the related regulations and certifications issued by public and private firms.

When talking about organic food there is always a sort of confusion of information because of the slight difference of natural, organic, ecological and biological concepts that often cause misunderstanding. Finally consumers have also to take into consideration the reliability of the information processed so the trust they have in the labels and if really the product is produced totally organically. Because of this amount of information that a consumer has to process before buying a product, the decision of buying an organic food involves strong ambiguity. In particular because the information consumers receive are confused, inconsistent, fragmented or vague.

During the decision-making process, ambiguity may produce discomfort, doubt, or other specific issues related to individual characteristics that may explain the attitude-behavior gap (Vermeir and Verbeke, 2006).

The level of the tolerance for ambiguity of a person depends on their openness and in particular to the degree to which people are able to put apart their need for a perfect, clear view of a specific situation. People with a low tolerance for ambiguity will prematurely close their activity of processing information and buy instead a product in which they don't have doubts about if the price is inferior.

Tolerance for ambiguity also affects the consumer's confusion avoidance. In a phase of purchase when the level of uncertainty in the data surpasses the consumers' ability to tolerate uncertainty, confusion occurs. Individuals with low tolerance for ambiguity won't buy a product they are confused about because their responses to the perceived risk are in the form of stress, avoidance, deferral, suppression, or refusal. Instead individuals with a high tolerance do not feel constrained to acquire new information to buy it because they are comfortable even in a situation of confusion and will catch every opportunity even the riskier ones.

Given prior observations, this study argues that consumers' tolerance of ambiguity is a personality trait that may play an essential role in explaining their behavior regarding organic food. More tolerant individuals don't need a high amount of information regarding an organic food product so they will more easily buy it. More tolerant consumers, in contrast to less tolerant consumers, show more confidence in their decision, feel less distressed by situations subject to multiple conflicting interpretations and are more willing to take risks. For all these reasons we can affirm that:

H5: Tolerance for ambiguity positively influences the consumers' WTP for organic food

2.8 Warm Glow and the WTP for organic food

The **warm glow** is the emotional reward experienced by a person for doing "good" not just for the environment but also for other people (Andreoni, 1990). In particular the expectation of warm-glow feeling from eco-friendly and social activities is a key factor that pushes the

consumers to buy sustainable products and influence their attitude and behavior by repeating that action (Hartmann, 2017; Ma and Barton, 2016). It motivates consumers to participate in environmentally friendly behaviors like for example the organic food buying. As reported by Boobalan and Sulur (2020), a person can experience some emotional rewards like a warm glow feeling by connecting his/her identity with doing good for the environment and others.

The feeling of warm glow for doing “good” is more common in collectivistic cultures like for example India or China than individualistic cultures like for example the USA or the UK, this feeling led Indian people to engage that particular behavior repeatedly making it become a habit. Because collectivistic cultures are affected by emotional-based societal credits such as appreciation, recognition, and obligation, the feeling of warm glow is highlighted by the societal pressure experienced by an individual towards engaging any behavior

There are 2 different types of altruism:

- **Pure altruism** is also known as moral altruism and is when people are motivated just by the desire of helping someone else even when it's risky and without any reward. This feeling is driven by internalized and moral values.
- **Impure altruism** instead is when people are also motivated by the emotional reward of giving to others (warm glow) and it arises independent of the possibility of financial reward. According to James Andreoni (1989,1990) in his theory of warm glow giving, this satisfaction represents the selfish pleasure derived from “doing good”, independently by the actual impact of one's generosity. People can be defined as impurely altruistic meaning that they maintain both altruistic and egoistic motivations of giving.

Selfish values are the driving factors of behavioral decision-making related to consumption because it is believed that individuals are selfish because of the concern for one's health which demonstrates the concept of pro-self or prioritize their interests which are then clearly reflected in their consumption behavior in fact it is proved that health and food safety concerns are the most important drivers of positive attitudes. People concerned with their health problems have better attitudes in the purchase of organic products and the act of buying green will make them feel good for themselves in the first place and then also for the environment.

Altruism can also be explained as the evolution of empathy in humans that is aimed to help other people in need (De Waal, 2008). In fact the capacity to be influenced by the understanding and the feel of pain of others motivates people to act altruistically. Moreover, independently by the fact that the altruism is “pure” or “impure” it has been demonstrated that people derive positive internal emotional benefits or “warm-glow” from helping others (Andreoni, 1990; Batson, 1987; Isen, 1970; Post, 2005). People do derive positive warm-glow from helping the environment, perhaps in a similar sense to the way in which people experience warm-glow from helping other people.

In the study conducted by Taufik, Bolderdijk, & Steg, 2015 it has been found that acting green leads to feeling good and when participants acted green they not only felt more positive but actually perceived higher temperatures—a literal “warm-glow”.

Pro-social and pro-environmental actions have an altruistic value because they reflect in the consumption of organic food which is good for the environment and also for the working conditions inside the firms and it supports local economic welfare. An important motive for pro-social and pro-environmental behavior may be the seeking of pleasure and the pursuit of happiness. In particular, consumers experience the psychological benefit which consists in an additional reward when they engage in altruistic behavior.

After all these considerations we are sure about the fact that the warm glow can be considered an emotional reward for “doing good” and is experienced by people when doing pro-social and pro-environmental actions like for example purchasing organic food, so the following hypothesis is proposed:

H6: The warm glow positively influences the consumers' WTP for organic food

2.9 The use of the moderating variable as an independent one

A moderating variable refers to a variable that “influences the nature magnitude and/or direction of the effect of an antecedent on an outcome” (Aguinis, Edwards, & Bradley, 2017, p. 2). In statistical terms, moderation is where a relationship between an independent variable and a dependent variable changes according to the value of a moderator variable (Dawson, 2014).

When working with a moderating effect the first thing to do is focus on the significance of the moderating effect. The moderator variable can have just the moderating effect between the relationship of two variables or it can also have the direct effect on the dependent variable. This decision depends on the characteristics of the moderator variable. The second thing to do is to report the effect size (f) and how much it contributes to R square as a function of the moderator through the software SmartPLS 3 which is a professional statistical software with graphical user interface for structural equation modeling (SEM) using the partial least squares (PLS) path modeling method. Lastly a simple slope plot should be executed and reported for the visual inspection of the direction and strength of the moderating effect as we will see in the next chapter. All these factors will be analyzed in detail in chapter 4.

In the analysis of my thesis, the moderating variable of impulsivity has both the negative moderating effect and the direct effect. In particular impulsivity has the moderator effect because it negatively moderates the relationship between anxiety and the WTP for organic food and it has also the direct effect because it negatively influences the consumers' WTP for organic food.

The case where the moderating effect acts also as the independent variable can be found in the literature in the article written by You Kyung Lee (2017) which talks about the Comparative Study of Green Purchase Intention between Korean and Chinese Consumers: The Moderating Role of Collectivism. In his study he assumes that collectivism has a positive impact on the green purchase intention but it also positively moderates the positive effect of NEP (new ecological paradigm) on green purchase intention and positively moderates the positive effect of environmental collective efficacy on green purchase intention. Collectivism was considered a direct antecedent and a moderating variable. This study contributes to the literature by investigating those factors likely to influence consumers' green purchase intention in the context of green marketing. Results showed that NEP, environmental collective efficacy, environmental knowledge, and collectivism are all antecedents of green purchase intention in China. In particular, collectivism positively moderates the relationship between environmental collective efficacy and green purchase intention in China and collectivism has also a significant direct impact on green purchase intention in China. This study is just an example of the fact that a moderating variable can have both the effects.

3. METHODOLOGY AND DATA COLLECTION

3.1 Population, sample and data collection

To conduct my quantitative research about the personality traits of consumers on organic food I launched a survey in Qualtrics, a software that allows you to create surveys and generate reports without the need of advanced programming knowledge. I used Qualtrics because it enables you to do surveys, distribute them and get the results which are shown thanks to the use of workflows.

After all the data was collected, I analyzed the data collected through SmartPLS 3, an innovative software that analyzes your data and gives you all the statistics.

To collect my data I launched a survey in Italian because my target was the Italian population. My survey was composed of a total of 58 questions divided in 7 different blocks from the questions about the dependent variable passing through the ones about the independent variables to the demographic questions.

The questions I made were all taken from the book “Marketing scales” to make my research more clean and ask questions made by professionals.

The questionnaire was distributed in 14 days, the first 2 weeks of May. To distribute the survey I decided to make a post on Facebook and Instagram in my personal account but the most useful source of distribution was Whatsapp where I had been able to distribute it to my relatives, parents, friends, acquaintances and friends of friends thanks also to the precious help of my friends and relatives who distributes it to all their acquaintances. There are also other methods to collect more answers to the survey like for example Amazon metadata but for my research answers were enough so I didn't need to rely on other methods.

The questionnaire was divided in 8 blocks:

- the first one was dedicated to the dependent variable hence the Willingness To Pay for sustainable products
- from block n.2 the questions are dedicated to the independent variables and in particular the second block is about anxiety

- the third block is focused on empathy
- the fourth block is about the health consciousness
- the fifth block talks about the tolerance for ambiguity
- the sixth is dedicated to the last dependent variable called warm glow
- the seventh block is dedicated to impulsivity, the moderating variable
- the last block is focused on the demographic questions

230 answers in total were collected for my research with the snowball sampling method which consists in sending the questionnaire to my relatives, friends and acquaintances through Whatsapp and other social media and asking them to send it to all their acquaintances, in this way the sample group is said to grow like a rolling snowball.

The first question of my survey, shown in **Table 3**, is the filter question which has been deeply useful to filter the participants of the survey. In particular I asked “Do you know what the meaning of organic food is?”, and just 223 participants passed the test instead the ones that answered “I’m not informed at all” haven’t been taken into consideration because they don’t have enough information about this topic to answer properly.

