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ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS

"Analysis of Consumer Behavior & Perception Towards Plant-Based Milk Category in Greece."

A thesis submitted in partial fulfillment of the requirements for the master's degree in marketing & communication

BY

EIRINI CHALK0DAIMON

Athens, 2020

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Declaration for Originality of Dissertation

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Athens, April 2020

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Brief Executive Summary

The present dissertation examined the role and importance of plant-based products, especially dairy alternatives, in the consumers' behavior. In recent years, the topic of plant-based substitutes for conventional animal products has gained a lot of social and academic attention. The main reason for this interest is the fact that livestock farming contributes to a great extent to the greenhouse gas emissions and, generally, to climate change.

According to the Environmental Protection Agency, about 65% of greenhouse gas emissions are caused by the use of fossil fuels worldwide, and nearly 20% of them are due to livestock farming. At this rate, livestock farming is not considered a sustainable activity because it threatens the environment through the over-exploitation of crops as well as the deforestation of rainforests to make more room for plantations.

On top of this, another main reason for consideration is that dairy consumption has raised concerns among the health-conscious and risk-prone population as clinical studies have demonstrated that animal milk can be harmful to human health. Some elements of milk are associated with a wide range of detrimental health effects and illnesses such as cow milk allergy, lactose intolerance, anemia, and coronary heart diseases. Besides, they have been criticized for not having enough nutritional benefits, so there is a doubt about their quality and safety.

Therefore, the objective of this dissertation was to investigate what the influential factors and the barriers that affect the behavioral intention of consumers to purchase plant-based products are. This is an important subject to look into, due to the limited research that has been generated in this area, creating white space for further research and investigation. Notably, this gap in research led to the examination of the case of plant-based milk alternatives to conventional cow milk in Greek consumers. Greece was an interesting focus for this investigation because previous research on observing Greek consumers' behavior towards plant-based milk products is quite limited, despite the fact that the plant category is a growing trend, which is becoming incredibly fashionable in the latest years.

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Market research on the global plant-based milk market shows that their sales increased by 61% globally from 2013 to 2018, and it is expected to reach $33.96 billion by 2026, growing at a CAGR (compound annual growth rate) of 13.5%, during 2018 to 2026. In the case of Greece, they are also gaining popularity in the last two years as their sales in the supermarkets increased by 33.2% between 2018 and 2019. Hence, due to the connection with health, sustainability, and clean eating, the plant-based category has positioned plant products as an upcoming trend that will continue to grow, as well as an attractive choice for consumers by providing several health and environmental benefits. So, based on all the above data, this dissertation will provide essential insights of the greek consumers, which could be wisely used from the companies of the plant-based category, taking advantage of this booming market.

Aiming to investigate consumer behavior towards the Greek plant-based milk category, the Theory of Reasoned Action (TRA) model was used. It was decided to conduct both qualitative and quantitative research because the combination of their results would provide more useful information regarding the consumers' intention to buy these products. Firstly, a qualitative study was conducted involving two focus groups, with four participants each. The first focus group included participants that consume conventional cow milk while in the second focus group, participants were purely plant-based milk consumers. Secondly, quantitative research was conducted through an online questionnaire. The sample consisted of 326 people, but 16 of them were not living in Greece, so we eliminated them from the analysis. Therefore, the final sample was 310 participants.

The results of the analyses produced interesting findings. First of all, behavior and behavioral intention are strongly positively correlated. Furthermore, the positive attitude of Greek consumers towards plant-based milk products has a positive influence on their intention to buy these products. The same holds when they have a positive attitude towards a healthy lifestyle that includes exercise, a balanced diet, maintaining body weight, and eating organic food. Additionally, in contrast to previous research results, this study shows that subjective norms do not seem to influence behavioral intention. Still, when the attitude towards a healthy lifestyle is considered, subjective norms do influence behavioral intention directly.

Regarding the influence of demographic factors of consumers, only gender seems to influence the behavioral intention, as females are more inclined to buy plant-based milk alternatives

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than males. Other factors like age, occupation, educational level, and personal income did not have a significant influence on this sample.

Last but not least, the analysis of barriers (price, availability, information, gatekeeper, food neophobia, and culture) showed that none of them influence behavioral intention. This result contradicts the findings of the previous research studies as well as the TRA model. Future research should look into this subject more thoroughly through larger samples and further qualitative and quantitative research, also involving a comparison between different countries.

Keywords: Plant-based milk category, cow milk, consumer behavior, TRA model, Greek consumers

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1 Introduction

The 20th century, which is characterized by the endless exploitation of human resources and the environment, marks the beginning of a period in the history of our planet where the human influences the atmosphere, and at the same time nature itself begins to warn the human population about the effects of these severe anthropogenic interventions. Specifically, humans are increasingly influencing the climate and temperature of the Earth through the use of fossil fuels, deforestation, and livestock breeding. These activities add vast amounts of greenhouse gases to the gases in the atmosphere, causing an increase in the greenhouse effect and global warming (Europa, 2019).

Carbon dioxide (CO_2) is the greenhouse gas most often produced by human activities and accounts for 63% of global warming due to these activities. Its concentration in the atmosphere today is 40% higher than at the start of industrialization. Other greenhouse gases are released in smaller quantities but trap heat much more than CO_2, and in some cases, are much more substantial. Methane accounts for 19% of global warming from anthropogenic causes and 6% for nitrogen oxide (Europa, 2019).

It is estimated that about 65% of greenhouse gas emissions are due to the use of fossil fuels as a result of transport and industrial activity at a local or global level. Livestock farming is likely to reach 20%, while deforestation is around 11%. These rates may vary from country to country and depend on the degree of growth, the extent of the crop, and the eating habits. However, these percentages for livestock farming are somewhat conservative, as livestock is threatening the environment through a variety of factors (EPA, 2019). What is more, farming bovid mammals is not viable anymore because more than half of the crops planted are used as feed for cattle (FAO, 2006). Due to the intense need to make room for plantations as well as new pastures for the animals, rainforests are being cut down at an alarming rate (UNEP, 2012). All of these aspects show that a large part of human food production is not sustainable anymore, and other alternative options are needed to terminate the downward spiral of this environmental catastrophe.

Based on these facts and given that by 2050 the Earth's population will be about 10 billion, more recent studies (Sarkwa et al., 2016; Grossi et al., 2019) show that the effects of correspondingly intensified production of livestock products will have an irreversible impact on climate change. In the

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case that the increasing consumption of meat will not stop, the effect will be getting bigger and bigger. Therefore, changes in dietary habits (especially in developed countries) and animal farming methods are required. As far as the latter is concerned, technological developments need to be fully utilized to make production less burdensome on the environment, minimize wastage of natural resources and eliminate the food waste phenomenon that is predominantly observed in the western world (FAO, 2016).

Last but not least, it is emphasized that the solution suggested by the experts is not total abstinence from livestock products, but a change in eating habits. Experts suggest that the most effective methods would be to systematically educate consumers on choosing a healthy and balanced diet that will, of course, also include some livestock products (Hoek et al., 2011; Baumann, 2013).

1.1 Research problem

In recent years, apart from the main problem of animal farming's contribution to climate change, there has been a consumer concern about the quality of the foods they consume. Criticism has mainly to do with the method and the means used by the farmer for pesticide residues and chemical fertilizers in food, for polluted and unsafe natural environments. The number of those looking for quality food, natural water, and air and for a situation where harmony between plants, animals, and humans is prevalent is increasing. Thus, human, nowadays, doubts about the quality and safety of the food that comes to his table (Carvalho, 2006).

It is noteworthy that world meat production has increased almost five times in the last fifty years, while the average annual per capita meat consumption has doubled over the same period (from 20 kg/year in 1961 to 43 kg/year in 2014). For centuries, the use of meat and animal origin’s products has been seen as a sign of prosperity. The impact on human health, though, from increased consumption of conventional meat, is mostly negative; excessive use of red and processed meat is associated with an increased risk of cardiovascular disease, strokes and certain types of cancer (The Guardian, 2018).

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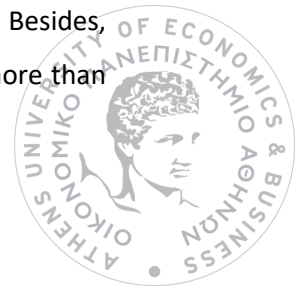
These facts have led consumers to increase the demand and, consequently, the production of organic and plant-based replacements. Plant category is often presented as a healthy, sustainable, and animal-welfare-friendly alternative. This promising and global uprising trend has somehow become a lifestyle instrument, consumed by many, not only because of dietary issues but also because of individual beliefs. More and more consumers are taking control of their health, which leads them to healthier options for consumption. Nowadays, being the best version of yourself is a social imperative. Self-health management is seen as a source of empowerment, and thus consumers are proactive.

Furthermore, due to urbanization and extended working hours, shoppers are prioritizing convenience and convenient solutions that help them maintain a quest for a healthier lifestyle. Last but not least, being more aware of the environmental impacts, as well as the influence that our choices have on personal well-being, is gaining the utmost importance. Based on all the above-market insights of this upcoming trend worldwide, the plant-based category is growing substantially, as it is leaving the niche market and becoming more mainstream and easily accessible (Retail Insight Network,2019).

According to the consumer research company Mintel (2019), products that mentioned ''plant-based'' grew 268% between 2012 and 2018. This is an impressive finding, as well as the fact that the 25% of global consumers say that plant-based food/beverages have become more important in their lives, and thus they are willing to pay up to 10% more for those products (HealthFocus International Global Report, 2019). These valuable data indicate that plant trend is not just a hype, but a holistic change to the consumers' lifestyle, which must be taken seriously into consideration.

More specifically, the global plant milk beverages market is expected to reach $33.96 billion by 2026, growing at a CAGR of 13.5% from 2018 to 2026 (Food Navigator, 2019). There is a huge market opportunity as the plant-based market is forecasted to rise to a CAGR (compound annual growth rate) of 30% in cental East Europe between 2019 and 2023. Additionally, Central East Europe Industry (2018) estimates that plant-based dairy consumption per capita in Western Europe is 1l versus 0,3l in Central East Europe. That indicates that there is an essential opportunity in the plant-based market for Greece, as there is plenty of space for plant-based market expansion. Besides, another compelling insight available is that the plant-based beverages will grow in value more than



the SSD (sparkling soda drinks), water, juices, and dairy products combined, with CAGR of 30% between 2019 and 2023 (CEE Industry Estimates, 2018).

Regarding plant-based milk products, which are our main study, they have gradually started to be accepted by consumers. Derived from the water extraction of nuts, cereals, or legumes, plant milk is completely free from animal-based ingredients, and it is becoming more and more popular in European countries, as well as in Greece. Consumers turn to them for a variety of reasons, either because of an allergy or because of the hormone-laden cow's milk (Sethi et al., 2016). Market research shows that milk sales to non-dairy products increased by 61% from 2013 to 2018. Although plant-based milk is a very different product from cow milk, it provides several health benefits that make it an attractive choice (MINTEL, 2018).

Concerning the plant-based meat market, it has proliferated in recent years, mainly because of the increasing awareness of the various health and ecological benefits of having conventional meat consumption reduced (MINTEL, 2014). However, the overall market share of plant-based meat remains rather small, being only 3 to 5% of the meat market in Europe (MINTEL, 2013). Additionally, Apostolidis& McLeay (2016) and Ritchie et al. (2018) in their studies show that, even though there are various social challenges to encourage the production of plant-based meat, the only disadvantage to this is that they often have a higher price than standard meat products. Thus, it does not provide any economic incentive for meat substitution.

Generally, milk contains several essential nutrients and plays an integral role in dietary recommendation because of its high content of calcium, proteins and vitamins, mainly A, B2, and B12 (Rozenberg, et al., 2016). However, dairy products have several environmental impacts. The main ecological effects related to milk/dairy production are soil degradation, air/water pollution, and loss of biodiversity. According to the European Environment Agency (EEA), in the E.U. countries, one-third of households' total environmental impact is related to food and drink consumption (EEA, 2005).

Even though the economic growth of plant-based milk is significant, international literature has quite a few studies concerning with a comparative analysis of the product image of cow milk vs. plant milk so far. Moreover, more research should be made comparing the motives of European consumers for consuming cow milk vs. plant milk. However, there are two studies investigate the

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consumer's acceptance of soy-based products versus conventional milk products (Palacios et al., 2009; Villegas et al., 2009), and one study investigates consumer behavior in North Carolina. The last one examines the importance of specific product attributes of cow milk versus plant milk (McCarthy et al., 2017).

Based on the above studies and the main environmental impacts of dairy production, the present dissertation approaches the issue from the marketing aspect, focusing on consumer behavior analysis. More specifically, the aim is to investigate what makes consumers more willing to consume plant-based products.

In the present dissertation, the results imply that, although many people are cautious about consuming plant-based alternatives non-dairy market is gaining much popularity by the vegan society. This fact aims to decrease consumption as well as the production of animal products. Their positive attitude towards buying these products, mainly for environmental and health issues, increases the possibility of buying them as well as when the approach is posed towards a healthy lifestyle, mainly due to exercising, a balanced diet and maintaining healthy body weight. In this case, friends or other celebrities/influencers play an important role, while this fact does not necessarily hold when they have a positive attitude towards buying these products. Also, gender is the only background factor that affects the intention to purchase these products, with women more willing to consume them than men.

1.2 Research question and purpose

The main research question guiding this investigation:

"What are the driving factors and barriers affecting Greek consumers' behavior towards plant-based alternatives to milk?"

The answer to this question required using both primary and secondary data to understand various consumers' views and behaviors better. Therefore, the purpose of this study was to identify the different drivers and barriers towards plant-based milk category from a consumer point of view.

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From an academic perspective, conducting this study is of high importance, because insufficient research has been done thus far regarding the plant-based milk category. Especially in the case of Greece, recently, there is a growing demand for fruits, vegetables, and plant-based products, and generally, it has been observed an orientation towards a healthier lifestyle. According to a survey of the Research Institute of Retail Consumer Goods (ielka, 2019), changes in the dietary and consumer trends of Greeks are observed in recent years. The study was conducted in September 2019 with a sample of 950 consumers from all over Greece, and the results highlight interesting dietary and consumer trends towards plant-based products that are expected to shape the supermarket sector and their suppliers over the next decade (2020 - 2030). Furthermore, the present dissertation used an expansion of the Theory of Reasoned Action (TRA) model to investigate consumer behavior towards plant-based milk, following the work of Tang &Mousel (2016). This model will be explained in detail later in the study.

Finally, the results of the present study could also be beneficial for greek or multinational companies, which are activated in the greek market and especially in the dairy alternatives sector. These insights will help them to take advantage, to the fullest, this new trend, by being credible challengers among the competition. Although our sample cannot be generated to the whole greek population, due to the limited sample of participants, at least they can have an estimation about the reasons their customers are motivated to buy their products. Also, they will have an idea regarding the barriers that make customers unwilling to consume them.

1.3 Dissertation structure

To start with, the structure of this dissertation contains seven chapters: The first chapter is the present introductory one. The second chapter includes useful information about the Global and Greek market of dairy and plant-based milk. The third chapter begins with a brief presentation of basic definitions and concepts regarding diets and consumers' dietary habits. Furthermore, it describes the animal and plant milk, and then it includes some information and approaches regarding consumer behavior and existing literature for consumer behavior towards plant-based milk products.

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The fourth chapter contains the essential framework and methodological tools and analysis adopted towards the investigation of the consumers' behavior for plant-based milk by using the TRA model. The fifth chapter presents the main results, both from the qualitative and the quantitative study. Furthermore, it is analyzed as well, their combination and comparison. The sixth chapter connects the results of this study with the previous ones in the literature, discussing which of them are also found in other studies and which are not. The seventh and the last chapter concludes the analysis, also presenting some recommendations regarding practical usage of the findings and future research.

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2 Industry Overview

2.1 The Market for Dairy and Plant Milk

2.1.1 Global Dairy Market

Milk is considered one of the best agricultural raw materials in the world. According to FAO (2016b), in 2013, global milk production was valued at $328 billion; the dominating share of cow milk was 82.7%, followed by buffalo milk (13.3%), goat milk (2.3%), sheep milk (1.3%) and camel milk (0.4%). Also, global milk production is projected to rise by 23% in 2025 compared to the worldwide production level in 2013. The demand for dairy products will mainly come from countries in Africa and Southeast Asia, while in the USA and Europe, cow milk consumption is steadily declining due to the orientation towards plant-based milk alternatives (Alexandratos & Bruinsma, 2012; Zingone et al., 2017). Nevertheless, the dairy herd causes an increase in the Greenhouse Gas Emissions, primarily through rumination; about 3.1 gigatonnes of CO_2 equivalent are produced per year, thus contributing to 40% of the global livestock emissions and about 75% of it comes from the dairy cattle.

According to FAO (2019), global milk production in 2018 was 843 million tones, an increase of 2.2% from the previous year, driven by production expansions in the USA, E.U., Argentina, India, Turkey, and Pakistan. However, countries like China, Ukraine, and a few others saw a decline in milk production, partially offsetting the global increase. The increase of milk production in the corresponding countries was due to the higher dairy herd numbers as well as improvements to processes of milk collection (India and Pakistan), improvements in the efficiency of integrated dairy production systems (Turkey), the increased milk yield per cow (USA, E.U.) and improvements on the utilization of idle capacity, along with higher demand driven by the processing sector and imports (Argentina). On the other hand, Chinese milk output fell as a result of industrial restructuring processes and shrinkage of small-scale farms while in Ukraine, there was a reduction in producer margins and farm gate prices. The global milk output by continent is presented in Figure 1.

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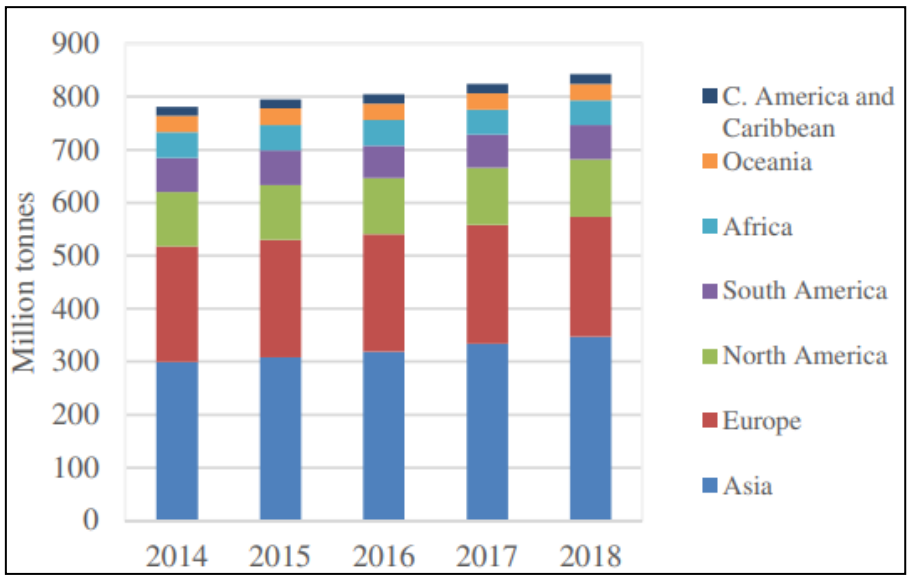

Figure 1: World Milk Production by Regions

Source: FAO (2019), p. 1

Asia is the region with the highest milk production expansion in 2018 (around 350 million tons), followed by Europe and North America. Milk production also expanded in all other regions as well, but by smaller volumes.

2.1.2 Global Plant Milk Market

The global plant milk market reached an estimated size of U.S. $8.51 billion in 2016 and is forecasted to rise to a CAGR (compound annual growth rate) of 12.5% to triple to a market volume of U.S. $24.6 billion in 2025. Soy milk is globally the dominant plant milk concerning market shares (Research and Markets, 2017). The highest consumption of plant milk is in the Asian-Pacific area (Allied Market Research, 2019).

According to ProVeg International (2018), among all the plant-based products, plant-based milk has the highest market value as well as penetration. In the US, by June 2018, sales of plant-based milk have increased by 9%, while sales of conventional milk declined by 6%, thus making plant milk account for 15% of total milk sales. Similarly, in Europe, plant-based markets are mostly located in Germany, the UK, and the Netherlands.

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Furthermore, according to the same report, the popularity of the various plant milk types varies between countries. However, almond milk is considered to be the most popular one. In the US, almond milk had the most significant market share (64%), second comes soya (13%), and then follows coconut milk (12%). These three milk varieties dominate the US market. However, new, more types are currently penetrating the market, such as pecan and quinoa milk, which are becoming more and more popular as consumers tend to choose more dairy-free milk alternatives.

In the UK, almond milk was also the leading category, with sales of $106.9million (9.1% growth) in 2017, followed by soya milk ($101.7million or 1.3% growth) and coconut milk ($34million or 17.4% growth). Nevertheless, in terms of growth, oat milk is the leading category regarding the number of markets, owing mainly to the Swedish Oatly, one of the most successful plant-based milk brands in the UK. More analytically, oat milk occupies 66% of the plant-based milk market is up 66.7% during the period 2016-2017 (Proveg International, 2018).

However, although all plant-based milk alternatives are considered to be more environmentally friendly than conventional milk, they have different greenhouse gas emissions (GHG). Among all plant milk varieties, almond milk, with 0.7 kg CO_2 equivalent per liter, has the lowest GHG emissions, followed by oat milk (0.9 kg CO_2eq, and soya milk (1 kg CO_2eq) (Proveg International, 2018).

2.1.3 Greek Dairy Market

The dairy industry is considered one of the most traditional sectors of primary production in Greece, which employs a large number of the active Greek population in the dairy companies. Banks in the past, and especially in the pre-crisis period, have contributed to the development of the sector through financing businesses' fixed assets, especially their production equipment. Simultaneously, the Greek State granted investment incentives under development laws relating to industry as well as following Community regulations. In this way, the dairy sector succeeded in flourishing in Greece. Small startups succeeded in industrializing and eventually became a dynamic and growing part of the Greek economy. Also, refrigerated milk and cheeses have seen the fastest growth in recent years, with companies aiming at long-term goals to focus on finding opportunities for these dairy products.

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Dairy companies are found everywhere in Greece, but the most significant number of dairy businesses is currently located, according to the Hellenic Food Authority (EFET), in Thessaloniki, Attiki, and Larissa, with 64, 63 and 52 enterprises respectively (see Figure 2). These regions account for 19.14% of all domestic businesses.

PREFECTURE	#	%
THESSALONIKI	64	6,84%
ATTIKI	63	6,74%
LARISA	52	5,56%
AITOLOAKARNANIA	37	3,96%
IRAKLIO	37	3,96%
RETHYMNO	37	3,96%
LESVOS	32	3,42%
ARGOLIDA	29	3,10%
KOZANI	29	3,10%
CHANIA	28	2,99%
KYKLADES	28	2,99%
IOANNINA	24	2,57%
ARKADIA	23	2,46%
ILEIA	21	2,25%
MAGNISIA	21	2,25%
TRIKALA	21	2,25%
ACHAIA	20	2,14%
FTHIOTIDA	20	2,14%
IMATHIA	20	2,14%
KEFALLINIA	20	2,14%
EVIA	19	2,03%
KILKIS	19	2,03%
VIOTIA	19	2,03%
SERRES	18	1,93%
PELLA	17	1,82%
MESSINIA	16	1,71%
DODEKANISA	15	1,60%
FOKIDA	15	1,60%
CHALKIDIKI	14	1,50%
EVROS	14	1,50%
KAVALA	11	1,18%
PIERIA	11	1,18%
RODOPI	11	1,18%
GREVENA	10	1,07%
KORINTHIA	10	1,07%
THESPROTIA	10	1,07%
KARDITSA	9	0,96%
LAKONIA	9	0,96%
DRAMA	8	0,86%
ARTA	7	0,75%
CHIOS	6	0,64%
FLORINA	6	0,64%
KASTORIA	6	0,64%
PREVEZA	6	0,64%
KERKIRA	5	0,53%
XANTHI	5	0,53%
LASITHI	4	0,43%
EVRYTANIA	3	0,32%
ZAKYNTHOS	2	0,21%
IKARIA	1	0,11%
LEFKADA	1	0,11%
LIMNOS	1	0,11%
SAMOS	1	0,11%
TOTAL	935	100,00%

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Figure 2: Number of Domestic Dairy Businesses in Greece

Source: EFET

In the last 20 years, the competition in the industry is very intense, mainly because the prominent market players are well established. They have a very well organized distribution network of their products throughout much of Greece, and they have negotiable power to enter their products in large and small supermarkets that further promote their growth.

According to ICAP, the total domestic consumption of milk decreased by 4.6% during the period 2013-2014, while it decreased by 9.8% in the previous two years (2011-2012). Of the dairy product categories, only high-pasteurized milk consumption increased by 6.3%. Today, the Greek dairy market can be characterized as fragmented or even fully competitive, as competition is high. At the same time, both small and large companies do not occupy very high market shares[1]. In 2015, Delta had the largest market share of dairy products with approximately 33%, followed by Olympos with 17%, Mevgal with 14.2%, Dodoni with 14%, and other companies with 23% of the market[2].

As a result, the recent economic crisis led to a decrease in the profit margins in the early years of its emergence and then led to a shift from processing to imported products. Consumers turned to long-term milk over fresh as well as in cheaper options. Private label products have experienced a boom in the crisis because of their low price as well as imported products. Companies focused mainly on fresh milk production were heavily reliant on loan funds. The combination of the financial crisis and the massive amounts of loans has led these businesses to serious liquidity and even survival problems.

2.1.4 Greek Plant Milk Market

Food allergies, as well as the animal origin of milk, have created a worldwide tendency to avoid drinking it. New vegetable products, such as almond milk, coconut, rice, soy, etc. have flooded the supermarket shelves in Greece as well as abroad. Significant increases in their sales are expected

[1] http://www.naftemporiki.gr/finance/story/904992/icap-se-ptotiki-troxia-i-egxoria-agora-galaktokomikon (in Greek)
[2] https://www.fpress.gr/epixeiriseis/story/52748/idoy-o-gigantas-tis-agoras-galaktos (in Greek)

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to be observed in plant milk made by almond, soy, coconut, and rice promoted as alternatives to conventional - cow milk[3].

Specifically, according to data presented by Eleni Giannakouli, sales of "plant dairy products" on the supermarket channel wherein January-October 2019, totaled to € 23.77 million, up to 33.2% concerning the previous year. Plant-based milk beverages account for the largest share of "plant dairy products," with sales in the ten months reaching € 18.84 million, up from € 17.47 million in the whole of 2018, while compared with the corresponding ten-month period in 2018, sales of this category increased by € 4.75 million or 34%.

Organic milk saw a sales growth of €4.01 million or 7%, while goat sales increased by €0.7 million or 8% compared to 2018 ten months. Nevertheless, the leader in the milk class is still the cow. That is why, overall, the milk category declined 3% in the first ten months of 2019 compared to the first ten months of 2018 and stood at € 280.9 million, up from € 285.5 million last year[4].

In the Greek plant-based milk market, the leading market brands are the following:

Adez: The Adez brand originates from Argentina, where it has been popular since it launched in 1988. In Mexico, Brazil, and Argentina, it is the most popular drink in its segment. Coca-Cola acquired the brand in March 2017 and launched in Greece in 2018. Adez brings innovation in the type of plant-based beverages through its unique flavors, offering options for both breakfast and all day long[5].With no added sugar, AdeZ is a dairy-free smoothie that contains seeds, fruit juices, and vitamins. The three-strong range is available in 250ml single-serve bottles, designed to be consumed on-the-go and representing a unique opportunity for retailers to build their on-the-go beverages and snacking offer in store. The three core flavors, almond, coconut, and soy, are available in an 800ml bottle.

[3] https://www.insider.gr/eidiseis/kosmos/98452/ragdaia-anaptyxi-gia-fytiko-gala-kataklyzei-kai-ta-rafia-stin-ellada (in Greek)
[4] https://www.kathimerini.gr/1054696/article/oikonomia/epixeirhseis/kerdizoyn-edafos-ta-fytika-galaktokomika (in Greek)
[5] https://gr.coca-colahellenic.com/gr/markes/proionta-3e/adez/ (in Greek)

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Alpro: Alpro is a European company founded in 1980 and based in Ghent, Belgium. It markets organic and non-organic dairy products as well as plant-based products, such as foods and drinks made from soy, almonds, rice, oats, etc. Alpro has three production facilities in Belgium, France, and the United Kingdom (Alpro,2020).

Olympos: It is one of the top dairy companies in Greece. Its history starts in 1965 in Larisa. Until 2000, it operates in the near region of Thessaly with the main focus on the market of Larisa. However, since 2001, it markets its products all over Greece as well as export them to over 30 countries. Until recently, Olympos was selling only conventional milk, but since 2018, it has launched its first plant-based milk made by almond and pistachio, thus creating more steps towards increasing the popularity of the plant-based milk category in the country (Olympos,2020).

Delta: It is a Greek dairy industry founded in 1952. After its foundation, it was operating as a family-run factory for the production of yogurt and bulk milk. Later on, in the 1960s, it moved to Tavros, where part of it is still there. In the coming years, Delta marketed with other products such as ice cream, fruit juice, cheese, and more. Today, it is one of the largest dairy companies in Greece with seven factories and is expanding abroad. Also, by meeting the growing consumer demand in Greece for healthy and specialized food products, Delta has recently launched a new line of 100% plant-based milk, rich in flavor and nutritional value of fruits (delta,2020).

Vitam: It is a plant-based brand produced by the Dutch company Upfield, which mainly markets plant-based butter products. Recently, Vitam launched a new series of plant-based milk, including soy, almond, hazelnut, and cocoa (Vitam,2020).

Other brands: Apart from the aforementioned plant-based milk brands, there are also some other, less popular brands that could be found in some supermarket shelves, and these are Fytro, Provamel, and Joya.

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In Figure 3 are presented information about the types of plant-based milk for each brand.

Figure 3: Mapping of the Top Plant-Based Milk Brands in Greece (Types, Flavors, etc.)

Source: Private data given to the student from Coca-Cola 3E

Last but not least, according to data provided by Coca-Cola 3E (personal communication), in January 2020, Alpro is the leading company in the market as its market share is 43.5%, followed by Olympos (34.5%), Delta (11.4%), Vitam (1.6%) and AdeZ (1.5%), while all the other brands hold 7.5 %.

At this point, it is imperative to be stated that the researcher is working in the Coca-Cola 3E company, in the plant-based sector, as a marketing specialist of Adez. She is responsible for the commercialization and the below-the-line communication of Adez at a national level. Thus, the results of this study will have a direct influence on the daily activities of the company, as they will offer valuable insights into the consumers' behavior. The results of the present study will help the researcher to better meet the consumers' needs through a more meaningful and coherent marketing plan, as well as, through properly targeted propositions and market activations.

3 Literature Review

3.1 Basic Concepts and Definitions: Diets, habits

According to Insight Medical Publishing[6], the term 'diet' is defined as «*the use of specific intake of nutrition for health or weight-management reasons. Although humans are omnivores, each culture and each person holds some food preferences or some food taboos. This may be due to personal tastes or ethical reasons*».

Nowadays, there are many modern and popular diets, followed by people, especially celebrities. The most popular ones are the following (Gilman, 2008):

- Vegetarian Diet: The most popular type of vegetarian diet is the one that prohibits all products of animal origin except eggs and dairy products. Vegetarian diets seem to be effective in maintaining a healthy weight and preventing many chronic conditions.
- Vegan Diet: It is the same type of diet with the vegetarian diet, with the only difference that animal origin products are forbidden, such as eggs, honey, and dairy products.
- Mediterranean Diet: The Mediterranean diet emphasizes the consumption of many plant products, such as fruits, vegetables, nuts, cereals, whole grains, and olive oil, as a significant source of fat. Cheeses, yogurt, poultry, and fish are recommended in moderation, as well as red wine. Red meat is present but in limited intakes. Numerous scientific studies have proven the Mediterranean diet as one of the healthiest dietary patterns.

From these and numerous other diets currently existed in modern society, some specific types of eating habits have been developed. The general category, in this case, is people who are called Omnivorous. According to Brooker et al. (2006), an omnivore is «*an animal/human that can eat and survive on both plant and animal matter*.» Therefore, humans, under the dietary habits framework, consume all types of food without restrictions. Recently, some evidence indicates that plant-based milk and food generally are gaining so much popularity that even omnivorous people tend to consume more of this type of food because, especially meat-eaters, are the target group for

[6] http://www.imedpub.com/scholarly/dietary-habits-journals-articles-ppts-list.php

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this popularity. According to data from Nielsen and the Plant-Based Foods Association, plant-based food sales increased by 20% in 2018, to more than $3.3 billion; plant-based milk is the most critical sector of this type of food as its sales increased by 9% in 2018 to $1.6 billion (Bloomberg, 2018).