Table 3 Filter Question - Level of information about organic food

Do you know what is meant by organic food? Are you aware of its difference from traditional food?	N.	%
I’m for nothing informed	6	2,62%
I’m not very informed	56	24,45%
I’m moderately informed	126	55,02%
I’m very informed	33	14,41%
I’m extremely informed	8	3,49%
	229	100%

Instead in the middle of Block 5 about health consciousness I placed the attention check “Please mark I strongly disagree now” to check the attention of the respondents to the questionnaire and not take into consideration the ones who replied “I strongly disagree” and just 157 respondents (out of 223) passed this test. Moreover throughout the questionnaire I used a redundant question about the age of the participants also to test the attention in filling the answers and luckily everyone in this case replied correctly. In **Table 4** are reported the answers to the attention check with the correspondent percentage.

Table 4 Attention Check

Please mark “I strongly disagree” now	N.	%
Strongly disagree	15	8,72%
Disagree	24	13,95%
Partially disagree	27	15,7%
Neither agree nor disagree	16	9,3%
Partially agree	35	20,345%
Agree	12	6,98%
Strongly agree	43	25%
	172	100%

This screening out was essential to recruit the most prepared and careful participants to the questionnaire and this led to the final sample of **157 valid respondents**.

In **Table 5** all the demographic characteristics of respondents are observed from the age of the participants to how often they buy organic food. The data of the table has already been corrected taking out the ones who didn't pass the filter question (6), the ones who didn't pass the attention check (15) and the ones who didn't complete the questionnaire which stopped on the first/second question or even before the first one (52).

Table 5 Demographic characteristics

DEMOGRAPHIC QUESTIONS	N.	%
Gender		
Male	33,76%	53
Female	66,24%	104
Age in completed years		
18-26	47,77%	75
27-37	13,38%	21
38-48	7,64%	12
49-59	17,84%	28
>60	13,38%	21
Level of instruction		
Lower than high school diploma	10,38%	17
3 years high school diploma	13,38%	21
5 years high school diploma	24,20%	38
Bachelor's degree	30,57%	48
Master's degree	21,02%	33
Profession		
Employee	43,95%	69
Freelance	6,37%	10

Entrepreneur	2,55%	4
Student	17,38%	28
Student-Worker	13,38%	21
Unemployed	5,10%	8
Retired	10,38%	17
How often do you buy organic food?		
Never	5,10%	8
Sometimes	53,50%	84
Quite often	31,85%	50
Often	8,28%	13
Always	1,27%	2
Are you planning to buy organic food the next time you go food shopping?		
Definitely no	1,91%	3
Probably no	11,46%	18
Maybe	35,03%	55
Probably yes	39,49%	62
Definitely yes	12,10%	19

As we can see from the first 2 questions in **Table 5**, about 62% of the respondents are female and a great 28% is represented by participants aged between 18 and 26. So the majority of the respondents of my questionnaire are young females.

This data is totally in line with the expectations since in the majority of the studies cited in my references has been seen that gen Z and in particular females are more inclined to respond

to surveys and also that young females are more concerned about their health and the environmental problems so they are more inclined to buy organic food.

When looking at the level of instruction, we can see that just 10% of the respondents don't have any diploma. Instead 52% of the sample has a bachelor's or master's degree. This data is really interesting because it means that more than half of the sample has a high institutional level. Moreover data show that regarding the profession, 44% is an employee and that the smallest percentage is represented by entrepreneurs who are just 3% of the total, the 5% of the sample are unemployed.

The last two demographic questions of the survey are aimed to look at the inclination of the respondents on organic products. In particular we can observe that the 54% of the sample sometimes buy organic food, instead the 10% often or always buy it. This data is an important contribution to the research because it means that a great part of the sample know well what organic food is and also which are the organic food categories that are better to be bought because sometimes (54%) or quite often (31%) they buy it in the supermarket. The last question asked if the participant would have bought an organic food product the next time he/she would have gone grocery shopping and the result is that 35% maybe will buy an organic food product instead the 52% will probably or for sure buy it which is an amazing discovery.

3.2 Items and measurement scales

All the 49 measurement items that were used to survey and analyze the different variables of the study were borrowed from existing research and in particular I found them all on the Marketing scales books to improve the quality of my research.

The survey was carried in Italian, so little modifications were made to the wording of the items to align them with the context of this research.

In **Table 6** there is the complete overview of the measurement scales with the measures, the items and the sources. To measure the variables of the questionnaire a seven-point Likert scale for all the variables from 1 to 7 was employed. In particular 7 indicates "strongly agree" with the sentence instead 1 indicates "strongly disagree", just for the measure of the

WTP 7 represents “Strongly probable” and 1 indicates “strongly improbable” and for the measure of empathy 7 is “always” and 1 is “never”.

To better analyze the data, the following changes to the scales has been made:

- In the measure of anxiety all the variables with reverse coding have been changed in the normal coding to make it easier to analyze the data. In particular changes have been made on item n. 5 Reassured → Worried, item n. 6 Relaxed → Nervous and item n.7 Comforted → Discouraged
- In the measure of impulsivity the reverse coding of variable n. 8 “I carefully plan most of my purchases” became “ I almost never carefully plan my purchases”
- Most changes have been made on the measure of tolerance to ambiguity where the reverse coding has been taken off on almost all the variables. In particular variable 1. “I like movies or stories with definite endings” became “I don’t like movies or stories with definite endings”, variable 2. “I always want to know what people are laughing at” became “I don’t care to know what people are laughing at”, variable n.4 “A good job is one where what is to be done and how it is to be done are always clear” became “A boring job is one where what is to be done and how it is to be done are always clear”, variable n. 6 “It really disturbs me when I am unable to follow another person's train of thought” became “It doesn’t bother me when I am unable to follow another person's train of thought”, variable 8 “A poem should never contain contradictions” became “It doesn’t bother me if a poem contains contradictions”, variable n. 10 “I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer” becomes “ I like to work on problems which have more possible solutions or ambiguous answers” and variable 12. “I like parties where I know most of the people more than ones where all or most of the people are complete strangers” became “I like parties where most of the people are complete strangers more than the ones where I know most of the people.

Table 6 Measures and variables

Measures	Items	Sources
Anxiety	<p>When you read about environmental degradation and health problems, to what extent did you experience the following feelings?</p> <ol style="list-style-type: none"> 1. Fearful 2. Tense 3. Nervous 4. Anxious 5. Reassured (r) 6. Relaxed (r) 7. Comforted (r) 8. Stressed 	<p>8 items, Likert-type scale from 1 to 7</p> <p>Maheswaran and Meyers-Levy (1990)</p> <p>Winterich and Haws (2011)</p>
Impulsivity	<ol style="list-style-type: none"> 1. I often buy things spontaneously. 2. "Just do it" describes the way I buy things. 3. I often buy things without thinking. 4. "I see it, I buy it" describes me. 5. "Buy now, think about it later" describes me. 6. Sometimes I feel like buying things on the spur of the moment. 7. I buy things according to how I feel at the moment. 	<p>9 items, Likert-type scale from 1 to 5</p> <p>(Rook and Fisher 1995)</p>

	<p>8. I carefully plan most of my purchases. (r)</p> <p>9. Sometimes I am a bit reckless about what I buy</p>	
Empathy	<p>1. When I see a retarded child, I try to imagine how he feels about things.</p> <p>2. When I meet someone who is very ill emotionally, I wonder how I would feel if I were in his shoes.</p> <p>3. Many times I have felt so close to someone else's difficulties that it seemed as if they were my own.</p> <p>4. Even when I argue with a person, I try to imagine how he feels about his view.</p>	<p>4 items, Likert-type scale from 1 to 5</p> <p>Su et al. (2008)</p> <p>Sherman and Stotland et al. (1978, pp. 27-44)</p>
Health Consciousness	<p>1. I reflect about my health a lot.</p> <p>2. I'm very self-conscious about my health.</p> <p>3. I'm generally attentive to my inner feelings about my health.</p> <p>4. I'm constantly examining my health.</p> <p>5. I'm alert to changes in my health.</p> <p>6. I'm usually aware of my health.</p> <p>7. I'm aware of the state of my health as I go through the day.</p>	<p>9 items, Likert-type scale from 1 to 5</p> <p>(Gould 1988)</p>

	<p>8. I notice how I feel physically as I go through the day.</p> <p>9. I'm very involved with my health.</p>	
Tolerance for ambiguity	<p>1. I like movies or stories with definite endings. (r)</p> <p>2. I always want to know what people are laughing at. (r)</p> <p>3. I would like to live in a foreign country for a while.</p> <p>4. A good job is one where what is to be done and how it is to be done are always clear.(r)</p> <p>5. I tend to like obscure or hidden symbolism.</p> <p>6. It really disturbs me when I am unable to follow another person's train of thought. (r)</p> <p>7. I am tolerant of ambiguous situations.</p> <p>8. A poem should never contain contradictions. (r)</p> <p>9. Vague and impressionistic pictures appeal to me more than realistic pictures.</p> <p>10. I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer. (r)</p> <p>11. Generally, the more meanings a poem has, the better I like it.</p>	<p>12 items, Likert-type scale from 1 to 7</p> <p>McQuarrie and Mick (1992)</p> <p>(Budner 1962; MacDonald 1970; Norton 1975)</p>

	12. I like parties where I know most of the people more than ones where all or most of the people are complete strangers.(r)	
Warm Glow	When I do something “good” for the environment, I feel: 1.ashamed / proud 2. in the wrong / in the right 3. wicked / virtuous 4. unethical / ethical	4 items, Likert-type scale from 1 to 9 Giebelhaus et al. (2016)
WTP for organic food	1. I am willing to pay a higher price for organic food than for conventional food 2. I would like to keep buying organic food, even if conventional food was cheaper 3. For the advantages I have as a customer of organic food I would be willing to pay a higher price.	3 items, Likert-type scale from 1 to 7 Zeithaml, Berry, and Parasuraman (1996) Habel et al. (2016)

3.3 Data analysis procedure

After distributing and collecting the data through Qualtrics it is necessary to analyze and test the validity of all the variables and the data which have been found because Qualtrics only tells the subdivisions of participants in every answer to a single question and the related percentages. To do that I exported all the data in a new platform named SmartPLS 3.