A unique and, nowadays, a popular category of eating habits is Vegetarianism. According to the Vegetarian Society[7], a vegetarian person is «*someone who lives on a diet of grains, pulses, nuts, seeds, fruit and vegetables with or without the use of dairy products and eggs. A vegetarian does not eat any meat, poultry, game, fish, shellfish or by-products of slaughter*».This category is usually considered the same as Veganism, but the main difference between them is that veganism is strict Vegetarianism. The Vegan Society defines veganism as «*a plant-based diet avoiding all animal foods such as meat (including fish, shellfish and insects) and animal products. More analytically, it is included dairy, eggs, and honey - as well as avoiding animal-derived materials, products tested on animals and places that use animals for entertainment*.»

According to a study conducted in the U.K. population, it is found that vegan and vegetarian diets are more and more growing in the country as almost one-fourth of Britons consuming plant-based products, especially milk alternatives. This shift in consumption towards plant-based food is driven by concerns regarding health, ethics, and the protection of the natural environment. Also, the Vegan Society shows that about 600.000 people in the U.K. were vegans in 2018, while in 2014, there were only 150.000 (The Guardian, 2019).

Another category of eating habits is the so-called Flexitarianism. The term flexitarianism or flexitarians is used for people who typically follow a meat-free diet. Occasionally though, they may include fish or meat in their diet. When the vegetarian or vegan diet is not fully covered, they usually take a step backward and become more flexible vegetarians with a more flexible diet, especially for those who cannot be 100% vegetarian and are easily tempted to eat meat or fish (BBC, 2017).

The flexitarian eating trend seems to grow much recently; according to a report by The Good Food Institute, in the U.S., retail sales of plant-based meat grew 23% in 2018, while total U.S. retail food sales grew just 2%. Also, plant-based milk retail sales were $1.8 billion, which was about 13% of the overall U.S. retail milk market, meaning more than 1 in 3 U.S. households buy plant-based milk,

[7] https://www.vegsoc.org/

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either from retail food stores or from groceries. The reason for that is because U.S. consumers are more and more concerned with issues like health and environmental sustainability, and nearly one-third of the U.S. consumers are flexitarian. The above is justified by the fact that plant-based food companies are using particular marketing strategies to attract flexitarians, rather than just focusing on the vegetarian population, to have their sales and popularity increased (The Good Food Institute, 2019).

Last but not least, an eating habit of gaining much popularity in the previous few years is the Pescatarianism. The term pescetarianism or pescatarian means that one has chosen to be a vegetarian while continuing to include seafood in his/her diet. That is, he/she stops consuming red meat, pork, poultry from his/her diet as a vegetarian while continues consuming fish and other seafood (BBC, 2018). In the U.S., it is estimated that 5% of consumers eat fish and shellfish once a month or at least twice a month because they follow a pescatarian or a flexitarian diet (Seafood Source, 2016).

3.2 Animal vs. Plant-based Milk

Milk types are distinguished by their origin, i.e., by the animal or plant from which they are obtained. Regarding dairy milk, the most common is

- cow milk, which is mainly consumed as one of the main types of food. The fat content depends on the breed and age of the cow as well as its living and nutritional conditions (e.g., Swiss cows produce 4% fat while Dutch cows produce less than 3.3% fat but in more significant quantities). Cow milk yield can be as much as 4.000 liters a year. The cow starts producing milk from 3 years with maximum yield when it reaches ten years (Andrikopoulos, 2015).

Other common types of animal milk include (Andrikopoulos, 2015):

- Sheep milk: it contains more fats, proteins, and salts than cow's milk. An ordinary ewe produces 25-100 liters of milk a year with a lactation period of 180-220 days. Breed ewes also produce 250 liters a year.

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- Goat milk: in contrast to cow milk, it contains more fat and less lactose, while it has significant amounts of vitamin A and fewer carotenes and thus appears whiter. Goat milk is more digestible than cow milk and does not carry T.B. germs because goats are not affected by this disease.

From the plant-based or non-dairy milk side, as was already mentioned in the introduction, many alternatives have been developed. The reason behind this was so as the global interest to move towards more environmentally-friendly consuming behaviors. The most common types of plant-based milk are presented below[8].

Soymilk: Soy milk is made either from the seed itself or from isolated soy protein strains and often contains thickeners and vegetable oils to improve flavor and density. It works best as a substitute for includes a similar amount of protein, but about half the number of calories, fats, and carbohydrates. It is the most dominant plant milk concerning market shares. According to Grand View Research (GVR) (2019), the global soy milk market size was valued at $7.30 billion in 2018, and due to its great health benefits, the consumption of soy milk is expected to increase at a Compound Annual Growth Rate (CAGR) of 6.3% over the period 2019 - 2025.

Almond milk: It is made from almonds or almond butter and water. It has a light texture and a mildly sweet and buttery taste. It can be added to coffee and tea, mixed with smoothies, and used as a substitute for cow milk in sweets and pastries. Compared to cow milk, it contains less than quarter calories and less than half fat. It also has significantly less protein and carbohydrates. According to GVR (2019), the global almond milk market size was valued at $5.2billion in 2018 and is expected to increase at a CAGR of 14.3% over the period 2019 - 2025.

Coconut milk: Coconut milk is made from water and white flesh of brown coconuts. Coconut milk has a creamy texture and a sweet but distinctive flavor. It contains one-third of the calories in cow milk, half fat, and significantly less protein and carbohydrates. According to Market Research Future (2019), the global coconut milk market size was valued at $1.55 billion in 2018 and is expected to increase at a CAGR of 14.61% until 2023.

[8]Information on the each type of plant milk coming from https://enallaktikidrasi.com/2018/04/fytika-ypokatastata-galaktos/ (in Greek)

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Oat milk: In its purest form, oat milk is made from a mixture of oat and water. However, the industry often adds additional ingredients, such as guar gum, oils, and salt, to achieve the desired taste and texture. Oat milk is naturally sweet and mild in flavor. Oat milk contains a similar number of calories to cow's, almost double carbohydrates, and nearly half the amount of protein and fat. According to Future Market Insights (2020), the global oat milk market size was valued at $372.5million in 2019 and is expected to reach $698.8 million by the end of 2027.

Rice milk: Rice milk is made from ground white or brown rice and water. As with other non-animal-derived milk, it often contains flavor and texture enhancers. Rice milk has about the same number of calories as cow milk, but almost twice as many carbohydrates. According to Data Bridge Market Research (2019), the global rice milk market size was valued at $5.34million in 2018 and is expected to reach $16.33 million by the end of 2026.

Pistachio milk: This type of milk is a new trend to produce and launch more non-dairy milk alternatives in the market. It has excellent health benefits because pistachios contain dietary fiber, calcium, magnesium, vitamins B6, E, K, Omega-3, etc. Till now, only one study has been found regarding the quality and development of pistachio milk, and the results indicated that the method of making pistachio paste, the blending time of the slurry and the pH condition are the most critical factors affecting the quality of pistachio milk (Shakerardekani et al., 2012).

Walnut milk: As pistachio milk, a fluid that is produced by walnuts is also another non-dairy milk alternative currently being developed and launched in the market. According to Allied Market Research (2020), walnut milk contains omega-3 and also has few properties which help reduce weight. Also, its market size has expanded as a result of the rising consumers' awareness regarding the health benefits of walnut milk.

3.3 Theory of Consumer Behavior and literature towards plant-based milk products

In recent years, the terms 'consumer behavior' and 'purchasing behavior models' have been used extensively not only by large multinational companies but also by domestic, medium-sized and even small businesses to attract an ever-increasing consumer size. The goal of companies and their

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marketers is to reach consumers not only by offering economic incentives but also through a network of psychological and psychoanalytical factors, to affect and direct consumer's behavior subconsciously.

The Consumer Behavior Theory emerged as a separate field of Marketing in the late '50s and early' 60s. The essential motivation for this evolution came from marketing managers who wanted to learn how the social sciences could help find and interpret the causes of consumer behavior and purchasing decisions. By identifying the most critical factors that influence purchasing behavior such as product image, colors, shop atmosphere, product placement, advertising, etc., marketing managers tried to attract and entice more consumers (Khan, 2007 pp. 8 - 9).

In general, the term "consumer behavior" refers to any thought, human market behavior, feeling, an energy that leads to the purchase and use of products/services or the non-acceptance of these goods (Khan, 2007 pp. 9 - 10). The official definition of consumer behavior is given by the American Marketing Association,[9] where it defines consumer behavior as *«the dynamic interaction of affect and cognition, behavior, and environmental events by which human beings conduct the exchange aspects of their lives.»*

Thus, consumer behavior theory studies how individuals make decisions to spend their available resources (e.g., money, time, effort, etc.) on various consumer items.

Nowadays, plant-based milk alternatives are the fast-growing industry in newer food product development all over the world, including Greece. In the introduction, it was mentioned that cow milk or generally conventional milk makes some people abstain from its consumption either for medical reasons (e.g., allergy, hypercholesterolemia, lactose intolerance, etc.) or for environmental/ethical reasons. Hence, they opt for non-dairy alternatives that at least have a lower impact on the environment and their health (Sethi et al., 2016). Within this framework, Mäkinen et al. (2016) indicate that a vast majority of consumers in the world choose plant-based milk substitutes, not only for medical reasons but also as a lifestyle choice following the society's fashion trends. Regarding medical reasons, lactose intolerance is the most prevalent worldwide (75% of total cases). However, allergy is also a critical factor that reduces cow milk's demand.

[9] https://www.ama.org/

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Granato et al. (2010) claim that there are also economical and traditional/religious reasons for food preferences, and that's why countries like Japan, the USA, China, and some African countries promote the development of new non-dairy alternatives. Indeed, according to data from MINTEL (2016), the US market for non-dairy milk substitutes grew by 9 % in 2015, with 138 different varieties of plant-based milk just in Europe. Zeiger et al. (1999), Mäkinen et al. (2016) and Jeske et al. (2017) also claim that soya milk is the most prevalent milk substitute, but many people react to this as a result of their soy allergy, so they consume other types such as almond, oat, etc.

Therefore, being willing to assist and enable consumers to have more access to the plant-based milk market, many companies have developed and launched several on-dairy substitutes supporting vegan and vegetarian diets (Hoek et al., 2011; Fuentes & Fuentes, 2017). Furthermore, to increase the popularity and profitability of selling these dairy alternatives, marketing strategies like diversification and segmentation are adopted. The objective is to increase the demand, especially among consumers who are lactose intolerants, health-conscious, and vegans. It is also imperative to place the product in the right market through the right sales channel. Although there is a limited awareness amongst consumers about the nutritional benefits of these substitutes, however, with the proper marketing and by educating customers about the health benefits of these alternatives, this problem can be overcome (Markets Research, 2019).

Therefore, consumers seem to pay more attention today than in the past to the food's health benefits, to achieve healthy diets (Chrysochou, 2010). Food that is perceived as healthy has increasing popularity for consumers and companies in the food industry worldwide(Goetzke et al., 2014).

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4 Research Framework and Hypotheses

4.1 The Theory of Reasoned Action (TRA)

In the literature, various theories have been proposed showing how business, an organization, or a group are influenced by multiple factors such as its environment and internal structure. One such approach that is the central part of the investigation of the present dissertation is the so-called 'Theory of Reasoned Action (TRA).' It is considered one of the most widely used consumer behavior models in marketing research. It has also been used frequently in studying the acceptance of organic food (Petrovici et al., 2004; Padel & Foster, 2005; Baumann, 2013, Li &Xin, 2015; Myresten & Setterhall, 2015).

TRA emerged from social psychology and was proposed by Ajzen and Fishbein (1980). The TRA consists of three general structures:

1. Behavioral intention (which is close to the consumer's behavior)
2. Attitude
3. Subjective norm

Therefore, TRA suggests that a person's behavioral intention depends on his/her attitude towards the behavior and subjective norms. If a person intends to follow behavior, he/she is likely to support the action, and so he is close to his/her behavior. Besides, each person's intentions are influenced by his or her attitude toward behavior and subjective norms. Behavioral intention measures the degree of a person's intention to perform the behavior. In contrast, attitudes consist of one's beliefs about the consequences of the behavior multiplied by his or her assessment of the outcomes (Ajzen & Fishbein, Understanding Attitudes and Predicting Social Behaviour, 1980).

On the other hand, the subjective norm is defined as: "*the perception of the individual that most people who are important to him/her believe he or she should or should not do this particular behavior*." Thus, if a person views the proposed behavior (attitude) as positive and believes that other influential individuals want him/her to have that behavior (subjective norm), then there is a

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greater intention (motivation) on his/her part. So, he is likely to carry out the behavior (Ajzen & Fishbein, Understanding Attitudes and Predicting Social Behaviour, 1980).

The equation that follows for the above behavior is:

Behavioral intention = Attitude + Subjective norms

Thus, this model suggests that external stimuli influence one's attitude by modifying the structure of one's beliefs. Besides, the subjective norms that form part of the behavioral intention are related to the idea that third parties have about whether the individual should adopt the behavior or not (see Figure 4). A high correlation between attitudes, subjective norms, and behavioral intentions have been confirmed in many studies.

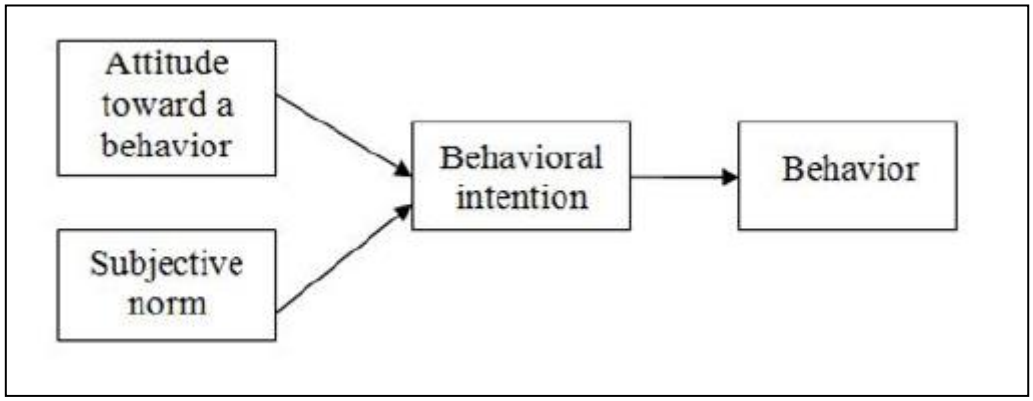

Figure 4: Basic TRA Model as defined by Ajzen&Fishbein (1980)

Source: Mousel & Tang (2016), p. 9

According to TRA, all other factors influence behavior by changing attitudes or subjective norms. Ajzen and Fishbein (1980) refer to these factors as external variables. Examples of such variables may be political influences, organizational structure, gender, age, occupation, etc.

The TRA, however, is incomplete in terms of individual control over a behavior. Regardless of the person's intention to act, there are usually some barriers. Such barriers are internal factors, such as whether the person has the relevant skills, abilities, and knowledge, but also external factors such as time, opportunities, cooperation with others, etc. (Ajzen& Madden, 1986). So, a behavior can be entirely out of control or maybe not.

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"Perceived behavioral control" is an additional factor affecting behavioral intention. It directly expresses how difficult it is for a person to act, how many resources and opportunities he/she thinks there are, or how many factors are positive or negative. For example, if a person believes that he/she can exercise daily, this factor may influence his/her intention to do so. Thus, "perceived behavioral control" becomes the separation of the Theory of Planned Behavior (TPB) from the Theory of Reasoned Action (TRA). However, in the present dissertation, only TRA will be used because TPB requires a more in-depth analysis of the consumer's behavior, something that would make the analysis more complex (Ajzen & Fishbein, Understanding Attitudes and Predicting Social Behaviour, 1980; Ajzen & Madden, 1986).

Let's now examine each component of the TRA more accurately to understand their importance for incorporating them into this model.

Behavior

According to Ajzen and Fishbein (1980), Behavior (B) is defined as *"observable acts that are studied in their own right."*Specifically, the present study analyzes this behavior as the observable act of purchasing fresh and plant-based milk in a store at a specific time.

Behavior Intention

Again, according to Ajzen and Fishbein (1980), Behavior Intention (BI) is defined as *"a person's location on a subjective probability dimension involving a relation between himself and some action. A behavioral intention, therefore, refers to a person's subjective probability that he will perform some behavior"*. According to the TRA model, as it was shown previously (see Figure 1), if BI is positive, then this makes a particular behavior very possible. This relationship constitutes the first research hypothesis that is going to be analyzed in the empirical part of the dissertation, which is the following:

H1: A person's behavior intention to buy plant-based milk products has a strong/positive relationship with his/her actual behavior of purchasing those products.

H1 can, therefore, be expressed with the following **Equation 1**:

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$$\boldsymbol{B = w * BI}$$

where

B: a specific behavior,

BI: the intention to engage in a particular action and

w: the weight reflecting the impact behavior intention has on behavior

In the previous literature, Bagozzi (1992) claimed that whenever the intention in a specific behavior is activated, it will operate as a self-fulfilling mechanism and would motivate individuals into a status of "must or will do." Furthermore, Ajzen (2012) claimed that BIs are motivational factors that explain how much effort an individual is willing to make to perform a behavior. However, Malhotra & McCort (2001) concluded that motivating a better understanding of consumers' behavior is a primary concern for marketing researchers, so this requires a more in-depth analysis of consumer's behavior.

Attitude

The attitude was defined by the same authors as*"a person's general feeling of favorableness or unfavorableness toward some stimulus object"* (Ajzen and Fishbein, 1980). So, attitude is about an individual's personal belief that a particular action will take place and lead to the desired outcome. In this study's notion, attitude is considered as a person's belief that consuming plant-based milk is good for his/her health. It has been observed that the increased influence of mentality gives rise to a positive intention of a consumer to purchase milk. At the same time, improved positive attitudes towards milk and dairy products reduce the likelihood of taking preventive behavior (Lu et al., 2010).

For investigating the attitude factor, six different variables have been identified: health, taste, animal welfare, environmental friendliness, a positive feeling when consuming the product and harness of animal farming. Health was chosen because the benefits of following a plant-based diet far outweigh those of consuming traditional food (Anomaly, 2015; Springmann et al., 2016). Also, the

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taste is considered by Wansink et al. (2005) and Hoek et al. (2011) as an appealing factor for consumers when they have to decide to buy analog products.

Regarding animal welfare, worldwide organizations such as FAO (2006) and UNEP (2012) claim that animal welfare is very important for the ecological balance, pointing out that animals should not be used in the production process for producing plant-based foods. At the same time, animal production causes many problems to the natural environment (e.g., population reduction, pollution from animal production, climate change, etc.), so the world should establish an environmental friendliness by avoiding harming the animals.

Thus, the attitude hypothesis is the following:

H2a: A consumer's attitude towards plant-based milk products has a positive relationship with his/her intention of purchasing those products.

Additionally, another aspect of attitude was examined in this study, the fact of having and maintaining a healthy lifestyle, which is the case when a person's diet combines conventional and plant-based food, intaking the necessary nutrients its body needs[10]. So, a balanced diet includes all types of food but at those quantities and calories that maintain the body healthy. This aspect was included in the analysis because it is considered to be fundamental to healthy living. Eating only vegetables or fruits and entirely abstain from eating meat, dairy and fish could be very dangerous to one's health because such diets are lacking in some vital nutrients like omega-3, calcium, vitamin B-12, which are present in meat and dairy (Raba et al., 2019).

So, the second attitude hypothesis is the following:

H2b: A consumer's attitude towards having a balanced diet has a positive relationship with his/her intention of purchasing those products.

[10] https://www.healthline.com/health/balanced-diet

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Subjective Norm

Subjective norm is defined, as it has already been seen before, as *"a person's perception that most people who are important to him or her think he or she should or should not perform the behavior in question"*(Ajzen and Fishbein, 1980).In other words, the subjective norm is about knowing what other people think of a specific behavior/action. In the present case, the consumption of plant-based milk products, then how vital these opinions are to the individual in question and finally, how many different groups of people there are which influence the individual (Tang &Mousel, 2016).

In the present thesis, the people that influence an actor were grouped into four categories: friends, family, colleagues/classmates, and celebrities & influencers from TV, social media, etc. Also, the behavioral intention will be positively affected by people's opinions if this is favorable to them and important to the actor. Therefore, the research hypothesis that is made is the following:

H3: A consumer's subjective norm towards plant-based milk products has a positive relationship with their intention of buying those products.

Socio-economic Background

Another critical factor that is incorporated in the TRA model is the socio-economic background of the respondents, i.e., gender, age, education, etc. This factor was also studied in the studies of Greene-Finestone et al. (2008), Li & Xin (2015), and Myresten & Setterhall (2015) in the case of adolescents in the UK and the Netherlands. They concluded that the majority of vegetarian adolescents are females. Ajzen & Fishbein (1980) did not incorporate a socio-economic background in their model. However, they claimed that gender, age, and occupation do influence behavioral intention.

Backman et al. (2002) argue that gender plays a vital role in a person's consumer behavior. Also, Hewitt & Stephens (2007) say that women have more positive attitudes about healthy eating and a greater desire to eat healthy foods such as low fat or organic milk. On the other hand, Berg et al. (2000) claim that men's attitudes and intentions are different from those of women as they show a higher preference for whole fat milk.

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Regarding age, a study by Fila and Smith (2006) concludes that at younger generations, subjective norms like friends and parents significantly influence the behavior of these individuals. At the same time, attitudes at these ages come to complement the subjective norms in the consumer's influence. Factors such as taste and health benefits can affect these attitudes.

In older people, Kim et al. (2003) claim that perceived behavioral control (which is not examined here) plays an essential role in behavioral intention. At this age, behavior complements perceived behavioral control in the plan to buy milk. However, there are also cases such as the older women, where attitude is determined more by the side effects of milk (e.g., lactose intolerance) rather than by knowledge (Mobley et al., 2014). Also, for middle-aged consumers, Astrom and Rise (2001) conclude that the intention of a healthy diet affects the consumer's behavior in buying low fat or organic milk. Subjective norms at this age do not have as much influence on this intention as attitudes (and perceived behavioral control).

Finally, the occupation, according to Rani (2014), has a significant impact on a consumer's behavior. For instance, if a consumer works as a marketing manager of a company, they will be more willing to buy business suits, whereas a low-level worker in the same company may purchase rugged work clothes.

In line with the TRA, background factors gender, age, and occupation were also studies in this dissertation and were incorporated into the following hypothesis:

H4: A person's socio-demographic background (age, gender, occupation) influences their intention to buy plant-based milk products.

H4 can be written in the following ***Equation 2***:

$$\begin{aligned}\mathbf{B\sim BI} = \mathbf{w_1 Aact} + \mathbf{w_2 SN} + \mathbf{w_3 Gender} + \mathbf{w_4 Age1} + \mathbf{w_5 Age2} + \mathbf{w_6 Age3} + \mathbf{w_7 Age4} + \mathbf{w_8 Age5} \\ + \mathbf{w_9 Age6} + \mathbf{w_{10} Occupation1} + \mathbf{w_{11} Occupation2} + \mathbf{w_{12} Occupation3} \\ + \mathbf{w_{13} Occupation4}\end{aligned}$$

where

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$\mathbf{w_1} - \mathbf{w_{13}}$: the weights that reflect the relative impact of each factor on the behavior intention,

Aact: Personal attitude towards engaging in a specific behavior,

SN: Subjective norm towards engaging in that particular behavior,

Gender: Dummy variable for gender (=1 if male, 0 otherwise),

$\mathbf{Age1} - \mathbf{Age6}$: Dummy variables for each age group and

$\mathbf{Occupation1} - \mathbf{Occupation4}$: Dummy variables for each occupation group.

Analytical information about the 0 and 1 values of each dummy variable in age and occupation will be mentioned in the research results section.

4.1.1 Expansion of the TRA Model

4.1.1.1 Socio-economic background

Apart from the main demographic variables mentioned previously, other studies like Hoek et al. (2004), Liu (2013), and Li &Xin (2015) highlight the importance of income and education on the consumer behavior context, so these additional factors were also incorporated in the model. Therefore, the hypothesis is the following:

H5: A person's income and education influence their intention to purchase plant-based milk products.

So, Equation 2 can be expanded to the following ***Equation 3:***

$$\begin{aligned}\mathbf{B{\sim}BI} = {} & \mathbf{w_1 Aact} + \mathbf{w_2 SN} + \mathbf{w_3 Gender} + \mathbf{w_4 Age1} + \mathbf{w_5 Age2} + \mathbf{w_6 Age3} + \mathbf{w_7 Age4} + \mathbf{w_8 Age5} \\ & + \mathbf{w_9 Age6} + \mathbf{w_{10} Occupation1} + \mathbf{w_{11} Occupation2} + \mathbf{w_{12} Occupation3} \\ & + \mathbf{w_{13} Occupation4} + \mathbf{w_{14} Income1} + \mathbf{w_{15} Income2} + \mathbf{w_{16} Income3} \\ & + \mathbf{w_{17} Income4} + \mathbf{w_{18} Education1} + \mathbf{w_{19} Education2} + \mathbf{w_{20} Education3}\end{aligned}$$

where

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$\mathbf{w_{14}} - \mathbf{w_{20}}$: the weights that reflect the relative impact of each factor on the behavior intention,

$\mathbf{Income1} - \mathbf{Income4}$: Dummy variables for each income group and

$\mathbf{Education1} - \mathbf{Education4}$: Dummy variables for each education group.

Likewise, analytical information about each dummy variable in income and education will be mentioned in the results section.

4.1.1.2 Barriers

Although TRA is the most widely used model in the psychology and consumer behavior context, however, it has been criticized for its simplicity (not including many influential factors) and inadequacy. The major disadvantage, in this case, is the ignorance of the relationships between individuals in acting to their interpersonal and social relations, as well as the broader social structures governing social practice. Although TRA considers the importance of social norms, only individual perceptions of these social phenomena are recognized (Terry et al., 1993; Aleassa et al., 2011). Moreover, some studies (Vermeir & Venbeke, 2006; McEachan et al., 2011; Rhodes & de Bruijn, 2013) show that behavior and intention are different from each other.

Taking account of these TRA drawbacks, the present dissertation used an expansion of the TRA model just as Li & Xin (2015) and Tang & Mousel (2016) did in their works. The difference in this modified version is that behavior and intention are not the same, so there is the so-called "behavior - intention gap." Between these variables, various other variables are called "barriers," not included in the factors of attitudes and subjective norms. These barriers are a significant number of variables that could make a consumer determined to buy a particular product, not buy it for many reasons (e.g., high price, traditions, etc.). The modified version of the TRA model is presented in Figure 2 below.

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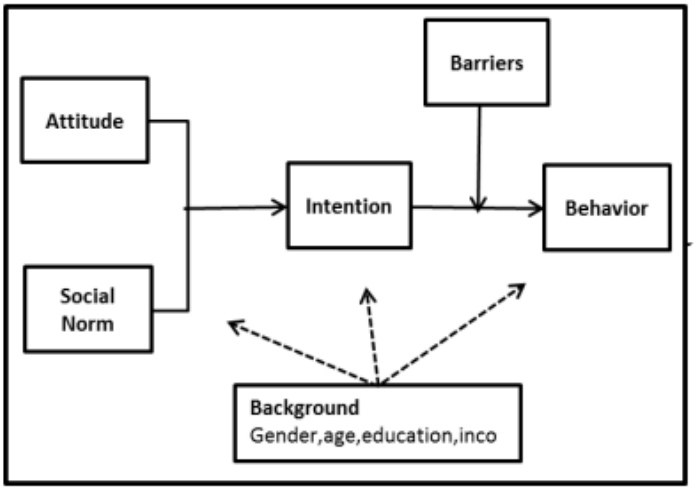

Figure 5: Modified TRA model
Source: adapted from Li &Xin (2015), p. 12

The barriers that were included in this dissertation were six: Price, Availability, Information, Gatekeeper, Food Neophobia, and Culture. Price and Food neophobia was used in the study of Hoek et al. (2011), highlighting that many plant-based products are new on the market, usually more expensive than the conventional ones, and consumers are unfamiliar with them. Furthermore, Gatekeeper and Culture were used by Wansink et al. (2005), indicating that the free will of a decision in a household as well as their awareness towards health and environmental protection. Finally, Availability and Information were used in the study of Kollmuss & Agyeman (2002) as well as in the present work because they might not have knowledge about all the consuming options or whether they are available at stores. Thus, from this presentation, it is clear that the barriers make the variables B and BI different from each other. Hence, the hypothesis, in this case, comprises six sub-hypotheses tests:

H6a: The price barrier (PB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6b: The availability barrier (AB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6c: The information barrier (IB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

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H6d: The gatekeeper barrier (GB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6e: The food neophobia barrier (FNB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6f: The cultural barrier (CB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

The final equation that incorporates the above six barriers is ***Equation 5*** below:

$$\begin{aligned}\mathbf{BI - B} = {} & \mathbf{w_1 PB + w_2 AB + w_3 IB + w_4 GB + w_5 FNB + w_6 CB + + w_7 Gender + w_8 Age1} \\ & \mathbf{+ w_9 Age2 + w_{10} Age3 + w_{11} Age4 + w_{12} Age5 + w_{13} Age6 + w_{14} Occupation1} \\ & \mathbf{+ w_{15} Occupation2 + w_{16} Occupation3 + w_{17} Occupation4 + w_{18} Income1} \\ & \mathbf{+ w_{19} Income2 + w_{20} Income3 + w_{21} Income4 + w_{22} Education1} \\ & \mathbf{+ w_{23} Education2 + w_{24} Education3}\end{aligned}$$

where

$\mathbf{w_1 - w_{24}}$: the weights that reflect the relative impact of each factor on the behavior intention,

BI − B: the plan - behavior gap to engage in the specific behavior,

PB: the Price Barrier, which shows whether a plant-based product is too expensive for a consumer,

AB: the Availability Barrier, indicating whether a plant-based product is not readily available at a regular store for a consumer,

IB: the Information Barrier, indicating whether the information about a plant-based product is difficult to access for a consumer,

GB: the Gatekeeper Barrier, indicating whether the consumer is not able to decide freely over what to a consumer in his household,

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FNB: the Food Neophobia Barrier, indicating whether the consumer does not like to try new foods and

CB: the Cultural Barrier, indicating the importance of tradition and culture of food to a consumer.

Therefore, all the hypotheses from 1 to 6 were studied in the present dissertation through the TRA model, to determine how these factors impact consumer behavior. The results would be more useful not only for consumers but also for companies in the non-dairy substitutes industry.

4.2 Research Design

The present dissertation aimed to investigate and identify the different factors and barriers that influence consumer behavior in the case of plant-based milk alternatives. For conducting this research, a specific methodology was adopted to examine this relationship from an empirical point of view. In general, scientific research is distinguished into two fundamental methods: a qualitative and quantitative analysis. Qualitative research aims to investigate and deeply understand social phenomena. The researcher with the qualitative research answers the questions related to "Why?" and "How?" of these phenomena. The qualitative approach is mainly an exploratory method, i.e., investigates attitudes, perceptions, motivations, and behavioral data.

On the contrary, quantitative research refers to the systematic investigation of phenomena by using statistical methods and figures. A representative sample of observations is usually used to generalize the results to the general population, often by collecting data with questionnaires, scales, etc.(Saunders et al., 2009). In the present study, both qualitative and quantitative research was used, as these methods complement each other.

4.3 Qualitative Study

4.3.1 Focus Group

Firstly, the consumer point of view was examined in the form of two focus groups, followed by a taste test in both cases. The qualitative study conducted was exploratory as it is described in Saunders et al. (2009), aiming to extract new information and trends from the participants related to

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the plant-based milk category. The aim was to discover all the elements and factors influencing people regarding the consumption of dairy replacements. This information subsequently enabled the development of the hypotheses for the quantitative research that followed. The above method of using the data of the qualitative study to facilitate our quantitative study was done according to Bryman and Bell (2011). This technique is an excellent way to find out more specific factors about your research based on the fact that the discussion occurs in a relaxing situation, where consumers are not under time pressure at all. That means, there is much more time to discuss, so the participants can do an in-depth dive analysis into the questions, where they feel it is needed.