SmartPLS 3 is a second-generation multivariate statistical procedure that can be applied in marketing research because it can test theoretically supported linear and additive causal models. It’s a great way to estimate complex relationships between variables at the same time. There are several different approaches to the Structural Equation Modeling (SEM):

- Covariance-Based SEM (CB-SEM) is widely applied when sample size is large and is the preferred data analysis method for confirming or rejecting theories testing the various hypothesis
- Partial Least Squares (PLS) which is a modeling approach to SEM with no assumptions about data distribution. PLS-SEM is useful for structural equation modeling in applied research projects, in particular when the sample of participant is not too big and the data distribution is skewed
- Generalized Structured Component Analysis (GSCA) is the best method if overall measures of model fit are particularly important to the researchers or many nonlinear latent variables exist and have to be accommodated.

The method I used for the thesis is the Partial Least Squares Structural Equation Modeling **PLS-SEM** because the number of participants is limited and the data distribution is skewed. Moreover it is useful to visually examine the relationship that exists between variables to understand which one gives the best result.

We can also find 2 sub-models in a PLS: the inner model and the outer model. The inner model or structural model specifies the relationships between the independent and the dependent variables (the constructs) instead the outer model or measurement model specifies the relationship between the independent variables and their observed indicators and it helps to evaluate the reliability and validity of the construct.

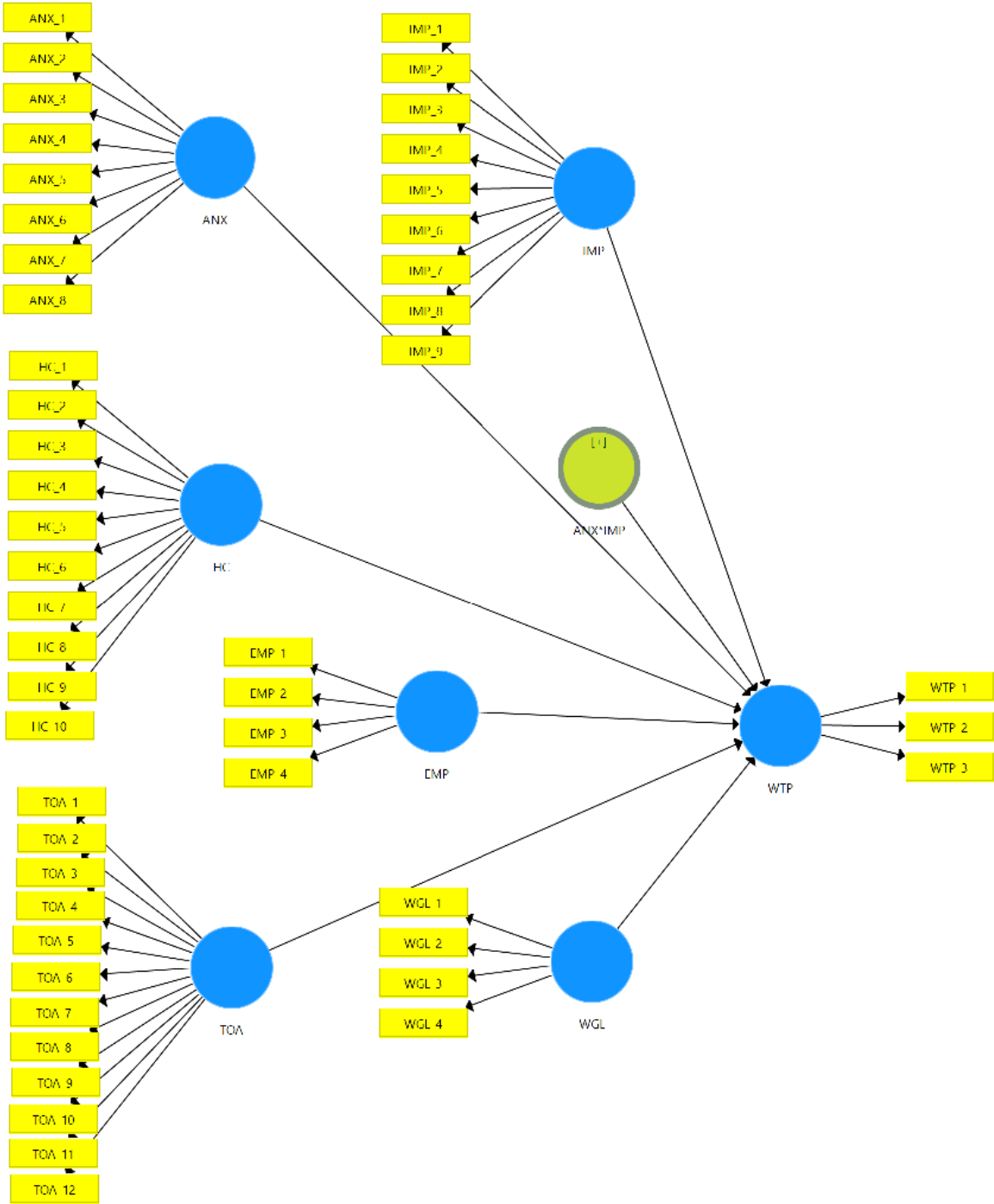
Moreover there is another distinction between formative and reflective scale. In the reflective measurement scale the indicators are highly correlated and interchangeable and their reliability and validity should be examined and moreover the directional arrow points to the items indicating that the construct causes the measurement of the indicator variables.

Instead in the formative measurement scale if the indicators cause the latent variables and are not interchangeable with each other and in this case there is no need to test indicator reliability or validity, moreover the directional arrows will point from the items to the construct. In my study I just used **reflective measurement scales** in fact both reliability and validity have been measured and the arrows point all from the construct to the indicators .

The PLS path model is a diagram generated to visually display the hypotheses and to show the relationship among constructs and their indicators. **Figure 7** represents the path model of my research. We can recognize the independent variables and the moderator in the graph

because they have a one way arrows pointed outside instead the dependent variable has a one way arrows pointed inside. In particular we can see one dependent variable that is the WTP, one moderator with moderator effect ANX*IMP and six independent variables with their related indicators which are ANX, HC, EMP, TOA, WGL and the direct effect of IMP.

Figure 7 Structural model with variables and items



4. DATA ANALYSIS AND RESULTS

4.1 Measurement model analysis

In SmartPLS when we have a reflective measurement model, as in this case, the first thing to measure is the **reliability** and the **validity** of the construct measures and just then evaluate the structural model.

The first criterion to be evaluated is typically internal consistency reliability. The traditional approach to evaluate the internal consistency is **Cronbach's Alpha** which provides an estimation of the reliability, demonstrating how good the items measure a construct. It assumes that all indicators are equally reliable giving to each of them the same weight and it is sensitive to the number of items in the scale.

Another measure of internal consistency reliability is **composite reliability**. Composite reliability is a more modern approach and unlike Cronbach's alpha that weights all of the items equally without considering their load factors, Composite Reliability takes into account the different outer loadings of the indicator variables. Generally Cronbach's Alpha tends to underestimate the internal consistency reliability, in contrast composite reliability tends to overestimate the internal consistency reliability so it's important to take into account and report both the criteria.

Rho_A is another measure of internal consistency reliability which is less used than the other two approaches and usually its results lie between the values of Cronbach's Alpha and Composite reliability.

The variables with Cronbach's Alpha to be reliable and hence consistent should have a value greater than **0.700** instead with composite reliability the values higher than **0.600** (perfect if they are higher than 0.700) are considered acceptable but values above 0.95 are not desirable because they indicate that all the indicator variables are measuring the same phenomenon and are therefore not likely to be a valid measure of the construct.

Once the reliability of the constructs has been measured, we have to also test the validity of our variables, starting with the **convergent validity**. It indicates how well a measure positively correlates with the other measures of the same construct. In particular all the

measures of a specific construct should converge or at least share a high proportion of variance.

To evaluate convergent validity we have to consider the **outer loadings** of the indicators and the **average variance extracted (AVE)**.

The standardized outer loadings should normally be higher than **0.708** (0.700 is considered close enough) to be considered valid because the high values of the items indicate that they have much in common with the associated construct. The value of the standardized outer loading represents how much of the variation in an indicator is explained by the construct and is described as the variance extracted from the item.

The other measure which is used to measure the convergent validity is the Average Variance Extracted (AVE). The standardized outer loadings are necessary to calculate it because it represents the sum of the squared loadings divided by the number of indicators for every construct. An AVE to be valid has to be higher than **0.500** because it indicates that the construct explains more than half of the variance of the indicators instead an AVE lower than 0.500 indicates that more variance remains in the error of the item rather than in the variance explained by the construct.

In **Table 7** are represented all the datas extracted from SmartPLS without changing and dropping any variable for the analysis. The numbers in red represent the values of Cronbach's Alpha, Rho_A and Composite Reliability which are lower than 0.7 and the values of AVE which are lower than 0.5 instead in green are shown all the values that are above that limit. As you can see not all the values are in green so not all of them are reliable and valid.

Table 7 Descriptive coefficients of the measurement model

	Cronbach's Alpha	Rho_A	Composite reliability	Average Variance extracted (AVE)
ANX	0.914	0.925	0.931	0.631
EMP	0.745	0.827	0.836	0.568
HC	0.868	0.487	0.558	0.215
IMP	0.914	0.393	0.853	0.423
TOA	0.711	0.491	0.675	0.184
WGL	0.919	0.981	0.940	0.797
WTP	0.828	0.874	0.895	0.740

As reported by Hair et al (2017), if not all values are considered reliable and valid is given by the fact that generally indicators with very low outer loadings hence below 0.4 should always be eliminated from the construct. Instead indicators with outer loadings between 0.40 and 0.70 should be considered for removal from the scale only when deleting the indicator leads to an increase in the Average Variance Extracted (AVE) and if its removal doesn't negatively affect the content validity (Cronbach's Alpha and composite reliability).

I eliminated from my study the following outer loadings which had a value lower than 0.4:

IMP1, IMP8, HC10, HC6, HC7, TOA3, TOA1, TOA4, TPA5, TOA6, TPA7 and TOA10.

Instead I decided to remove the following items between 0.400 and 0.700 because I verified that without them the constructs have an higher reliability and/or validity:

EMP4, ANX7, IMP9, TOA2.

The indicator TOA_8 has not been deleted even if it's 0.486 because removing it, the AVE increases but both the value of Cronbach's Alpha and composite reliability decrease so it's better to leave it as it is.