4.3.2 Participant Selection and Data Collection

Concerning the sampling and data collection, we decided to select a broad spectrum of people of different ages and several educational backgrounds. Each group was composed of two male and two female participants. They were between the ages of 18 to 36, and they were all Greek citizens. In general, we took a convenience sample, with the following restrictions. The interviewees in the cow milk sample had to consume cow milk more frequently than plant milk and at least twice a week. In the same way, the subjects in the plant milk sample had to drink plant milk more regularly than cow milk, also at least twice a week. Concerning the duration, each focus group meeting lasted more or less one hour and a half, and it took place in the researcher's house that enabled the generation of a more cozy and relaxed environment.

Besides, regarding the taste test, the researcher was fully prepared by bringing samples of the plant-based milk ''Adez''. As it was referred before, she works in a multinational FMCG (fast-moving consumer goods) company, and she is responsible for the marketing plans of the plant-based milk category. Thus, the findings of this taste test will be precious not only for the later facilitation of the quantitative study but also for the adaptation of a more efficient targeted approach of the consumers regarding the marketing plans and the digital communication as well. Finally, The feedbacks of participants' perception of the brand will be taken into consideration for future improvements of the branding and packaging, trying to meet the demands and needs of the ''Adez'' target group, as well as to approach their lifestyle in a deeper level.

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4.3.3 Analysis method for the qualitative data

The focus group discussion was based on a list of pre-determined topics, which were the only guidance for the flow of the debate, having them previously write down. (Appendix 1). The fundamental pillars, with which the discussion was structured, are described below:

- 1st pillar: Cow-based milk attitudes and general knowledge of its implications
- 2nd pillar: Perception and general knowledge about the plant-based milk category
- 3rd pillar: Purchase intention about plant-based milk
- 4th pillar: Perception and knowledge about the broader impact of meat and dairy consumption to the health, environment and animal welfare
- 5th pillar: Criteria and barriers of the product selection
- 6th pillar: Taste test

In the first pillar, habits, occasions, and generally, the current behavior of the participants were portrayed towards the cow-based milk. In the second one, the perception was depicted, as well as the current behavior of the participants towards the plant-based category, focusing mainly on plant-based beverages.

Moreover, the purchase intention towards the plant-based milk category was discussed in the third pillar, underlining the future behavioral intention of each participant and the reasons behind this decision. In the next one pillar of discussion, the perception and the broader impact of the meat and milk industry was thoroughly debated, which was later linked with the attitude of each participant towards the cow-based milk category in general. Following the fifth pillar, we discussed all the criteria of the product selection as well as the barriers which were found from previous researches, which keep people from buying the plant-based products, even though there is the initial desire. At the end of the discussion, the taste test followed, conducting a blind taste test firstly after the revelation of the brand, a discussion followed regarding the packaging, and their feedback in general.

Last but not least, both focus groups were tape-recorded, as advised in Bryman and Bell (2007) for later evaluation. Each one tape-recorded discussion was carefully listened to and analyzed

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afterward for each reply to be categorized and linked to the main variables of the TRA model of our quantitative study, which were: the Behavior, the attitude, the behavioral intention, and the barriers. This is also the structure that was followed for the results of our qualitative study in the next chapter.

4.4 Quantitative Study

In addition to conducting a qualitative study, quantitative research was also used to collect more data. Upon collecting the data, a survey via questionnaire analysis was conducted to get a comprehensive understanding of what motivates Greek consumers to buy plant-based milk substitutes, as well as what barriers may increase the gap between consumers' behavior intention and their actual behavior. The questionnaire used in the study was a structured questionnaire. The majority of the questions were arranged in a matrix according to the Likert scale from 1 to 7 (Hair et al., 2014, p. 626). This technique is a convenient method as it was possible to attribute each weight w to each influential factor. More explanation on the questionnaire is given in detail in the following sections.

4.4.1 Sampling and Data Collection

Data collection was conducted on an online platform (Google forms). This way was more convenient than the traditional way of distributing printed questionnaires as the second way would be more costly regarding the time and effort from moving from one place to another to collect the necessary sample. The selection of the sample was made through convenience sampling and snowball sampling (Saunders et al., 2009). The final sample consisted of 326 respondents(resulted in 310 usable responses).

4.4.2 Questionnaire Development Process

In total, the questionnaire included 16 questions; In the first three single questions, respondents were asked general information about whether they live in Greece or not, what diet they follow, and how much they spend on food per week. The questions from 4 to 9 are the central part of the questionnaire as there were tested the research hypotheses presented in the previous section. Specifically, the correspondence of each question to the existing TRA variables, as well as each question' source, presented in the respective segment is the following:

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- Behavior (Question 4) - Ajzen & Fishbein (1980)
- Behavioral Intention (Question 5) - Ajzen & Fishbein (1980)
- Attitude (Questions 6 and 8) - Ajzen & Fishbein (1980), Focus groups
- Subjective Norm (Question 7) - Ajzen & Fishbein (1980)
- Price (Question 9) - Hoek et al. (2011)
- Availability (Question 9) - Wansink et al. (2005)
- Information (Question 9) - Wansink et al. (2005)
- Gatekeeper (Question 9) - Wansink et al. (2005)
- Food neophobia (Question 9) - Hoek et al. (2011)
- Culture (Question 9) - Hoek et al. (2011), Focus groups

Furthermore, question 10 asks respondents about whether they know or trust a specific plant-based milk brand. Questions 11 through 15 were single questions about the socio-economic background of respondents, i.e., gender, age, occupation, monthly income, and education. Finally, question 16 was organized on a Likert scale and asked respondents whether healthy eating is essential to them. The entire questionnaire information is presented in Appendix 2.

4.4.3 Data Transformation and Analysis

In this survey, a 7-point Likert-scale was used. Therefore, the range of raw data was from 1 to 7, for both assertion and weighting answers, except for the Behavior(B) and Behavioral Intention (BI), which only had assertion answers. Assertion answers were all those that express something about a specific thing (e.g., I think consuming plant-based milk alternatives is good for my health). In contrast, weighting answers reveal a degree of importance for the assertion answer (e.g., The fact that plant-based milk alternatives are suitable for my health is important to me).

In all variables, each assertion answer was re-coded from -3 to +3 to make clear the positive or negative answers. Therefore, each response was coded into numbers ranging from -3 (strongly disagree) to +3 (strongly agree). Regarding the weighting answers of each variable, under Ajzen & Fishbein's suggestions, they were left as it is, ranging from 1 to 7. After making this recording, the next step was to pair the assertion and the weighting question together by multiplying them into one item. The result was a combinatorial question on the scope from -21 to +21.

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The collected data was analyzed using the Statistical Package for Social Sciences (SPSS) software and, specifically, the IBM SPSS Statistics 20 version. The steps of analysis were the following:

The first step was to conduct a reliability analysis between attitude and subjective norm scale to test the extent to which these measurements provide consistent results. The approach used was the coefficient alpha or Cronbach's alpha. This coefficient is calculated as a function of test items' number, as well as the average inter-correlation among them. It takes values between 0 and 1; values that are lower than 0.7 are considered poor or questionable regarding internal consistency, so the reliability is not reliable. However, if the alpha takes values over 0.7, the reliability is strong[11].

The second step was to conduct a factor analysis between attitude and subjective norm scale to test their validity. It is a technique that is used to reduce a large number of variables into fewer numbers of them called 'factors.' The method used was the Principal Component Analysis (PCA), the most common method used by the researchers[12].

Next, there were presented the main descriptive statistics for all variables in the questionnaire. For those organized on a Likert scale, information about their mean value was introduced, while for the single question variables, their behavior was presented through frequency distributions.

Finally, a regression analysis was used to test all the hypotheses between each influential factor and behavior intention towards buying plant-based milk substitutes as well as the assumptions between barriers to the behavior - intention gap. Dummy variables were also used for gender, age, occupation, education, and income.

[11] https://www.statisticssolutions.com/directory-of-statistical-analyses-reliability-analysis/
[12] https://www.statisticssolutions.com/factor-analysis-sem-factor-analysis/

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5 Results

5.1 Qualitative Study

As earlier stated, the aim of this qualitative research was mainly to ensure that we had all the factors that influence consumer behavior's choice when it comes to buying or not buying plant-based milk alternatives. Also, we examined, which is the perception of the plant-based milk category from both users and non-users. Furthermore, it was a perfect opportunity to execute a consumer blind taste test of the plant-based milk Adez. Firstly, without revealing the name of the brand, we collected the purest opinions concerning the taste and the possibility of buying it or not. In the last section, we revealed the brand, and so asked their feedback regarding packaging and taste matching. Both groups were free to talk as much they wanted, and we only moved to the next question when nobody had anything to add. The focus group discussion was semi-structured and lasted about 90 minutes. Lastly, all participants were comfortable and eager to help; there was no question that they did not want to answer.

5.1.1 Behavior

To begin with, the first pillar of the discussion for both focus group interviews was their current behavior concerning their consumption of dairy milk.

When it comes to the first focus group of cow-based milk drinkers, all four participants followed an omnivorous diet and consumed dairy products daily. More analytically, they mostly mentioned drinking cow milk in the coffee, as a quick meal with cornflakes or plain with cacao and finally for cooking. When they were asked about the reasons for their preference for cow-based milk, the responses were differentiated. One participant stated that he drinks it for pleasure and relaxness, another one interviewee for replacement of a meal or instead of juice, and the remaining two replied that they like the taste. More specifically, one participant stated :

" I love drinking milk. It relaxes me, and it makes me feel like I am a kid again. It is something that reminds my younger age in which drinking milk with cacao was the most favorite time of the day."

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Following our discussion, they were asked about more general information and rumors about the cow-based milk in general. Most of them did not know any specific knowledge from current scientific studies, except the prevailed opinion that cow milk is a must ingredient for a healthy diet and necessary for building strong bones, preventing osteoporosis. One participant characteristically stated:

"There are some rumors that the milk is not beneficial anymore for the adults, and it is not suggested to drink it, but I do not believe it. I think it is a vegan hype."

On the other hand, depicting the main idea of our gathering, they were asked general information regarding the plant-based milk category; for instance, brands that maybe know or existing plant flavors at the conventional supermarket of the neighborhood.

They mostly answered with the primary core flavors such as soy, almond, and coconut. Three of the participants had tried once or twice in their lifetime and one participant, not even once.

Nevertheless, they knew a couple of brands in the plant-based milk category such as Alpro, Bitam, and Olympos, considering the last one referred the leader of the category as well. Regarding their perception about the plant-based milk category in general, the central claims unanimously were that is a vegan trend that will soon fade out followed by people who want to be different somehow. What is more, plant-based milk was characterized as tasteless and boring but healthy.

To continue with, regarding the diet and the current behavior of cow-based milk consumption for the second focus group, which was the plant-based milk drinkers, two of the participants were strict vegans, and the rest two followed a vegetarian diet. That is to say, they occasionally consume dairy products such as cheese and milk. More analytically, they mostly mentioned drinking cow milk basically at out-of-home occasions such as drinking coffee at a café-bar, in milk chocolates, in ice-creams, and at dining. However, knowing that they both consume plant-based milk as well, a logical question was why they had not replaced it with the plant-based on these occasions too. One reason behind this was that the plant-based category is not yet an established one in the majority of the bars and cafeterias, so it is not quite easy to find plant-based milk at a typical café store. Another reason was that for the referred occasions, the cow-based milk taste was

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preferred, and they did not want to exclude so many choices to choose the vegan version, which will be less tasty, as they stated.

Last but not least, the next hot topic, which will be discussed with further detail in the following pillars of discussion, was the perception and general knowledge about the cow-based milk. All the participants were highly informed and educated when it comes to the consequences of consuming cow milk, and that was the initial trigger that turned them into a plant-based substitute. Three of the participants stated that health was the first reason for which they quit cow milk. The environment's exploitation was the second reason, and animal abuse, coupled with the unfair treatment and the massive production of animals, was also another crucial reason. Characteristically, one of the vegan participants stated:

"Cow milk is nothing more than hormones, antibiotics, and pus. There is nothing beneficial to our health.

On the contrary, it is the cause of a pile of diseases, not to mention that it does not help at the osteoporosis at all, but it does create it. Amazingly, nobody knows that". Similarly, another participant stated that she quitted the cow milk due to lactose intolerance.

With this in mind, the next core pillar of discussion came to the surface, which is the knowledge and perception regarding the plant-based category. In terms of their plant-based milk consumption, all four participants drink plant milk almost every day, on occasions like at breakfast with cereals, in smoothies, at cooking, and last in coffee, tea, and hot chocolate. More specifically, when they were asked about their perception about the above category, their answers were of high interest. Most of the participants agreed that they choose to drink it not for its nutritious elements or vitamins but only to avoid drinking the cow-based one. Characteristically, one of the participants stated:

"There is nothing special or extraordinary at this category, except the fact that it is digestible. However, beyond that, only the fact that I know how the cow milk is extracted and what causes to our health, I will choose to buy vegan milk".

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Regarding the brands of plant-based milk they buy, the below brands were referred: Alpro almond milk unsweetened, Olympos almond milk unsweetened, Delta oat milk, and last Ecomilk rice or oats which is a brand only found in bio stores. Lastly, when they were asked which brand supposed to be the leader of the category, all of them agreed that Alpro is the big winner.

5.1.2 Behavioral intention

Entering another critical pillar of our discussion, we asked the first focus group's respondents, which were the cow-based milk drinkers, whether they would ever consider quitting the cow milk and start buying plant-based beverages. All of them answered that if it is not necessary for medical or diet reasons, they will not choose to consume it because they find it boring and tasteless.

Concerning the second focus group, which were the plant-based milk drinkers, the purchase intention of all the participants was crystal clear; all of them will continue to consume plant-based beverages as they already do. One participant's opinion was quite interesting; she stated that she is planning to reduce or even eliminate at all the plant-based milk substitutes in the future. Based on her claims, although the plant milk is better for the health and animals, there are still some environmental consequences in a slighter scale, she stated.

5.1.3 Attitude

Continuing with the next fundamental pillar, which was the knowledge about the broader impact of meat and milk consumption on the health and the environment, the first group of cow-based milk drinkers knew almost nothing. They had never thought that their food choices might affect the environment in some way. More specifically, when they were asked about milk consumption and the consequences to health, everybody claimed that there is no need to worry about that because no harm is caused to our health. On the contrary, milk is supposed to be highly abundant in nutritious elements. Nevertheless, only one participant stated that maybe the milk is nutrient only until our childhood period.

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Based on the above, their lack of information concerning this specific issue was apparent. Hence, an initiative was taken to watch videos, regarding the consequences of meat and dairy consumption on the environment, to health, and animal welfare. Regarding the last one, we watched a video from a non-profit organization called "Peta," which was highlighting how animal treatment occurs in huge industries such as the meat and milk industry and to compare their attitude towards milk consumption after knowing all the truth.

Surprisingly, despite their first sock towards the cruelty's scenes and poor treatment of animals, as well as having just heard all the severe consequences to the health, only one participant stated that she would try to reduce the consumption. All the other participants reported that although the fact that they were depressed and sad by what they saw and learned, they are not willing to stop or reduce the consumption of meat and dairy because they think that even though they will do it, nothing will change.

On the other hand, the second focus group of the plant-based milk drinkers knew almost everything about this issue. All the participants were deeply aware of the consequences of cow milk consumption to the health, environment, and animal welfare, so there was no need to show the video to them. They had already seen it. Moreover, they knew all the arguments with in-depth detail, by heart. Characteristically, one of them supported that videos and researches like the previous ones were the reason to follow a vegan diet and a more conscious eating lifestyle. In addition to that, he claimed:

" I feel it is our duty that our consumption's choices have not to be burden against the environment and animals. Every choice I made on food, it is a conscious choice."

5.1.4 Barriers

Towards the end of our interview, we examined the factors which would be barriers to plant-based products purchase. For the most part, the obstacles that they were previously established only moderately influenced both focus groups. More specifically, the barriers that we examined were below: price, information, gatekeeper, availability, food neophobia, and tradition.

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Concerning the price barrier, the price was not an obstacle regarding the plant-based product's purchase for the plant-based milk drinkers focus group. Notably, one female participant stated:

"Price does not affect me. I always choose the best for my health independently from the price. More specifically, my wage will never affect the quality but the quantity. That means, if a bottle of plant-based milk is the most extraordinary beautiful thing in the world, I will buy it as a luxury product instead of everyday milk. Hence, I would change my manner of drinking milk."

On the other hand, almost all the members of the cow-based group stated that price is a factor that they importantly consider regarding the plant-based product purchase, which will importantly influence their final decision.

Another barrier that we talked about was information. The information barrier describes the problem that information on these products is not readily available, and will thus decrease the possibility of people purchasing them. Even though the plant-based category is still considered as a niche market, starting its appearance in the regular supermarkets the last years, all the respondents, of the plant-based milk focus group, were quite well informed. Mainly, they knew the subject of environmental destruction by intensive animal farming, the cruelty of animal treatment, as well as what kind of products they are and the fact that they can be found at the typical supermarket store. When we asked where they got the environmental knowledge, they said mostly from social media, published medical researches and articles, as well as through their research on the internet regarding this topic. For instance, on the environmental issue itself, one opinion stated was the below:

"Meat and milk industry is one of the most polluting industries which need excessive energy and resources to be sustainable.

Furthermore, Animal farming causes methane gas emissions, which is one of the leading causes of the greenhouse effect." One other participant stated: "You need to produce food for the cow, and then you need an area for the cow, as well as excessive water consumption for the cow and for growing its food. So, you need much more area to produce the food you eat, than if you eat vegetables, so there is less space for forests, and hence there is less regeneration of oxygen."

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On the other hand, the first group of the cow-based milk drinkers was not so well informed as they knew almost nothing about what is going on in this vast industry. Most of the knowledge they got was coming from their family's beliefs, and the rumors such as "Drink milk, it makes bones stronger." So, because the plant category is an entirely new market, many people, especially omnivores, do not know that plant-based products are healthier and more environmentally friendly from animal products. Thus, not having all that information readily available and accessible, discourages them from buying these products, confirming that the lack of information is indeed an essential barrier as Agyeman and Kollmuss (2002) also found.

We also discussed the gatekeeper barrier, but that question was quickly answered from both focus groups. First of all, the gatekeeper barrier means that people cannot decide themselves freely what they buy. The people living with partners and especially those who live with their parents take their decision jointly, but most of the time, the choice is made by the one who goes shopping. For most participants, there was not any problem concerning this barrier as they were themselves mostly, who go to the supermarket. Interesting was the opinion of one vegan participant who claimed that if she would still living with my parents, I could not be able to build the lifestyle I have now and to choose the diet I follow now. It would be impossible."

Moreover, the availability and the food neophobia barriers did not have any significant influence on the behavioral intention gap in both focus groups. This might happened because the plant-based products are readily accessible in the most conventional markets in Greece. Also, due to globalization, it is considered nowadays fascinating to try and taste new foods that you are not familiar with and international cuisines from all over the world. So for these specific participants, these factors were not considered as barriers.

Last but not least, one more barrier which we added right away after the focus group interview was the issue between food and tradition. Interestingly, after our discussion with both focus groups, it was highly emphasized the value of culture behind the recipes and the procedure of production, mainly if it is locally produced or handmade. They take this into grave account regarding milk selection as well. For example, for the plant-based focus group, that they would not buy a mass-produced, processed plant-based milk, even if it tastes good. Explicitly, it was stated:

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"We try to support local producers and small, environmentally friendly industries. Especially we choose greek products, in order not to burden more the environment with transportation gas pollutants, and to boost the Greek economy as well."

After these statements, we decided to add one additional barrier to our survey, the tradition tied to food.

5.1.5 Taste Test

After the end of our detailed discussion, we proceeded with the first part of the taste experiment, which was the conduction of a blind taste test of the brand 'Adez,' which is the plant-based milk for which, the researcher is in charge, as a marketing specialist. The chosen flavor for the above process was the almond. The reason behind this taste test was double. The first goal was to see the consumers' correspondence regarding the taste, without being aware of the brand name, and then to make a comparison with the taste of their favorite milk. After the revelation of the brand, their perception towards this specific brand was discussed, as well as a debate regarding its packaging and taste.

Regarding the focus group of the cow-based milk drinkers, the findings were quite impressive. All of the participants liked the flavor a lot, but they were quite confused about what they were drinking. Explicitly, one participant stated:

‘’To be honest, I do not clearly understand what this is, which I am drinking, but I like it a lot. It is really sweet, so I assume it is vanilla or coconut milk’’. The other two participants had precisely the same opinion, and only one participant was sure that it is almond flavor.

Moreover, when they were asked if they could replace it with the milk the participants drunk that period, all of them claimed, with absolute confidence, that they would not. One reason behind this was the fact that the taste was not so neutral as the milk is and that it is quite different as taste with the one they were used to so many years.

Following the second group of plant-based milk drinkers, which is the leading target group, the results were kind of disappointing. Only two of the participants liked the taste but not as much as

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the brand they usually drink. Characteristically, one participant from the other two who did not like it at all stated:

''The taste is so sweet, which makes me sure that it contains many calories. I think it is unhealthy, so it does not fulfill my purpose for a healthy lifestyle'. Also, another participant claimed: 'This taste is so intense that I cannot drink it.''

With the above in mind, their answer to the researcher's question, which was if they would replace it with the brand they usually drink, was expected. None of the participants would ever replace it with the plant-based milk they mainly buy.

After the blind taste test, it was high time for the revelation of the brand. So, regarding the first focus group of cow-based milk drinkers, the first impressions were encouraging. All of them liked a lot the packaging and the colors. Characteristically, it was said: 'The packaging is beautiful, but it does not remind me of milk. It gives the impression of something delicious and indulging'.

The researcher's next question to them was the below: if the packaging was matching the taste that they just tried. All of the people agreed that the packaging was not fitting with the taste. They claimed that the packaging was superior to the taste, and it predisposed you for something more delicious than that. To put it simply, only one participant highlighted: if I saw it for the first time in my life at the supermarket's fridge, I would take it because the packaging is fresh. But if I tried it, I would never buy it again'.

On the other side, the plant-based milk drinkers had more or less the same responses. The packaging was impressive, but negatively. To make it more clear, one of the vegan participants responded: The sample I tried was matching the packaging. That is, the taste is as sweet as the packaging is preparing you to taste. But to be honest, this indulgence is not compatible with the philosophy behind the plant-based products'.

Another vital comment from all the members of the focus group was regarding the plastic bottle. Although the fact that It was said that the bottle is 30% plant-based, the whole focus group still argued that is not acceptable to sell something like a healthy proposition and friendly to the

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environment and at the same time to use plastic bottle. Furthermore, they added that all the plant milk category uses paper bottles, and hence they would never buy something consciously with a harmful impact on the environment. Provided that, they suggested that if the container were made by paper, they would give it a try.

So, to sum up, the primary reasons for which our leading target group or ideally our potential customers would not select Adez instead of the competitors, are below:

The first reason is due to taste. They would prefer a more neutral and healthy-like taste. Secondly, the plastic bottle remains the main reason not to buy it. Moreover, this specific product is not bio; that means that its materials, chemicals or energy were not derived from renewable biological resources. And Last but not least, based on focus groups' claims, it is supposed to be commercial, as the Adez is a Coca-Cola brand.

5.2 Quantitative Study

5.2.1 Reliability Analysis

The first analysis conducted was a reliability analysis with the method of Cronbach's alpha. The variables included in this case were 'Attitude1', 'Attitude2', and 'Subjective Norms.' Attitude1 consisted of 4 items: Health Choice, Good Taste, Animals Care and Environment friendly, Attitude2 of also four things: Balance Diet, Organic Food, Exercising, and Healthy Body. In comparison, Subjective Norms comprised four items: Friends, Family, Colleagues/Classmates, and Celebrities/Influencers. Initially, a reliability analysis was conducted to all three variables together and then a reliability analysis to each of the variables separately. The results of Cronbach's alpha method are presented in Table 1:

Variables	Cronbach's α
Attitude1	0,841
Attitude2	0,881
Subjective Norms	0,746

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Attitude1, Attitude2, Subjective Norms	0,864

Table 1: Cronbach'sα for each variable understudy

As it is seen from this table, the Cronbach's α for all variables together was 0,864 and then for each variable, 0,841 for Attitude1, 0,881 for Attitude2 and 0,746 for Subjective Norms. All the values mentioned above are above the 0,7 critical importance, so all three components had the right internal consistency. Therefore, it is concluded that the reliability of the sample is good or acceptable.

5.2.2 Factor Analysis

After conducting reliability analysis, the next step was to do the factor analysis by using the Principal Component Analysis (PCA) method. In this case, three-factor analyses were made: one for Attitude1, one for Attitude2, and another one for Subjective Norms. PCA extracted information about the Correlation Matrix of each item. Communalities (i.e., proportions of variance accounted for by selected components), Total Variance Explained with the Scree Plot presenting the component numbers, especially those with eigenvalues over 1, and Component Matrixes: the simple and the rotated one, along with the Component Transformation Matrix. In each of the two-factor analyses, two components were extracted that had eigenvalues bigger than 1, so the rotated component matrices for each analysis are presented in Tables 2, 3, and 4 below.

In the Attitude1 component, only one eigenvalue was over one and explained 67,94% of the variance. In the Attitude2 element, only one eigenvalue was over one and explained 75,14% of the variance, while in the Subjective Norms component also only one eigenvalue was over one and explained 63,4% of the variance. Moreover, all loaded factors in each item were high over 0,673, which means that validity was significant in all variables.

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Component	Eigenvalue	Total Variance Explained	Item	Factor Loading
Attitude1	2,717	67,94%	Health Choice	0,882
			Good Taste	0,736
			Animals Care	0,834
			Environment Friendly	0,838

Table 2: Rotated Component Matrix of Attitude 1

Component	Eigenvalue	Total Variance Explained	Item	Factor Loading
Attitude2	3,006	75,14%	Balance Diet	0,889
			Organic Food	0,749
			Exercising	0,912
			Health Body	0,908

Table 3: Rotated Component Matrix of Attitude 2

Component	Eigenvalue	Total Variance Explained	Item	Factor Loading
Subjective Norm	1,386	63,40%	Friends	0,735
			Family	0,783
			Colleagues/Classmates	0,838
			Celebrities/Influencers	0,673

Table 4: Rotated Component Matrix of Subjective Norm

Therefore, from both reliability and factor analysis, two components were confirmed, which was used in the further study presented in the next pages.

5.2.3 Descriptive Statistics

At this point are presented the necessary descriptive statistics for all questions of the questionnaire. Before proceeding to this analysis, it is essential to note that from the sample of 326 respondents, the final sample consisted only from 310 respondents because, as it will be seen in Graph 1, 16 people are living abroad, so they were excluded from the analysis. Due to this fact, all questions' cells in SPSS for these cases were blank and, in order not to include them in the regression analysis, they were recorded as missing values (-9999). A complete description of the characteristics of each asked item is now presented in the following pages. Initially, there will be shown the single

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questions about the demographics of the sample and then the descriptive statistics of the questions arranged in a Likert scale.

Table 5 presents all the necessary demographic variables by frequency distributions. The first column describes the name of the variable, the second column all the items associated with each variable, the third column the frequency distribution, the fourth column the percent distribution, and the fifth column the cumulative percent distribution.

Initially, regarding the respondents that are living in Greece, 95,09% or 310 respondents are living in Greece while 4,91% or 16 respondents are living abroad. These 16 respondents are, therefore, excluded from the present analysis as it is focused only on the consumers living in Greece.

Variable	Items	Frequency	Percent (%)	Cumulative Percent (%)
Living in Greece	Yes	310	95,09	95,09
	No	16	4,91	100
Diet	Omnivorous	245	79	79
	Flexitarian	38	12,3	91,3
	Pescatarian	5	1,6	92,9
	Vegetarian	10	3,2	96,1
	Vegan	12	3,9	100
Food Spending per Week	0-50€	166	53,5	53,5
	51€-100€	125	40,3	93,9
	101€-150€	12	3,9	97,7
	> 150€	7	2,3	100
Gender	Male	181	58,39	58,39
	Female	127	40,97	99,36
	Other	2	0,64	100,00
Age	18-24	53	17,1	17,1
	25-31	133	42,9	60
	32-39	56	18,1	78,1
	40-46	16	5,2	83,2

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	47-55	22	7,1	90,3
	56-62	22	7,1	97,4
	62 and up	8	2,6	100
Occupation	Student	66	21,3	21,3
	Working	213	68,7	90
	Unemployed	13	4,2	94,2
	Retired	18	5,8	100
Education	Secondary school	44	14,2	14,2
	Bachelor	131	42,3	56,5
	Master	120	38,7	95,2
	PhD	15	4,8	100
Monthly Personal Income	<700€	109	35,2	35,2
	701€-1000€	73	23,5	58,7
	1001€-1500€	67	21,6	80,3
	1500 an up	34	11	91,3
	Prefer not to answer	27	8,7	100
Healthy Eating	Not at all important	1	0,3	0,3
	Less important	3	1	1,3
	Slightly important	28	9	10,3
	Neutral	89	28,7	39
	Moderately important	189	61	100

Table 5: Descriptive statistics for demographics (n = 310)

Also, according to the table, the majority of consumers in the sample (79% or 245 cases) are omnivorous, i.e., they eat every type of food without a specific restriction on consuming them. Also, 12,3% (38 cases) are flexitarians, which means that they focus on vegetation but occasionally eat meat or fish. 1,6% or five consumers are pescatarians, i.e., they focus on vegetation but sometimes eat only fish or seafood. 3,2% or ten consumers are vegetarians, so they only eat vegetation but, in some cases, eat dairy foods. Finally, 12 consumers or 3,9% are vegans, so they strictly eat vegetation and no other animal product. Thus, although the diets focusing on vegetation are becoming popular in Greece, however, a significant number of Greek consumers tend to eat every food type depending on their preferences.

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Regarding the amount of money spent by consumers on food per week, the majority of consumers (53,5% or 166 people) pay 50€ or less per week, 125 consumers (40,3%) between 51€ and 100€, 12 consumers (3,9%) about 101€ to 150€ and seven consumers (2,3%) over 150€. Therefore, almost 94% of the present sample spend 100€ or less on food per week.

Regarding each consumer's gender, 58,4% are females, 41% males, and 0,6% other gender types. Also, 53 respondents (17,1%) are between 18 and 24 years old, 133 respondents (42,9%) between 25 and 31 years old, 56 respondents (18,1%) between 32 and 39 years old, 16 respondents (5,2%) between 40 and 46 years old, 22 respondents (7,1%) between 47 and 55 years old, 22 respondents (7,1%) between 56 and 62 years old and eight respondents (2,6%) are over 62 years old. Therefore, 60% of the respondents are less than 32 years old, so there many young people included in the sample. For the occupation for each consumer, the majority of respondents (68,7% or 213 respondents) are working in a job, 66 respondents (21,3%) are students, 18 respondents (5,8%) are retired, and 13 respondents (4,2%) are unemployed.

Moreover, 44 people (14,2%) have finished secondary school, 131 people (42,3%) have obtained a bachelor's degree, 120 people (38,7%) have acquired a Master's Degree, and 15 people (4,8%) have earned a Ph.D.'s degree. Additionally, 109 consumers (35,2%) have personal income less than 700€ per month, 73 consumers (23,5%) have personal income between 701€ and 1.000€ per month, 67 consumers (21,6%) have personal income between 1.001€ and 1.500€ per month. Also, 34 consumers (11%) have personal income over 1.500€ per month, and 27 consumers (8,7%) preferred not to answer about their exact monthly personal income.

Last but not least, regarding how consumers feel that healthy eating is essential to them, Table 5 presents the respective results. This question is organized on a 7-point Likert Scale. Still, we chose to present it as frequency distribution, with the following responses according to Likert scales guidelines: 1 = Not at all important, two = Less important, 3 = Slightly important, 4 = Neutral, 5 = Moderately important, six = Very important and 7 = Extremely important. So, the majority of the respondents (61% or 189 respondents) consider healthy eating as moderately necessary, 89 people (28,7%) are neutral, 28 people (9%) believe it as slightly important, three people (1%) as less important and one person (0,3%) not at all important.

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Now the Greek consumers' behavior for buying a cow and plant-based kinds of milk is examined according to the TRA model. The variable Taste is organized on a 7-point Likert scale, from 1 = Never to 7 = Every Day while the other variables from 1 = Strongly Disagree to 7 = Strongly Agree. The results are presented in Table 6.