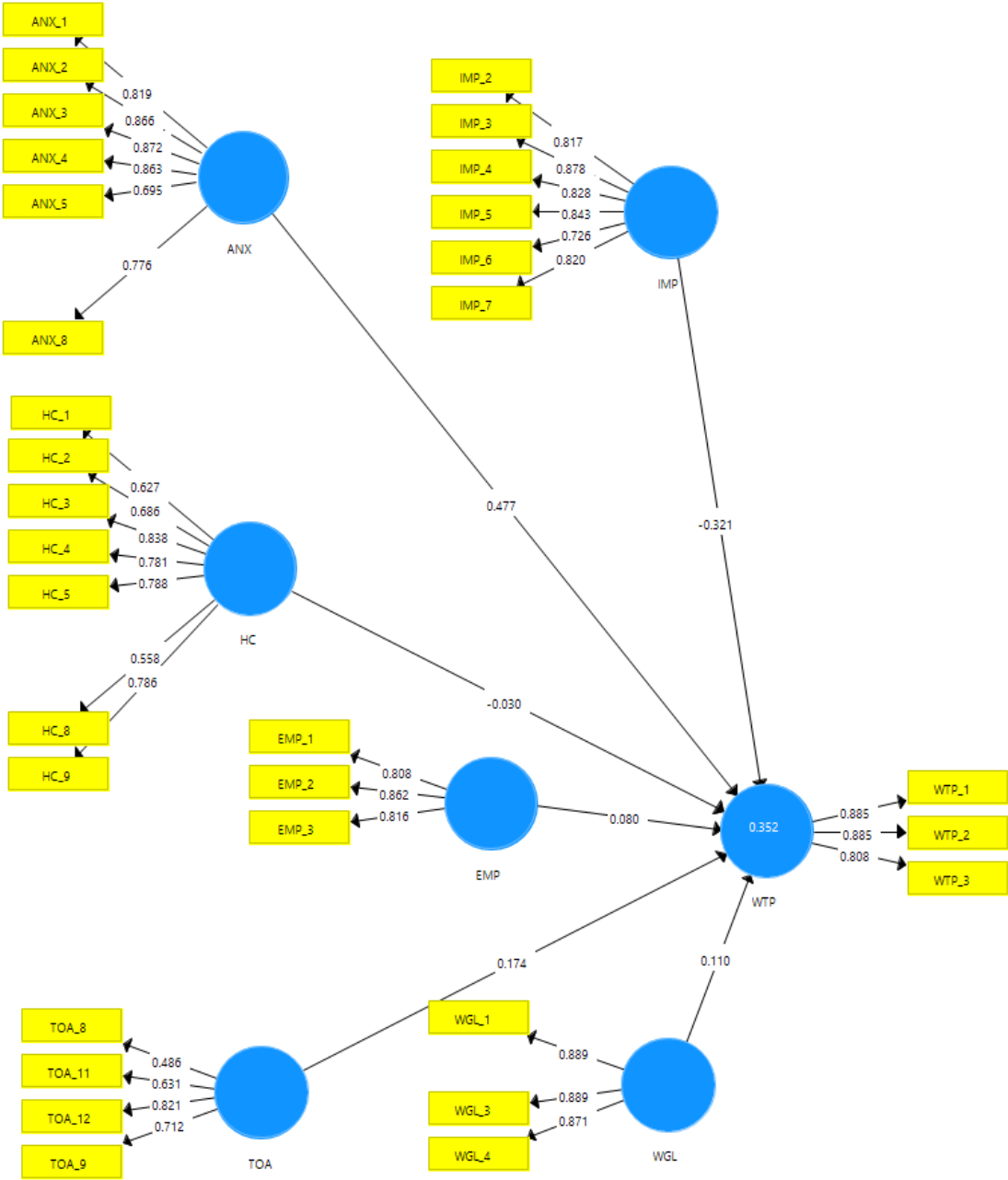
Table 8 Descriptive coefficients of the measurement model after the removal of the outer loadings lower than 0.4

	Cronbach's Alpha	Rho_A	Composite reliability	Average Variance extracted (AVE)
ANX	0.921	0.933	0.937	0.682
EMP	0.781	0.805	0.868	0.687
HC	0.861	0.912	0.887	0.532
IMP	0.908	0.990	0.925	0.672
TOA	0.657*	0.765	0.771	0.458*
WGL	0.919	0.982	0.940	0.797
WTP	0.828	0.868	0.895	0.740

As you can see in **Table 8**, after the removal of the invalid or unreliable values, all the constructs are green and this means that every construct is valid and reliable. The only exception is construct Tolerance for Ambiguity (TOA) where the value of Cronbach's Alpha is 0.657 (<0.700) and the value for AVE is 0.458 (<0.500) so they are both under the suggested value. Anyway these values are so close to the threshold that **this construct can be considered valid and reliable**. Moreover as reported in the PLS-SEM Hair_2 2017 the composite reliability is generally interpreted in the same way as Cronbach's alpha. Specifically, composite reliability values from 0.60 to 0.70 are acceptable in exploratory research, while in more advanced stages of research, values between 0.70 and 0.90 can be regarded as satisfactory. So since this is exploratory research, the composite reliability is higher than 0.7 and the value of Cronbach's Alpha is higher than 0.6 and really close to 0.70, it can be considered reliable.

We can see in **Figure 8** the structural model without the outer loadings lower than 0.4 and without the ones between 0.4 and 0.7 which penalized the AVE and the composite reliability or Cronbach's Alpha.

Figure 8 Structural model after the deletion of the unreliable indicators



After analyzing the reliability and the convergent validity of each single element of the measurement model, the following step is to analyze the discriminant validity.

The **discriminant validity** measures the level to which a construct is truly distinct from the other constructs of the measurement model so if the conditions are respected it means that a

construct is unique and captures data that are not represented by the other constructs. There are 3 ways to measure the discriminant validity:

- Fornell-Larcker coefficients
- Cross Loadings
- Heterotrait-Monotrait Ratio (HTMT)

The first approach to measure the discriminant validity is the **Fornell-Larcker criterion**. This model affirms that the square root of each construct's AVE should be greater than its highest correlation with any other construct.

In **Table 9** the data are reported in the form of a symmetric matrix, in which the diagonal values in green correspond to the square root of the AVE of every construct. The values under the diagonal represent the correlation between each construct and all the other constructs. These values under the diagonal must be lower than the values in the diagonal, otherwise there is a problem with the discriminant validity. The Fornell-Larcker method is based on the idea that a construct shares more variance with its associated indicators than with any other construct.

In my study, since all the values lying under the diagonal (the values representing the correlation between the different constructs) are lower than the values on the diagonal (representing the square roots of the AVE for each construct), the discriminant validity is confirmed.

Table 9 Fornell-Larcker criterion

	ANX	EMP	HC	IMP	TOA	WGL	WTP
ANX	0.826						
EMP	0.169	0.829					
HC	0.152	0.122	0.730				
IMP	0.261	0.067	-0.089	0.820			
TOA	0.242	-0.006	0.044	0.188	0.674		
WGL	0.270	0.048	0.184	0.029	0.185	0.893	
WTP	0.468	0.149	0.112	-0.145	0.346	0.250	0.860

The second model used to measure the discriminant validity is the **Cross Loadings**.

It works with the measurement of every loading, first the outer loadings of the construct's indicators and then the cross loadings which correspond to the loadings of the indicators with other constructs. The indicator's outer loading on the associated construct represented in green in the table should be greater than any of its cross-loadings (i.e., its correlation) on other constructs. If this condition is respected the discriminant validity has been established, instead if there is a cross-loadings that exceed the indicators' outer loadings we are in the presence of a discriminant validity problem. As you can see from **Table 10** the discriminant validity has been established in every single indicator because all the values of the cross loading are lower than the ones of the outer loading.

Table 10 **Cross loadings**

	ANX	EMP	HC	IMP	TOA	WGL	WTP
ANX_1	0.793	0.155	0.169	0.299	0,210	0.230	0.352
ANX_2	0.863	0.093	0.168	0.301	0.172	0.194	0.324
ANX_3	0.882	0.127	0.127	0.218	0.307	0.304	0.430
ANX_4	0.861	0.246	0.032	0.191	0.232	0.181	0.488
ANX_5	0.668	0.129	0.245	0.125	-0.088	0.206	0.366
ANX_6	0.888	0.055	0.092	0.153	0.220	0.203	0.390
ANX_8	0.806	0.141	0.077	0.255	0.349	0.247	0.285
EMP_1	0.089	0.808	0.193	0.007	-0.022	0.136	0.102
EMP_2	0.166	0.862	0.146	0.065	0.004	0.030	0.105
EMP_3	0.156	0.816	0.008	0.082	0.000	-0.019	0.151
HC_1	-0.019	-0.075	0.627	-0.033	0.051	0.205	0.078
HC_2	0.075	-0.008	0.685	-0.077	0.122	0.145	0.028
HC_3	0.050	0.183	0.838	-0.202	-0.026	0.174	0.111
HC_4	0.104	0.045	0.781	-0.051	0.107	0.154	0.051
HC_5	0.016	0.053	0.789	-0.058	0.059	0.046	0.062
HC_8	-0.045	0.053	0.558	0.147	-0.061	0.182	0.027
HC_9	0.369	0.191	0.786	-0.018	0.031	0.092	0.116
IMP_2	0.290	-0.075	-0.136	0.817	0.184	0.053	-0.036
IMP_3	0.248	0.110	-0.161	0.878	0.053	0.065	-0.173

IMP_4	0.217	-0.017	-0.081	0.828	0.183	0.028	-0.067
IMP_5	0.221	0.093	0.070	0.843	0.161	0.079	-0.016
IMP_6	P.171	-0.008	-0.152	0.726	0.072	-0.074	-0.048
IMP_7	0.177	0.050	-0.038	0.820	0.297	-0.049	-0.135
TOA_8	0.062	-0.075	-0.005	0.089	0.486	0.010	0.062
TOA_9	0.123	-0.020	-0.014	0.164	0.712	0.079	0.125
TOA_11	0.162	0.040	0.065	0.120	0.631	0.018	0.131
TOA_12	0.233	-0.002	0.046	0.139	0.822	0.247	0.253
WGL_1	0.292	0.075	0.118	0.073	0.198	0.863	0.301
WGL_2	0.243	0.024	0.190	0.040	0.193	0.926	0.183
WGL_3	0.197	0.039	0.205	-0.054	0.101	0.895	0.173
WGL_4	0.190	0.009	0.173	0.009	0.138	0.887	0.178
WTP_1	0.420	0.049	0.058	-0.117	0.246	0.190	0.885
WTP_2	0.456	0.191	0.180	-0.164	0.210	0.291	0.886
WTP_3	0.301	0.137	0.012	-0.074	0.173	0.130	0.808

The last way to measure the discriminant validity is the **Heterotrait-Monotrait ratio (HTMT)**.