		Behavior	**Behavioral Intention**
Taste	cow	3,1645	2,9065
	almond	2,2774	2,8484
	coconut	1,7516	2,2548
	soy	1,3355	1,4903
	oat	1,3452	1,7000
	rice	1,2226	1,4968
	pistachio	1,1677	1,5226
	walnut	1,1839	1,5742
		Knowledge	**Trust**
Brand	Alpro	5,0065	3,8548
	Olympos	6,0839	5,2742
	Delta	5,9258	4,3903
	Adez	2,6548	2,3194
	Vitam	5,429	3,8774
		Assertion	**Importance**
Attitude1	Health Choice	4,5032	4,4000
	Good taste	3,9839	4,3419
	Animals care	4,7806	4,7323
	Environment friendly	4,5677	4,9516
		Assertion	**Importance**
Attitude2	Balance Diet	6,2968	6,0323
	Eating Organic Food	5,4452	5,3484
	Exercising	6,4161	6,0935
	Healthy Body Weight	6,3097	6,0516
		Assertion	**Importance**
Subjective Norms	Friends	3,0097	2,7806
	Family	2,5032	2,7742
	Colleagues/Classmates	2,6065	2,3097
	Celebrities/Influencers	2,9032	2,0323
		Assertion	**Possibility**
Barriers	Price	4,6452	4,3935
	Availability	3,2742	3,4806
	Information	3,1226	3,1065

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	Gatekeeper	2,5097	2,6581
	Food Neophobia	2,2645	2,3871
	Traditions	4,4065	3,871

Table 6: Descriptive statistics for Brand, Taste and TRA Variables

Table 6 indicates that for cow milk, the mean frequency of its consumption is 3,164, so the majority of consumers are not currently consuming cow milk very often, maybe because it is not part of their preferences. The mean frequency is even lower in all the plant-based milk alternatives as it is less than 2, implying that Greek consumers seldom consume these milk types. Nevertheless, among plant-based milk types, almond milk has the highest average consumption, followed by coconut and soy. The same situation seems to be at the behavioral intention, as well. On average, though, by comparing these results, it is clear that intention exceeds behavior itself, so there is a very slight trend that consumers may be willing to consume more plant-based milk types in the future. The opposite seems to be for cow milk.

Regarding the awareness and the trustiness of each specific plant-based milk brand, the results show that the most well-known brands are Olympos (6,08) and Delta (5,92). This result probably happened because of the trustworthiness these brands built all these years, as leading dairy companies in the industry, launching only recently, non-dairy alternatives. Regarding Vitam (5,43), it is mostly known for its butter products, and, like Olympos and Delta, it has recently launched plant-based milk products. Furthermore, Alpro seems to gain extraordinary popularity (5,00) in the Greek non-dairy market, while Adez is the least known brand (2,65) in Greece.

Concerning trust, the situation is very different, especially for Alpro, Adez, and Vitam, where their mean values are less than 4, indicating that there is a relative lack of trust for these brands. However, for Olympos and Delta, their mean values are over 4, so there is a relatively high degree of confidence for these brands, maybe because they are also trustworthy for their traditional milk and other dairy products.

As for Attitude1, there is a slight but not high enough trend that consumers believe that consuming plant-based milk alternatives is suitable for animal care (4,78), protecting the natural environment (4,56). For their health (4,5), however, the taste is not so good (3,98). Regarding the

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importance for each case, the top priority is the environmentally friendly way of consuming these products (4,95), followed by animal care (4,73), health choice (4,4) and good taste (4,34), so good taste plays a somewhat important role in consuming plant-based milk alternatives.

Concerning Attitude2, there is a big trend that consumers believe that having a healthy lifestyle is excellent due to exercising (6,41), maintaining a healthy body weight (6,30), having a balanced diet (6,3), and eating organic food (5,44). All these averages are over 5, so being healthy is determined by all these factors at a high degree. Regarding the importance of each case, the top priority is exercising (6,09), followed by healthy body weight (6,05), a balanced diet (6,29), and eating organic food (5,34).

As for the subjective norms, it seems in all cases that the decision of a consumer to consume plant-based milk alternatives is not influenced much by their friends, family, colleagues/classmates, or celebrities & influencers as all mean values are less than 4. However, by comparing the cases, friends and celebrities/influencers have the most significant influence on the consumer's behavior, while friends and family influence are the most important.

Finally, regarding barriers, it seems that, on average, the main reasons for making consumers, eventually, not buy a plant-based milk alternative are the high price (4,64), the non-value of the traditional aspect of food (4,4), reduced availability (3,27) and poor accessibility (3,12). Also, the main reasons for making purchases less likely are high price (4,39), the non-value of the traditional aspect of food (3,87), reduced availability (3,48), and poor accessibility (3,10).

5.2.4 Regression Analysis

Now the analysis proceeds to the fourth and final stage of the present qualitative study, which is the regression analysis for testing each of the hypotheses mentioned in the TRA model section, which we also write all of them here:

H1: A person's behavior intention to buy plant-based milk products has a strong positive relationship with his/her actual behavior of purchasing those products.

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H2a: A consumer's attitude towards plant-based milk products has a positive relationship with his/her intention of purchasing those products.

H2b: A consumer's attitude towards having a healthy lifestyle has a positive relationship with his/her intention of purchasing those products.

H3: A consumer's subjective norm towards plant-based milk products has a positive relationship with their intention of buying those products.

H4: A person's socio-demographic background (age, gender, occupation) influences their intention to buy plant-based milk products.

H5: Apart from age, gender, and occupation, a person's income and education influence their intention to purchase plant-based milk products.

H6a: The price barrier (PB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6b: The availability barrier (AB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6c: The information barrier (IB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6d: The gatekeeper barrier (GB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6e: The food neophobia barrier (FNB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

H6f: The cultural barrier (CB) has a positive influence on the gap between behavioral intention to buy plant-based milk products and actual behavior.

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Table 7 presents the results of the regression analysis for each of the four equations, also mentioned in the TRA model section. More specifically, equation one tests the H1 hypothesis, equation two tests H2a, H2b, H3, and H4, equation three tests H5 and equation four tests H6a - H6f. It's important to note that statistically significant coefficients are presented in bold. By default, the 5% level of significance for testing each hypothesis is used.

Dependent Variable	Equation 1	Equation 2a	Equation 2b	Equation 3a	Equation 3b	Equation 4
B	D	-	-	-	-	-
BI	-	D	-	-	D	-
BI - B	-	-	-	-	-	D
Independent Variables						
Constant	**0,373**	**1,18**	**0,974**	**1,313**	**0,98**	-0,031
BI	**0,595**	-	-	-	-	-
Attitude1	-	**0,047**	-	**0,047**	-	-
Attitude2	-	-	**0,03**	-	**0,029**	-
Subjective_norm	-	0,002	**0,026**	0,005	**0,029**	-
Gender	-	**-0,213**	**-0,373**	**-0,236**	**-0,367**	**-0,148**
Age1	-	0,369	0,204	0,281	0,119	0,343
Age2	-	0,721	0,581	0,595	0,446	0,515
Age3	-	0,818	0,708	0,668	0,576	0,56
Age4	-	0,307	0,114	0,094	-0,049	0,25
Age5	-	0,348	-0,036	0,197	-0,115	0,328
Age6	-	0,185	0,175	0,066	0,117	0,415
Occupation1	-	0,173	0,502	0,292	0,555	-0,018
Occupation2	-	-0,158	0,129	-0,062	0,212	-0,062
Occupation3	-	-0,323	-0,079	-0,246	-0,058	-0,199
Income1	-	-	-	-0,316	-0,163	-0,05
Income2	-	-	-	-0,195	-0,139	-0,087
Income3	-	-	-	-0,243	-0,216	-0,219
Income4	-	-	-	-0,097	-0,172	-0,194
Education1	-	-	-	0,053	0,118	0,148
Education2	-	-	-	0,067	0,153	0,158
Education3	-	-	-	0,248	0,354	0,246
Price	-	-	-	-	-	0,003

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Availability	-	-	-	-	-	≈ 0
Information	-	-	-	-	-	0,009
Gatekeeper	-	-	-	-	-	Not tested
Food Neophobia	-	-	-	-	-	Not tested
Traditions	-	-	-	-	-	-0,003
R-Squared	**0,625**	**0,271**	**0,207**	**0,288**	**0,221**	**0,106**
ANOVA F-Test	**p < 0,001**	**p < 0,001**	**p < 0,001**	**p < 0,001**	**p < 0,001**	**p = 0,042**

Table 7: Regression results for each equation

Regarding Equation 1, it was statistically significant according to the ANOVA F-test (p <0,001) and also extracted an R-squared equal to 0,625. The above, generally, means that 62,5% of the variability of the dependent variable is explained by the regression or the variability of the independent variable(s), and the rest percentage of variability is unexplained, i.e., is due to random factors not examined in the model. The higher the value of R-squared, the more fitted is the regression line to the data.

For testing H1, the coefficient of Behavior Intention is positive and statistically significant (p <0,001), so H1 is accepted. Thus a person's behavior intention to buy plant-based milk products **has** a strong positive relationship with his/her actual behavior of purchasing those products.

Regarding Equation 2a, it was also statistically significant according to the ANOVA F-test (p <0,001) and extracted an R-squared equal to 0,271. Also, Age1 - Age6 and Occupation1 - Occupation 3 are all dummy variables. The analysis of the dummy variables is shown analytically in table 3 in the Appendix.

As it may have been cleared from these dummy variables, they include all categories except one, and this is done to avoid the so-called 'dummies trap.' This action happened because had we covered all the groups for age and occupation, we would have the problem of multicollinearity, an issue of linear relationships between independent variables.

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For testing H2a, the coefficient of Attitude1 is positive and statistically significant (p <0,001), so H2a is accepted. Thus a consumer's attitude towards plant-based milk products **has** a positive relationship with his/her intention of purchasing those products.

Moreover, for testing H3 concerning Attitude1, the coefficient of Subjective Norm is positive but statistically insignificant (p = 0,887), so H3 is rejected. Thus a consumer's subjective norm towards plant-based milk products **has not** a positive relationship with their intention of buying those products.

Finally, for testing H4 concerning Attitude1, the coefficient of Gender is negative and statistically significant (p = 0,045), so H4 is accepted for Gender, indicating that women are more inclined to purchase plant-based milk products than men. However, there is not seem to be any significance for age and occupation in all categories. So H4 is not accepted concerning Age and Occupation.

For Attitude 2 (Equation 2b), this regression was statistically significant according to the ANOVA F-test (p <0,001) and extracted an R-squared equal to 0,207. The conclusions of each hypothesis testing are the same as the previous one, but here H3 is also accepted because the coefficient of Subjective Norms is positive and significant (p = 0,042). Therefore, H2b and H3 are accepted, while H4 is allowed only to Gender.

5.2.4.1 Results for Equation 3

Regarding Equation 3a, this regression was statistically significant (p <0,001) and extracted an R-squared equal to 0,288. Also, Income1 - Income4 and Education1 - Education 3 are all dummy variables (Appendix 3).

The results, in this case, show that all income and education categories are statistically insignificant, so H5 is not supported.

Concerning Attitude2, this regression was statistically significant (p <0,001) and extracted an R-squared equal to 0,221. The conclusions of each hypothesis testing are the same as the previous one, so H5 is also rejected for Attitude2.

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Finally, regarding Equation 4 for the main barriers, Gatekeeper and Food Neophobia were excluded from the analysis because the initial regression that also incorporated them was not statistically significant. The reason was that these variables had too many outliers (over 40 cases), so it was decided not to test them because they would provide misleading results (Hair et al., 2014). Furthermore, Information and Availability also had many outliers, but it was decided to keep them in the analysis; otherwise, they would have offered misleading results (Hair et al., 2014, pp. 62-65).

The above regression was statistically significant (p =0,042) and extracted an R-squared equal to 0,106. The hypothesis testing for H6a to H6f indicates that all barriers are statistically insignificant, so no one of them has a positive influence on the behavior - intention gap. Thus, these hypotheses are all rejected except for H6d and H6e, which were eventually not tested.

To sum up, Table 8 presents all the hypotheses and the test outcome for each one.

Table 8: Testing outcome for each research hypothesis

Hypothesis	Test Outcome
H1	Accepted
H2a - H2b	Accepted
H3	Rejected for Attitude1, Accepted for Attitude2
H4	Accepted (only for Gender)
H5	Rejected
H6a	Rejected
H6b	Rejected
H6c	Rejected
H6d	Not Tested
H6e	Not Tested
H6f	Rejected

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6 Discussion

Having presented the findings for both qualitative and quantitative studies, now these findings will be thoroughly discussed, comparing them as well, with the results of the previous studies in the literature.

Initially, the relationship between behavior and behavioral intention is found to be strongly positive, not only from the existing literature but also from the results of our study. In many cases, these two terms are considered to be quite similar. However, they differ with each other; behavior is about a formulation of specific temperament towards consuming or not a particular product at present, while behavioral intention refers to the potential consumption of this product in the future. Therefore, we can now confirm that H1 was correct, finding out that intention strongly influences behavior.

Regarding Attitude, which is one of the fundamental variables of our TRA model, it was found that it has a positive influence on behavioral intention. This finding means that if a consumer has a positive perception towards buying plant-based milk replacements, his/her chances of purchasing them in the future (behavioral intention) increase. This result is similar to that of the study of Lu et al. (2010), finding that increased positive attitudes towards milk and dairy products reduce the likelihood of taking preventive behavior. In general, the fact that attitude influences intention is not shocking, as related studies using the same model (TRA) have ended up with the same output (Myresten & Setterhall, 2015). The same holds for the case of a healthy lifestyle, where the study of Raba et al. (2019) confirms that having a balanced diet is far more critical than a vegan diet, so having this attitude for health increases the likelihood for buying a certain product. Furthermore, our results are following Wansink et al. (2005) and Hoek et al. (2011), who confirm that attitude variables like the taste, animal care, and health play an essential role in the consumer's final decision, so they affect behavioral intention. Hence, H2a and H2b are also confirmed, meaning that a consumer's attitude towards having a balanced diet or purchasing plant-based products has a positive relationship with his/her intention of purchasing those products.

As it concerns the subjective norm, in our statistical analysis, it was not found significant in having a positive influence on the intention to buy plant-based products; so H3 is rejected. Hence,

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our results are again in accordance with previous studies, as Myresten and Setterhall (2015). On the contrary, the subjective norm indeed has a positive influence only on a healthy lifestyle. Therefore, the results for this variable are mixed.

Moreover, regarding the socio-demographic factors, it was found that only ''Gender'' influences the consumers' intention to buy plant-based milk products. These results are following the studies of Greene-Finestone et al. (2008), Li & Xin (2015), and Myresten & Setterhall (2015), who found that the majority of vegans are females, so they are more inclined to buy plant-based products than males. The results are also compatible with those of Backman et al. (2002), as well as Berg et al. (2000) and Hewitt & Stephens (2007), saying that women have more positive attitudes about healthy eating and buying organic food than men. However, the other factors of socio-economic background do not seem to play an important role. This finding contradicts the results of Astrom & Rise (2001), Kim et al. (2003), Fila & Smith (2006), Mobley et al. (2014) and Rani (2014), who stated, in general, that behavioral intention varies between age groups, as well as between jobs, educational level, and personal income. Finally, it was interesting the fact that the educational level did not appear as a significant factor. This observation was made because, in our qualitative study, the cow-based milk consumers, which were omnivores, scored quite low that animal farming is harmful to the environment. This fact shows that people, unfortunately, are not aware of the connection between meat/milk production and climate change. Thus, it is imperative people to be better educated on the impacts of animal farming, as well as on the potential environmental and health benefits of a dairy and meat reduced diet has.

Last but not least, we tested the barriers, which hold people back from buying plant-based products once they had the desire to do so. After our analysis, we were quite impressed by the result that none of these six examined barriers was found to be significant. Hence, they do not seem, in this case, to have any influence on the gap between behavior and behavior intention to buy plant-based milk products. The reason was that, on average, all the values were less than 5, so there was not a strong relationship between those and the behavior intention gap. So, they are not compatible with the results of Kollmuss & Agyeman (2002), Wansink et al. (2005), and Hoek et al. (2011), who concluded that at least one of these barriers affect behavioral intention. Also, they are not compatible with the results of our focus group for those consuming conventional milk, who seemed

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to be influenced by the price of a plant-based milk alternative. Something, however, that does not play an essential role in the other focus group with the plant-based milk consumers, for whom price is not a priority; so, they do not have to think about the money spent in plant-based food, in the first place.