HTMT is the mean of all the indicators of correlations of one construct with different constructs relative to the mean of the average correlations of indicators measuring the same construct. In the HTMT model values higher than 0.90 suggest a lack of discriminant validity because it would mean that the constructs are too similar. When the values are lower than **0.85** the discriminant validity is established because the constructs in the path model are conceptually more distinct and maintain their unicity.

As you can see in **Table 11** all the datas are represented in green because they are lower than 0.85 so the discriminant validity is established.

Table 11 Heterotrait-Monotrait Ratio (HTMT)

	ANX	EMP	HC	IMP	TOA	WGL	WTP
ANX							
EMP	0.198						
HC	0.188	0.204					
IMP	0.299	0.094	0.184				
TOA	0.331	0.089	0.142	0.263			
WGL	0.282	0.100	0.226	0.085	0.194		
WTP	0.508	0.174	0.119	0.139	0.285	0.250	

If the values are lower than 0.85 and the discriminant validity is present, as in this case, we can continue with the analysis.

The HTMT can serve as the basis for a statistical discriminant validity test called **bootstrapping** to check whether the HTMT statistic is significantly different from 1 because PLS-SEM does not rely on any distributional assumptions and so standard parametric significance tests cannot be applied.

The bootstrapping function allows us to create casual subsamples starting from the actual sample and verify the validity of the relationships among the existing constructs; if the bootstrap confidence intervals do not present a value of 1.00, the discriminant validity of the constructs is supported.

4.2 Structural model assessment

After having analyzed and confirmed the validity, reliability and the lack of problems in the discriminant validity of the model, the next step is the analysis of the structural model. It is carried out to examine the model's predictive capabilities and understand the relationships that exist between the different constructs of the model and their intensity.

The structural model assessment is divided into 6 steps that has to be followed:

STEP 1: Collinearity issues

STEP 2: Significance/relevance of the structural model relationships

STEP 3: Level of R square

STEP 4: Effect size f square

STEP 5: Predictive relevance Q square

STEP 6: Effect size q square

4.2.1 Collinearity issues

The first step of this path is to assess the structural model collinearity issues. It is important to analyze the collinearity issues before proceeding with the structural model assessment. We can have collinearity problems in the structural model if redundant indicators are used as single items to measure two or more constructs. High levels of collinearity between indicators are a crucial issue because they have an impact on the estimation of weights and their statistical significance.

To measure the collinearity issues we have to look at the Variance Inflation Factor (**VIF**). If its level is higher than 5 it indicates that 80% of its variance is increased because of collinearity. If the level of VIF is higher than 5, the corresponding indicator has to be removed if the remaining indicators still sufficiently capture the construct's content.

Outer VIF refers to the variance inflation between the indicators of each construct, instead the Inner VIF refers to the variance inflation between the constructs.

In **Table 12** we can see the Outer VIF of the structural model which are all represented in green because they are under the suggested level. I decided to remove indicator ANX_6 because its value was above 5 (5.163) and doing it all the values inside the construct of anxiety decreased and also value WGL_2 because it was very close to 5 (4.936) and cutting it out the other values of warm glow benefited from it.

Table 12 Outer VIF values of the structural model

Indicators	Variance Inflation Factor (VIF)
ANX_1	2.656
ANX_2	3.064
ANX_3	3.593
ANX_4	2.576
ANX_5	1.713
ANX_8	3.005
EMP_1	2,318
EMP_2	2.584
EMP_3	1.312
HC_1	1.595
HC_2	1.953
HC_3	2.023
HC_4	2.552
HC_5	2.979

HC_8	1.779
HC_9	1.749
IMP_2	3.450
IMP_3	2.592
IMP_4	3.212
IMP_5	2.385
IMP_6	1.855
IMP_7	2.099
TOA_8	1.195
TOA_9	1.422
TOA_11	1.290
TOA_12	1.148
WGL_1	1.658
WGL_3	4.067
WGL_4	3.801
WTP_1	2.189
WTP_2	1.787
WTP_3	1.858

In **Table 13** are reported all the Inner VIF values which represent the inflation variance of the indicators inside each construct. As you can see, all values are green because they are lower than 5 so there are no multicollinearity issues so there shouldn't be problems in estimating weights and their statistical significance.

Table 13 Inner VIF values of the structural model

	ANX	EMP	HC	IMP	TOA	WGL	WTP
ANX							1.266
EMP							1.051
HC							1.077
IMP							1.129
TOA							1.101
WGL							1.123
WTP							

4.2.2 *Structural Model Path Coefficients (BOOTSTRAPPING)*

After having analyzed and confirmed the validity, reliability and the lack of collinearity issues, it's time to study the structural model to understand the relationships that exist between the different variables of the proposed model and their intensity.

In SMART-PLS the method which is used to analyze the structural model is the **Bootstrapping**: a non parametric procedure that allows to test the statistical significance of PLS-SEM results such as path coefficients, Cronbach's Alpha, HTMT and R Square values. It uses a large number of sub-samples which are created with the original set of data through the replacement. The subsamples are then used to estimate the PLS path model to verify the validity of the model set for the research for each single one of them.

My research included 100 observations since it was the maximum number that could be used in SmartPLS 3 and from it 500 bootstrap samples or sub-samples were generated and the path coefficients of the structural model were then calculated. As reported by Hair et al (2017), marketing researchers usually assume a significance level of 5%. This does not always apply because when a study is exploratory in nature, researchers often assume a significance level of 10%. The choice of the significance level and type of test (one or two tails) depends on the

field of study and the study's objective. Given the fact that the sample on which my study is based is small (100 data) and the uniqueness and originality of my research, I used the two tailed analysis because there is also a negative assumption (impulsivity) with a **10% significance level**.

The t-statistics and p-value verify whether the hypothesized relationships between the independent variables and the dependent one are significant or not. Instead the Beta value (Original value) is the regression coefficient which indicates the effect of the independent variable on the dependent variable, if it has been previously stated that the relationship is significant. A value higher than 0.1 indicates that a change of the independent variable causes a more than proportional change in the dependent variable.

The coefficients to be significant have to respect the following values:

- The **T Statistics** coefficient has to be the greater than **1.65**
- The **p value** has to be lower than **0.1**

In **Table 14** are indicated all the path coefficients that have to be analyzed to understand if the hypotheses made have been rejected or accepted.

Table 14 Structural Model Path Coefficients

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
ANX → WTP	0.477	0.432	0.079	6.038	0.000
EMP → WTP	0.080	0.086	0.111	0.718	0.473
HC → WTP	-0.030	0.006	0.104	0.290	0.772
IMP → WTP	-0.321	-0.270	0.174	1.843	0.066
TOA → WTP	0.174	0.178	0.097	1.793	0.074
WGL → WTP	0.110	0.114	0.093	1.184	0.237

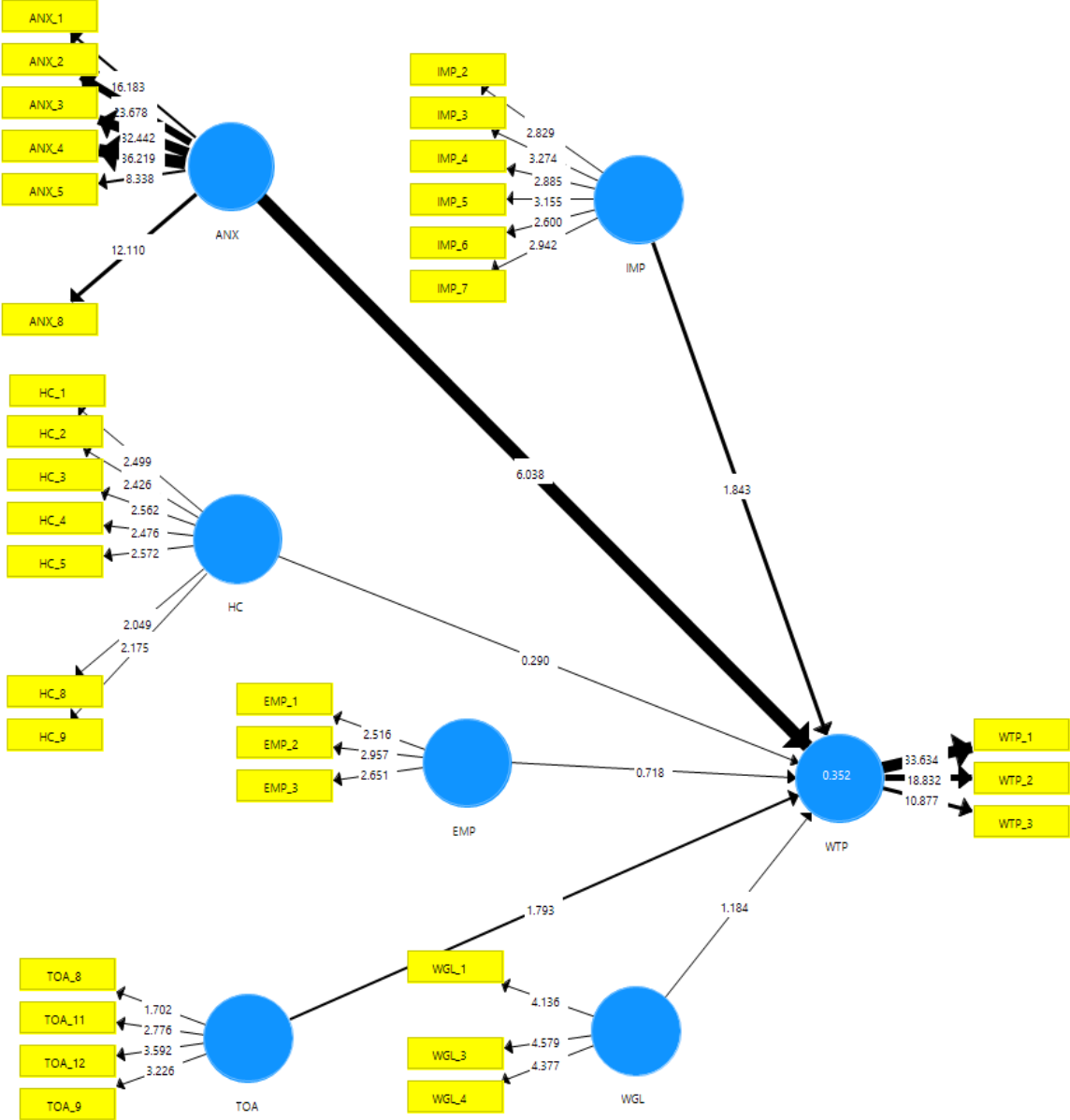
As you can see in **Table 14**, the p-values reported in red are the ones that are not considered significant because they are higher than the threshold of 0.1 instead the p-values in green indicate all the values that respect the limit of 0.1 so they can be considered significant.

It has been discovered that the values that are significant are anxiety because its p-value is 0.000 so lower than the threshold 0.1 and its t-statistic is 6.038 so definitely more than the threshold of 1.65, tolerance for ambiguity because its p-value is 0.074 and its t-statistics is 1.793 and the direct effect of impulsivity because its p-value is 0.066 and its t-statistics is 1.843.

Instead, as confirmed by the red color, the non significant values are empathy, health consciousness and warm glow.

As you can see in **Figure 9**, the confirmed relationships between the independent variables and the dependent one are represented with a bold line. The strongest relationship with the thicker line is the one between ANX and WTP followed by the one between IMP and WTP and then with a thinner line there is the relationship between TOA and WTP.

Figure 9 Path coefficients and the relationships between the constructs



4.2.3 *Coefficient of determination → R square value*

R square value is the most commonly used measure to evaluate the structural model.

It is represented by a coefficient which is a measure of the model's predictive power. It is calculated as the squared correlation of a dependent variable's actual value and its predicted one. The coefficient represents how much variance or change in the dependent construct can be explained by the independent constructs.

The R square value ranges from 0 to 1 and a higher level indicates a stronger predictive accuracy. To be adequate the R square should be at least 0.10. A value of 0.75 of the dependent variable is described as substantial because it means that 0.75 of the value of dependent variable is explained by all the independent variables instead a value of 0.5 or 0.25 is described as respectively moderate or weak (Hair et al., 2011; Henseler et al., 2009).

In this case the value of the R square is **0.352** so the correlation between the WTP and the other dependent variables is quite weak but definitely adequate. Moreover the R square value through the bootstrapping is 0.000 and this represents that this value is significant.

4.2.4 *Effect Size f square*

To have a complete analysis we also have to measure the f square. It represents the change in the R square when a specific independent variable is deleted from the model and it can be used to evaluate if the elimination of the variable has a substantive impact on the dependent variable.

In f square values of 0.02, 0.15 and 0.35 represent respectively small, medium and large effects that the elimination of determined dependent variable has on the independent one (Cohen, 1988). Instead an effect size value of less than 0.02 indicates that the elimination of a construct has no effect on the dependent construct.

As you can see in **Table 15** Anxiety (ANX) is represented in green and it has a medium effect on the WTP, Impulsivity (IMP) and Tolerance for Ambiguity (TOA) are represented in black and have a small effect on the WTP. Instead Empathy (EMP), Health Consciousness (HC) and Warm Glow (WGL) have no effect on the dependent variable in fact they are written in red.

These results can be found also in the bootstrapping procedure checking for the f square where the p values of ANX, IMP and TOA were lower than 0.5 meaning that the values are significant instead the other values are higher than the threshold meaning that they are not significant.

Table 15 f square

	ANX	EMP	HC	IMP	TOA	WGL	WTP
ANX							0.277
EMP							0.009
HC							0.001
IMP							0.140
TOA							0.042
WGL							0.017
WTP							

4.2.5 *Blindfolding and predictive relevance Q square*

Evaluating the R square values as a criterion for the predictive accuracy is not enough because also the **Stone-Geisser’s Q square value** should be examined (Geisser, 1974; Stone, 1974). This criterion measures the model’s out of sample predictive power because it predicts data that are not used in the model estimation.

In particular the Q square is obtained with the blindfolding procedure which is a procedure that omits every dth data point in the dependent variable and estimates the parameters with the remaining data points.

The difference between the true (i.e., omitted) data points and the predicted ones are used as input for the Q square measure. Blindfolding is an iterative process that repeats until each data point has been omitted and the model re estimated.

The value for the omission distance D has to be between 5 and 12 and a Q square value higher than zero indicates that there is the path model's predictive power/relevance for the dependent variable instead if the value is lower than zero there is no predictive power in the model.

The omission distance number has to be an integer number so since I had 100 observations in my study I couldn't select the default D 7, so I opted for 8. An omission distance D of 8 means that every eighth data point of a construct's indicators are eliminated in a single blindfolding round and there are in total 8 blindfolding rounds because the number of the rounds corresponds to the omission distance.

In **Table 16** we can see in the first column SSO that shows the sum of the squared true observations, in the second column SSE that is the sum of the squared prediction errors and in the last one the Q square value represented in green because it is above zero and more precisely 0.215 so there is predictive power for the dependent variable WTP.

Table 16 Construct Cross Validated Redundancy

	SSO	SSE	Q SQUARE (1-SSE/SSO)
ANX	588.000	588.000	
EMP	294.000	294.000	
HC	686.000	686.000	
IMP	588.000	588.000	
TOA	392.000	392.000	
WGL	294.000	294.000	
WTP	294.000	230.907	0.215

4.2.6 *Effect size Q square*

The aim of the Q square values thanks to the blindfolding procedure is to measure how well the path model can predict the original values.

The Q square effect size for q square values works as the f square effect size for R square values and in particular the relative impact of predictive relevance can be compared by means of the measure to the q square effect size,

In particular a value of 0.02 indicates that an independent construct has a small predictive relevance, a value of 0.15 shows that it has a medium predictive relevance and a value 0.35 indicates a large predictive relevance.

To compute the q square value of the dependent variable WTP, Q square included and Q square excluded is needed. The Q square included value is shown in **Table 16** ($Q\ square \rightarrow 1 - SSE/SSO$) and its value it's 0.215 instead the Q square excluded value is obtained from a model re-estimation after deleting one variable.

In this case I decided to eliminate the variable Anxiety (ANX) and the Q square value after the reestimation (Q square excluded) is 0.078 as you can see in **Table 17**.

Table 17 Construct Cross Validated Redundancy after the reestimation without the variable ANX

	SSO	SSE	Q SQUARE (1-SSE/SSO)
EMP	294.000	294.000	
HC	686.000	686.000	
IMP	588.000	588.000	
TOA	392.000	392.000	
WGL	294.000	294.000	
WTP	294.000	270.958	0.078

The size effect of Anxiety (ANX) on the Willingness To Pay (WTP) is given by $(Q^2_{\text{included}} - Q^2_{\text{excluded}}) / (1 - Q^2_{\text{included}})$ hence $(0.215 - 0.078) / (1 - 0.215)$ and it is equal to **0.17** so this means that Anxiety has a medium predictive relevance on the dependent variable WTP because its value is higher than 0.15.

4.3 Moderator analysis

Moderators describe a situation in which the relationship between two constructs is not constant but instead depends on the values of a third variable hence the moderator variable. Moderators not just change the strength of a relationship between two variables but it also can change the direction of a relationship.

SMART PLS 3 let us also analyze the effects of moderators on the model.

In my research I assumed that impulsivity is the moderating variable which has a direct effect because it negatively influence the WTP for organic food and it has also a moderating effect because it moderates negatively the positive effect that anxiety (ANX) has on the willingness to pay (WTP) for organic food. In the previous paragraph has been analyzed the direct effect of impulsivity instead here in this paragraph the moderating effect of impulsivity will be measured. In particular the higher will be consumer impulsivity when buying organic food, the lower will be the positive effect of anxiety on the WTP.

There are 3 different types of moderator but the one which suits the best my model is the **product indicator approach** because the constructs are not formative and the objective is to evaluate the significance of the moderation effect on the relationship between the dependent and the independent construct. This method involves multiplying each indicator of the independent variable with each indicator of the moderator variable (Chin, Marcolin, & Newsted, 2003). In this way all these product indicators become the indicators of the interaction term hence the moderator variable.

When interpreting the results of a moderation analysis, the first interest is to understand if the relationship between the dependent variable and the independent one is significant. As you can see in **Table 18**, the moderating effect ANX*IMP is not significant because the p value of

0.707 is way above the threshold of 0.1 and also the value of the t statistics of 0.376 doesn't respect the required values because it's lower than 1.65.

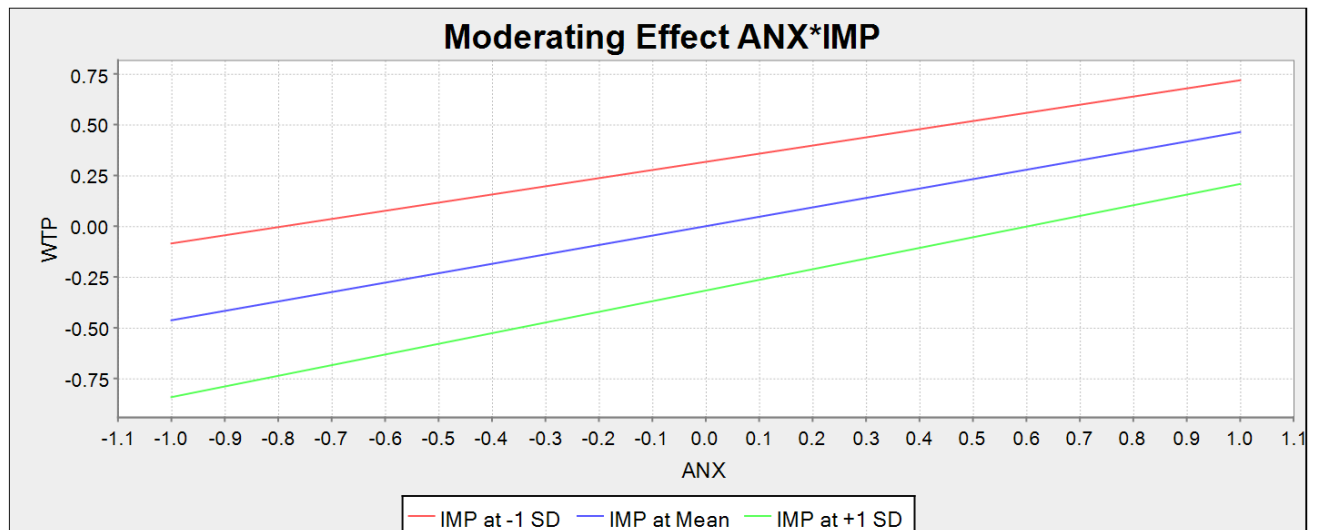
It is also important to notice that the R square of the model with the moderator is 0.357 so it's still valid instead the f square of the moderating effect is 0.006. This means that the moderator has no effect on the relationship between anxiety (ANX) and the willingness to pay (WTP). It's also important to underline that the product indicator approach normally causes some collinearity issues as in this case since lots of the outer VIF values are above the threshold for the moderating effect variable.

Table 18 Structural Model Path Coefficients with the moderating effect

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
ANX → WTP	0.477	0.432	0.079	6.038	0.000
EMP → WTP	0.080	0.086	0.111	0.718	0.473
HC → WTP	-0.030	0.006	0.104	0.290	0.772
IMP → WTP	-0.321	-0.270	0.174	1.843	0.066
Moderating Effect ANX*IMP	0.061	0.086	0.164	0.376	0.707
TOA → WTP	0.174	0.178	0.097	1.793	0.074
WGL → WTP	0.110	0.114	0.093	1.184	0.237

In the first analysis we can surely affirm that the independent variable with moderating effect impulsivity doesn't alter the relationship between the other independent variable anxiety and the dependent variable WTP. To better understand the effect of the moderator we also have to take a look at the Simple Slope Analysis calculated through SMARTPLS 3 that visualizes the two-way interaction effect, reported in **Figure 10**.

Figure 10 Moderating effect ANX*IMP



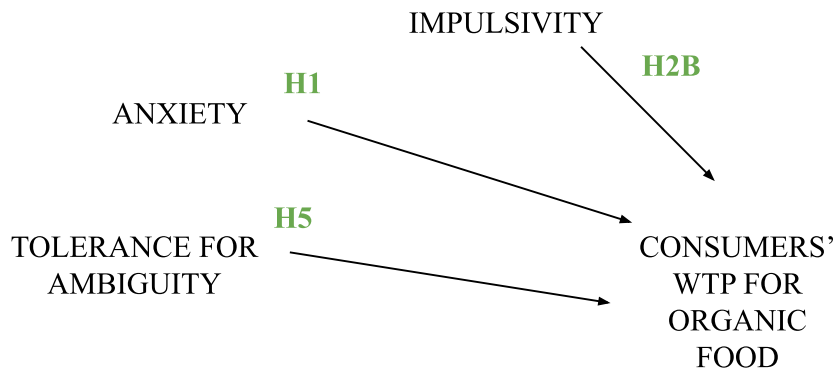
The three lines represent the relationship between anxiety (x axis) and the WTP (y axis). The middle line (blue line) represents the relationship for an average level of the moderator variable IMP. The other two lines represent the relationship between ANX and WTP for higher (green line) and lower (red line) levels of the moderator variable IMP.

As we can understand from the graph, at a higher level of IMP the relationship between ANX and WTP is weaker because it is under the middle line. Instead with a lower amount of IMP the relationship of ANX and WTP is stronger. This confirms the first analysis because even if a higher level of IMP makes the relationship between ANX and WTP increase less than without the moderating effect, the slope of the 3 lines is still positive so this rejects the hypothesis that IMP has negative effect on the relationship between ANX and WTP.

4.4 Final results

As you can see in **Figure 11** the confirmed hypotheses are H1, H2B and H5. This means that there have been confirmed relationships between the dependent variable, the consumers' WTP for organic food, and the independent variable of anxiety (H1), the direct effect on the variable impulsivity (H2B) and the variable of tolerance for ambiguity (H5).

Figure 11 **Structural model of confirmed hypothesis**



In this paragraph are summarized all the results collected through the bootstrapping in SmartPLS 3 hence not just the original sample (Beta value) but also the t-statistics and the p-value. The relationships between all the independent and the dependent variables are shown in **Table 19** as also the different hypotheses proposed in my study.

My study gave the following results:

- ★ H1 assumes that “Anxiety positively influences the consumers’ WTP for organic food”. This hypothesis is **confirmed** because the 2 values respect the necessary prerequisites to be considered significant and in particular the t value is 6.038 which is higher than the threshold 1.65 and the p value is 0.000 which is lower than the threshold 0.1. Moreover the Beta value is 0.477 so it indicates that anxiety has a big positive effect on the dependent variable. This means that the hypothesized relationship, which positively relates anxiety and the consumers’ WTP for organic food, is statistically relevant. As a matter of fact, anxiety appears to be a significant predictor of the dependent variable.

- ★ H2A states that “Impulsivity negatively moderates the positive relationship between anxiety and the consumers’ WTP or organic food”. This hypothesis has been **rejected** because the 2 values do not respect the threshold and this means that the effect of the moderating factor is too weak. In particular the t statistic is 0.376 which is lower than the threshold 1.65 and the p value is 0.707 which is definitely higher than 0.1.

- ★ H2B affirms that “*Impulsivity negatively influences the consumers’ WTP for organic food*”. H2B is **confirmed** by the analysis of the results since the t-value is 1.843 which is higher than 1.65 and the p-value is 0.066 which is under the threshold 0.1. Moreover the beta value is -0.321 which indicates that impulsivity has a high negative effect on the WTP for organic food. This means that the hypothesized relationship, which negatively connects the direct effect of impulsivity and the consumers’ WTP for organic food, is statistically relevant.
- ★ H3 assumes that “*Empathy positively influences the consumers’ WTP for organic food*”. This hypothesis is **rejected** since the results demonstrate that the t-value is lower than 1.65 (0.718) and the p-value is higher than 0.1 (0.473). Since all three values don’t respect the threshold H3 is not confirmed.
- ★ H4 states that “*Health consciousness positively influences the consumers’ WTP for organic food*”. H4 is **rejected** by the analysis of the results because the t-value is 0.290 which is lower than 1.65 and the p-value is 0.772 which is higher than 0.1. These results are considered not acceptable.
- ★ H5 states that “*Tolerance for ambiguity positively influences the consumers’ WTP for organic food*”. H5 is **confirmed** thanks to the analysis of the result. In particular the t-statistics is 1.793 which is higher than the threshold 1.65 and the p-value is 0.074 which is lower than 0.1 as required to be valid. Moreover the beta value is 0.174 so it indicates that the tolerance for ambiguity has an important positive effect on the consumers’ WTP for organic food. This means that the hypothesized relationship, which positively associates tolerance for ambiguity and the consumers’ WTP for organic food, is statistically relevant.
- ★ H6 states that “*Warm Glow positively influences the consumers’ WTP for organic food*” is **rejected** by the analysis of the results since the t-value is 1.184 so lower than the threshold 1.65 and the p-value is definitely higher than the threshold of 0.1 because it is 0.237 so this relationship is considered not significant.

Table 19 Final results of hypothesis testing

N.	Path	Direction	Original sample	t-statistics	p-value	Significance (p<0.05)
H1	ANX → WTP	+	0.477	6.038	0.000	YES
H2A	Moderating Effect ANX*IMP	-	0.061	0.376	0.707	NO
H2B	IMP → WTP	-	-0.321	1.843	0.066	YES
H3	EMP → WTP	+	0.080	0.718	0.473	NO
H4	HC → WTP	+	-0.030	0.290	0.772	NO
H5	TOA → WTP	+	0.174	1.793	0.074	YES
H6	WGL → WTP	+	0.110	1.184	0.237	NO

5 DISCUSSION AND LIMITATIONS

5.1 Discussion

After having introduced the final results of this quantitative research, it is important to interpret and discuss these outcomes in relation to the proposed model, carried out using the SmartPLS software. This study was conducted to analyze and explain the relationship between the individual personality traits and the WTP for organic food.

Hypothesis 1 about anxiety has been confirmed, so anxiety positively influences the consumers' WTP for organic food because anxious people are more worried about environmental and health problems so they will prefer organic products to feel better and stay more relaxed. This is perfectly in line with the findings of Dayu Cao, Yan Zheng, Chunnian Liu, Xiaoying Yao, Shiyue Chen (2021). The aim of this article is to identify and describe the relationships among different consumption values, anxiety and organic food purchase and it has been discovered that anxiety has a positively significant influence on the consumer purchase intention. Another example from the literature is given by the article of Dahai Wang, Fei L. Weisstein, Shen Duan, Pilsik Choi (2021) where the role of negative moods (anxiety and depression) on the purchase intentions is examined and this research discovered that anxious mood encourage consumers to purchase more green products hence anxious mood has a positive impact on consumer decision making in the context of green consumption.

Hypothesis 2A which states that impulsivity has a negative moderating effect on the relationship between anxiety and the WTP for organic food has been rejected because the results show that the effect is way too low and is not significant. This is not in line with the article of J. Leigh Leasure and Clayton Neighbors (2014) which states that impulsivity moderates the association between physical activity and alcohol consumption and this research gave positive results confirming the moderating effect of impulsivity.

Instead Hypothesis 2B has been confirmed, so impulsivity negatively influence the consumers' WTP for organic food because more impulsive people don't think about the consequences of their actions and will follow their impulse that will probably push them to buy the food product with brighter colors rather than the ones that don't have a negative impact on the environment. This is also confirmed by the literature in the article of Violeta

Stancu and Liisa Lahteenmaeki (2022) about Consumer-related antecedents of food provisioning behaviors that promote food waste and it has been discovered that excessive buying happens to a large extent due to people's impulsive buying tendency and lack of mindfulness related to shopping.

Hypotheses 3,4 respectively of empathy and health consciousness have been rejected by the analysis so it seems that they don't have a positive influence on the consumers' WTP for organic food. These results provide some important insights for marketing literature in general. For empathy, in fact, these results do not seem to comply with previous studies. This is not in line with the findings of Patrick de Pelsmaker, Liesbeth Driesen, Glenn Rayp (2005) based on the WTP for fair trade coffee who discovered that consumers value the ethical aspect in a product during the purchase. For what concerns health consciousness, the results also seem not to be in line with what was found by K.D.L.R. Kapuge (2016) about the Determinants of Organic Food Buying Behavior: Special Reference to Organic Food Purchase Intention of Sri Lankan Customers. He discovered that awareness and health consciousness are two key determinants of purchase intention of organic food.

The findings evidence that the hypothesis 5 has been confirmed so tolerance for ambiguity positively influence the WTP for organic food because people with more tolerance for ambiguity are attracted by new products that they don't know and are curious to try them so since the organic food marketing is in continuous growth and always new products are introduced this positively influence the consumption of organic food. This is perfectly in line with the results of the study of Eloi Jorge, Ernesto Lopez Valeiras, Maria Beatriz Gonzalez Sanchez (2021) about the the role of attitudes and tolerance of ambiguity in explaining consumers' willingness to pay for organic wine where it has been discovered that the findings highlight the role of consumer tolerance of ambiguity in explaining the relationship between healthy attitude and willingness to pay for organic wine. The more tolerant individuals are, the higher their level of acceptance of new information concerning the ability of organic wine to satisfy their healthy attitudes. The results support the idea that consumers who tolerate ambiguity and manifest a healthy attitude are willing to pay a higher price for organic wine.

Instead hypothesis 6 about the warm glow has been rejected and this represents an important finding. This is not in line with what was found by Kirubaharan Boobalan, Nishad Nawaz, Harindranath R.M., Vijaiakumar Gajendran (2021) which studies the influence of Altruistic Motives on Organic Food Purchase and discovered that the expectation of the "warm glow

feel” that resulted from engaging in any pro-social activities significantly results from the purchase of organic food.

From these findings we can understand that more anxious people with more tolerance for ambiguity are more inclined to buy organic food instead people more impulsive will tend to prefer other products characterized by other characteristics like for example the brighter colors of the packaging. This lets us understand that new marketing strategies should be introduced to take advantage of these discoveries.

These findings helped me find an answer to the research gap: Why do lots of people still not buy organic? How can we promote organic food consumption?

Leaving out the higher price of organic food that can't be currently changed because the offer is still slower than the demand for organic food, the answer could be because a lot of people still don't know the effects on the human body and on the environment and this is caused by food illiteracy. People don't have enough information and capability to understand what they are eating and if effectively that food will impact their body in a positive or negative way. Another reason could be given by the scarce trust in the organic food certification caused by the various food frauds which consist in selling a product at a higher price as organic but in reality the chemical agents of the food produced in the conventional way has been omitted and are not written in the label. 'Mislabeling', which occurs when a product's label does not reflect its actual attributes, remains the most common form of food fraud in the EU.

To contrast these two main phenomena the most important thing to do is to spread awareness on the negative effect of conventional food and conventional agriculture practices on the environment and in particular on the human body and promote the innovativeness and unique properties of organic food to fight against food illiteracy. The second important action has to start from the government which should increase the control on organic food to be sure that it has all the properties to defeat the always more frequent food frauds. In this way the consumers will be sure that they are buying organic food and this will increase their trust in the label and increase the consumption.

5.2 Implications for practice

This current research provides several fundamental insights as well as practical and managerial implications regarding the creation and use of green marketing messages based on the findings to enhance the consumers' WTP for organic food.

Green marketing (or environmental marketing) is the promotion of environmentally friendly products, services, and initiatives. It is the key to promote the consumption of organic food between individuals because communicating sustainability helps to make the target audience aware of how the products offered to them will meet their needs whilst also addressing economic, social and or environmental issues (Villarino and Font, 2015).

According to the results obtained from the SmartPLS software, the strongest result is the personality trait of anxiety. Since anxiety derives from the environmental degradation and the effect on the human body, to foster the consumption of organic food new campaigns should be introduced to make people more conscious about what they eat and what would be better for their body and this would make them more aware and also concerned, increasing a right level of anxiety that would push people to buy organic.

The second finding that emerged from the analysis is the most interesting because it emerged that impulsivity negatively moderates the WTP for organic food but it is important to underline that it is not connected to the trait anxiety because the moderating effect has not been confirmed. In fact an impulsive person will be guided to the impulse even if he has anxiety and is aware of all the consequences. So since impulsivity is an “enemy” of the purchase of organic products, marketing strategies that invite the consumer to be more conscious and reflect about their choices should be introduced. Or marketing strategies can also be done to play with this trait, introducing more products characterized by interesting packaging that can attract the attention of an impulsive buyer or playing with their positioning in the supermarket.

The third result that has been discovered is that tolerance for ambiguity positively influences the consumers' WTP for organic food. People with high tolerance for ambiguity are attracted by new things that they don't completely understand because they have never seen them before and are curious about the ambiguity produced by new products so companies should

invest in the development and creation of new foods and the marketing strategies that focus on the innovativeness and uniqueness of the organic food should be introduced.

The traits of warm glow, empathy and health consciousness have been rejected but this is a big contribution to the recent literature. This is probably due to the high rate of food illiteracy that is still present in the individuals, in particular in the case of the trait health consciousness and to the scarce trust in the organic food labels in particular in the case of empathy because you can't be empathic about something if you don't really trust in it.

The most important things to do are introducing new marketing strategies that spread information and awareness about the consequences on the health and environment of conventional food to defeat food illiteracy. In particular these strategies should focus on the spread of information (anxiety), promote the innovativeness and uniqueness of organic food (tolerance for ambiguity) and influence the consumer to think about the consequences (impulsivity). Another step should be done by the government increasing the controls on organic food to be sure that it has all the properties to foster the trust of the individuals in organic food brands.

5.3 Limitations and future research directions

In spite of the different fundamental results reported in this study, it has several limitations that need to be outlined.

The first limitation is the size of the sample which is too small. This is due to the utilization of the software SmartPLS which let me use just 100 out of the 157 valid answers collected so I had to exclude from the sample the last observations to take just the ones that arrived before.

The second limitation is the technique I used to collect participants to my questionnaire. In fact I used the method of snowball sampling which consists in sending the questionnaire to my relatives, friends and acquaintances and asking them to send it to all their acquaintances, in this way the sample group is said to grow like a rolling snowball. Doing so I collected answers of females in their early 20s with a high level of instruction from just one country and probably it will be circumscribed to the Veneto region. This is not a problem, since personality traits do not depend on demographic characteristics, but it would be interesting to

obtain more responses from people of different age, gender, origin and level of instruction to examine their WTP for organic food.

The third limitation is intrinsic to the very nature of this study on the effects that these 6 specific personality traits have on the WTP for organic food. In fact, as previously mentioned, this study is the only one of its kind because no other study in the literature analyzes the relationship between the personality traits of anxiety, impulsivity, empathy, health consciousness tolerance for ambiguity and warm glow all together in relation with the willingness to pay for organic food. This study takes the characteristics of both the Theory of the Big Five and the Theory of Planned Behavior to have a complete vision and to be able to analyze every single trait. Moreover it is a quite new topic because just in recent history has been discovered all the problems caused by the conventional agriculture.

The fourth limitation of this research is that it is limited to just 6 personality traits where just 3 of them are confirmed but there are many other traits that could be examined and maybe have a connection like for example the creativity, innovativeness, the laziness, the anger and so on. Obviously I had to limit my research to just 6 personality traits otherwise the questionnaire would have been too long and too confusing so I chose the ones that better fit this topic and where there was enough literature and previous studies to be able to formulate my hypothesis.

Since it has been stated that anxiety and tolerance for ambiguity have a positive effect and impulsivity has a negative effect on the WTP for organic food, it would be interesting for future research to analyze how much more or less (in the case of impulsivity) the individuals with these personality traits would be willing to pay.

The recognition of the most important limitations of this study may also prove to be a starting point or important suggestions for future research about this topic to have always major knowledge and information about the organic food consumption and enlarging the sample to people of other countries, culture and habits it will be possible also to understand the different WTP for organic food of different countries.

5.4 Conclusion

The findings of the quantitative research lead to the drawing of various conclusions.

The anxiety, the direct effect of impulsivity and the tolerance for ambiguity traits are significantly related to the consumers' WTP for organic food, which is in line with the results of prior studies in the organic consumption context. In particular it has been discovered that anxiety and tolerance for ambiguity have a positive influence on the WTP for organic food. Instead the direct effect of impulsivity on the dependent variable has been confirmed and impulsivity negatively influences the WTP for organic food. Instead its moderating effect has been rejected because it doesn't moderate the relationship between anxiety and WTP.

The hypothesis about health consciousness, warm glow, empathy and the moderating effect of impulsivity have been rejected, contrary to the literature that supported these traits.

In conclusion this study is the only of its kind and it is an important contribution to the marketing literature and could be a starting point or just offer precious suggestions for future research. Investments in marketing should be done to promote the awareness and knowledge of environmental problems and the consequences of conventional food on the human body to increase the anxiety that will foster the WTP for organic food and will fight against the food illiteracy. Moreover, marketing strategies that promote the innovativeness of organic food should be introduced to increase the curiosity in those consumers who are attracted by the ambiguity. It would be also important to make people think about their actions and not to act impulsively, trying also to get their attention at first glance on organic food with new marketing strategies like for example an interesting packaging. Finally a lot of work should be done also by the government to help firms and organizations to spread the message and increase the controls on organic food to check that all their properties and requisites have been respected to build trust in the organic food label at country level.

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