Moreover, another intriguing fact was that the tradition barrier did not come out as an influential factor, which is not following the findings of our focus group interviews. More specifically, we added tradition as an extra barrier to our quantitative questionnaire, only because it influenced both focus groups' participants, and it was essential for them too regarding the purchase of the plant-based products. In general, most of the time, people appreciate the traditional and cultural value a product has, as well as the procedure of production, especially if it is made locally or handmade. In this specific case, the findings showed that the tradition linked with the plant-based products does not affect a lot the greek consumers of buying them.

Moreover, these results again contradicted the findings from the cow-based drinkers' focus group, who shown to be influenced by the information barrier. As the focus group findings depicted, the cow milk drinkers were not entirely educated regarding the plant category, as it is an entirely new market for them; neither knew the link between the meat and milk consumption to the health, environment, and animal welfare. That indicates that if the information about the plant-based products is not readily handy, this will decrease the possibility of most consumers to buy it. Finally, based on our analysis, it can be pointed out that mostly the cow-based drinkers are influenced the most from the examined barriers. That indicates the fact that the plant-based drinkers choose more consciously the products they consume based on the healthy and environmentally friendly lifestyle, which they have chosen to follow. Thus, it is more challenging to get influenced by other external factors.

Lastly, regarding the gatekeeper and the food neophobia barriers, in our sample, we had too many outliers, so we did not include these variables to our analysis in order not to disrupt our results. This maybe happens due to misunderstanding of the questions, which resulted in the reversal of the conclusion.

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Other findings from the qualitative research, which could arouse someone's interest, were the below: First of all, the consumption of plant milk beverages is primarily led by the motives of achieving a healthy lifestyle, as well as a proper diet and by the motive of feeling good. Other vital motives are environmental stability, animal welfare, and of course, the motive of taste indulgence. Moreover, it was clear that plant milk participants try in every way possible to reduce their environmental footprint and to make the planet more sustainable, by replacing cow-based milk with the plant milk, seen as a climate-friendly action. Another one alluring detail that was captured was the fact that plant milk drinkers extract wellness from physiological benefits (healthy diet, to feel good). On the contrary, the cow milk consumers receive wellness from indulgence criteria (tastes good) and the habit (I am used to drinking it since I was a child), which reveals an intense connection to the tradition and the childhood memories.

Interesting enough is also the finding that cow milk is strongly correlated with drinking coffee. Both plant and cow milk drinkers stated that this is the most frequent use of cow milk. Even some of the plant-based milk consumers stated that they find it difficult to get used to the plant milk taste in the coffee. The negatively perceived taste, in one of the key reasons why they do not drink plant milk. Thus, it would be a strategic move for plant milk companies to cover this white space and take advantage of this booming trend by producing plant-based milk suitable for coffee. In that case, it would also be an essential change to expand the plant category to the Ho.Re.Ca market also, by introducing this innovative beverage to the coffee specialist and bartenders.

Lastly, the most stimulating finding of all was the fact that cow milk consumers do not get motivated at all by the animal welfare and the sustainability of the planet. This was assumed when besides the fact that they saw the socking video with the cruelty towards animals and the environment, they did not change their behavioral intention about future consumption of cow milk. These results undoubtedly show the existed emotional connection between Greek consumers and cow milk consumption.

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7 Conclusions and Recommendations

7.1 General Observations

To sum up all the previous analysis, the purpose of the dissertation was to investigate what the main factors that influence the Greek consumers' decision on whether or not they will buy plant-based milk beverages are. From the results obtained from conducting both qualitative and quantitative study, some of them were forecasted, but some others were not the ones expected according to the previous literature review.

Initially, as expected from the theory, it was identified as a positive relationship between behavior and behavioral intention. Both qualitative and quantitative analysis indicates that, especially for the plant-based milk alternatives, the perception of a consumer for a specific product (as well as the consumption of it), makes him/her more inclined to continue consuming it in the future. This attitude can be justified based on the fact that people, who already consume a non-dairy alternative, in many cases, have more knowledge and information about its functionality than those drinking conventional milk, so they are more inclined to purchase these products.

Also, a strong positive relationship was determined between behavioral intention and attitude; Either from the perspective of the inclined to buy plant milk due to animal care, environmental awareness, good health or taste, or from the standpoint of having a healthy lifestyle, i.e., a balanced diet, eating organic food, exercising, etc. These attitudes make the purchase of a particular alternative more likely. The opposite, of course, holds when consumers have not positive attitudes towards plant-based milk category, either because of their eating habits or because due to trust issues in comparison with cow milk, so they decide not to consume plant-based products.

There is also a positive relationship between subjective norm and behavioral intention when it comes to a healthy lifestyle. This positive relationship occurs mostly from friends and celebrities/influencers, even though consumers are not influenced by these norms when it comes to plant-based products. Instead, they decide according to their preferences and tastes. However, there is no positive relationship between subjective norm and behavioral intention, in the case of the inclined to buy a specific product due to animal care, environmental awareness, good health, taste,

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etc. This finding may contradict one's expectation that especially celebrities and influencers would have a significant influence on consumers' decisions in purchasing alternative milk products and quitting conventional milk. However, this is not observed here as there are controversial results about this topic. So the decision to buy or not may depend on other factors like the sensitivity of each consumer to environmental or health problems, the perceived behavioral control, etc.

Moreover, regarding the socio-economic background of consumers, only gender was an influential factor in behavioral intention. This element was also confirmed by other studies, saying that women are more inclined to try consuming alternative products than men because they give more emphasis on a healthy and balanced diet. On the contrary, men usually do not change their food habits and prefer to consume what they like, regardless of how harmful it is to their health or the environment in general. A surprising result was that in our sample age, occupation, personal income, and education do not influence behavioral intention, which, in reality, may have some impact on the consumers' behavior. For example, young people may be more eager to try to consume alternative milk products than the old ones, which are usually considered as more conservatives regarding their way of living and more attached to the diet habits they are used to follow.

Finally, considering the barriers that prevent a consumer from buying a specific product, the results here were also surprising because price, availability, information, and tradition do frequently influence the behavioral intention to purchase plant-based milk products. Price is usually the most crucial barrier factor for deciding whether to buy a product or not and was only necessary to the people who are currently consuming cow milk. Other factors, based on previous studies, like availability and information, also play some role in the final decision. Still, in this case, no positive influence was observed, maybe due to the smaller number of those who follow a vegan or a vegetarian diet than the omnivorous ones, which was the majority in the quantitative analysis.

So, in answer to our research questions, the drivers towards buying plant-based milk beverages are health, maintaining a healthy body weight with a balanced diet, concern for animal care, and concern for the environment.

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7.2 Implications

Plant-based milk and generally plant category is, without a doubt, a booming market, gaining more and more fanatic audience in the last few years. Due to its connection with long-term health, wellness, sustainability, and clean eating, the plant-based category has positioned plant products as an uprising trend, which will continue to grow, gaining more significant market shares in the years to come. Combined with the global issues of environmental effects, animal welfare, and health, plant-based milk will be a powerful competitor in the milk segment, intensively challenging the dairy sector. The findings of both qualitative and quantitative studies will provide valuable and new insights to the non-dairy companies for them to take advantage of this promising category.

In the first place, by understanding consumer behavior better, the main driver behind this rising trend seems to be the tendency to change food lifestyles. That means many types of diets are already arising, such as Veganism, Vegetarianism, and Flexitarianism. Based on the findings of the research, the last one is the type of diet the companies in the plant-based sector should focus on when creating their communication strategies. Flexitarianism is the first stage that someone will try as a diet if he/she chooses to support a more sustainable consumer lifestyle. This was based on the fact that the majority of our sample was omnivores. Flexitarians are more or less the same, but with a different state of mind. More specifically, flexitarians are people with a flexible diet, eating pretty much everything including meat, fish poultry, and eggs but having as the main criterion the reduced frequency of animal product consumption and increase plants in the diet. They actively seek new ingredients and tastes, new nutritious options, they study labels and look for ‘‘free-from’’ products. However, they are yet to explore the plant category fully, so they need more education & usage inspiration.

Regarding health, flexitarians are aware of the impact their diet has on today and future health, placing health before indulgence as often as they can. Besides flexitarians, they were also recognized those who are bound to become flexitarians, once they reached a point when health or image kicks in. Hence, people with omnivorous diets may become the flexitarians of tomorrow. These ‘‘future flexitarians’’ think that plant-based products are only for vegans, lactose intolerants, athletes, people on a diet, or active young people with a high income and not for them. They usually put indulgence over health-concerns, for as long as they feel good about themselves and are

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seemingly healthy (Retail Insight Network, 2019). So, in general, if plant-based companies want to target these two types of flexitarians, they should do the following actions: Firstly, to be transparent in product information, and to have responsibility for environmental, socio-economic, and personal impact. Also, they should be characterized by flexibility with products that optimize time management. Finally, they should offer simple diet choices helping consumers to achieve a physical, mental, and emotional balance. Hence, companies in the plant-based sector can also profit from the group of people who do not buy yet plant milk by making their products healthier and less processed, and of course, to communicate this position. Thus each time consumers will buy their products, they will feel that they have taken a choice, which will improve their health and protect the animals, as well as the environment.

Moreover, based on findings from the focus groups, plant-based companies should use for their products eco-friendly packaging by recycled paper, for instance, to be aligned with their environmental-friendly philosophy of the plant category.

Furthermore, animal welfare and environmental protection are vital factors that influence people. Hence, great emphasis should be given by companies to address in their communication strategy, actions, and investments towards this direction, highlighting in that way, the ethical character and personality of the company.

Besides, plenty of studies, included this study, have shown that users of plant-based beverages choose plant milk instead of animal milk due to health reasons. Based on that finding, companies should pay great attention to communicating in every way possible, the product's functionality and benefit to health.

Regarding the socio-economic factors, the only gender seemed to influence a person's decision towards plant-based milk consumption. Nevertheless, it would be preferable for companies not to focus only on women, but to offer a neutral packaging so as the product to be more generic, targeting men, too.

Also, based on our findings, we saw that subjective norm had an influence only when it comes to a healthy lifestyle and not to plant-based milk consumption. So, it would be a smart strategy for

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companies to enhance influencers who follow a healthy lifestyle and promote this health and wellness philosophy. In that way, they would have an indirect influence on the consumers, leading them indirectly to be part of the plant community, and thus to start consuming plant-based milk.

Moreover, plant companies should give greater emphasis on their products' category management. In that way, the placement of their products will be placed on a better spot in the supermarkets, ideally in the eye height, and not to the lowest shelf as most of the plant products are placed.

Last but not least, regarding the ''Adez'' brand, Coca Cola should take seriously into consideration the findings of the qualitative research, especially the taste test experiment. First of all, Adez should focus all its efforts on raising awareness regarding the brand. Very few knew the brand, which means that the company should invest a lot of time into managing the ATL (above the line) communication and especially its presence on social media, in which most of the population, especially the vegetarian community spend most of their time, as several studies shown (Hoek et al. 2011). Also, a commercial spot on the TV should be an easy but expensive way to achieve that. Furthermore, Adez should make more explicit its philosophy. More specifically, it should launch campaigns to make people more aware of the environmental footprint of animal farming, as well as to make more apparent the link between climate change and dairy consumption, highlighting though the benefits of a plant-based diet to the health as well.

Another useful feedback was the one regarding Adez's plastic packaging. Plastic is not included in the principles of plant-based philosophy, so it must be into consideration of changing to a paper-material bottle, as the competitors already use.

Furthermore, Adez should give a deep emphasis on developing of a plant milk variant, specifically designed to be used in coffee, as plant milk in general, has been criticized by both focus groups, for being less suitable for coffee. Hence, there is a white space in the category, which Adez could capitalize, by launching this professional variant.

Last but not least, Adez has to confront the general assumption that the whole plant-based category is perceived as dull, flat, and lacking excitement. On top of that, consumers think that plant-

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based drinks are only intended for people with lactose intolerance and vegans. Hence, to surpass this stereotypical image, it must differentiate its proposition; indulgence and wellness could be used to emphasize the satisfaction and delightful feeling someone could have by consuming plant milk.

To sum up, Adez, to achieve its ambition, which is to be a credible challenger among the competitors, disrupting the plant-based beverage category by continuously innovating responsibly and educating about the category, must take into serious consideration all the above findings from both analyses. Only in this way, it will manage to source volume from animal milk drinkers, plant-based drinkers, as well as new category users and thus to expand the category by inspiring healthier breakfast choices finally.

7.3 Limitations and Recommendations For Future Research

The first limitation of this research is that the sample was not so representative of Greek society, as the sample was a convenience one; hence, the results cannot be generalized to the whole Greek population. That means they were excluded those who were not well-informed about the issue or did not have access to the Internet to answer the online questionnaire. However, the sample's validity was high due to snowball sampling, which was not restricted to the vegan society. Furthermore, another limitation was that the quantitative questionnaire was in the English language, which restricted and reduced the final number of participants, especially people of the older age group, who may found it difficult to understand. Finally, for facilitation's reasons, a simplified version of the TRA model was used to depict and emphasize the most influential factors.

Regarding the conduction of future research, as this topic is entirely new, many aspects have probably not been examined thoroughly yet. So, it would be imperative to incorporate in the TRA model, more critical factors to come out with more robust results. These may be the perceived behavior intention considered in the Theory of Planned Behavior (TPB), as well as advertising and media, and how they affect people's behavior towards plant-based consumption.

Moreover, the six barriers should be rechecked and investigated again as they were not found to influence the gap between behavioral intention and behavior. Besides, more influential barriers should be found for the model to be more comprehensive.

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Another suggestion for future research could be this study conducted not only in Greece but to other countries too. Since plant-based milk alternatives are becoming more popular in the world and especially in Europe, future research regarding this topic should be expanded to be able to be compared at the national level.

All of the recommendations above are considered of paramount importance for future research and investigation.

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ALPRO Company (https://www.alpro.com)

American Marketing Association (https://www.ama.org/)

COCA-COLA 3E Company, ADEZ Brand (https://gr.coca-colahellenic.com/gr/markes/proionta-3e/adez/ (in Greek))

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DELTA Company: (https://www.delta.gr)

EFET (https://www.efet.gr/)

Factor Analysis in SPSS (https://www.statisticssolutions.com/factor-analysis-sem-factor-analysis/)

Greek Dairy Leading Brands (https://www.fpress.gr/epixeiriseis/story/52748/idoy-o-gigantas-tis-agoras-galaktos (in Greek))

Greek Dairy Market Decline (http://www.naftemporiki.gr/finance/story/904992/icap-se-ptotiki-troxia-i-egxoria-agora-galaktokomikon (in Greek))

Healthline - Balanced Diet (https://www.healthline.com/health/balanced-diet)

IELKA (http://www.ielka.gr/)

Insight Medical Publishing - Dietary Habits (http://www.imedpub.com/scholarly/dietary-habits-journals-articles-ppts-list.php)

OLYMPOS Company: (https://www.olympos.gr)

Plant-Based Dairy Growth in Greece (https://www.kathimerini.gr/1054696/article/oikonomia/epixeirhseis/kerdizoyn-edafos-ta-fytika-galaktokomika (in Greek))

Plant-based Milk Alternatives in Greece (https://enallaktikidrasi.com/2018/04/fytika-ypokatastata-galaktos/ (in Greek))

Plant-Based Milk Growth in Greece (https://www.insider.gr/eidiseis/kosmos/98452/ragdaia-anaptyxi-gia-fytiko-gala-kataklyzei-kai-ta-rafia-stin-ellada (in Greek))

Reliability Analysis in SPSS (https://www.statisticssolutions.com/directory-of-statistical-analyses-reliability-analysis/)

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Vegan Society (https://www.vegsoc.org/)

VITAM Company (https://www.vitam.gr)

Appendix 1: Qualitative Study - Interview questions

1st pillar: Cow-based milk attitudes and general knowledge of its implications

-Do you drink CB milk?

-On which occasions?

-What needs does it cover?

-Why do you consume C.B milk?

-What the CB milk represent for you? / How do you perceive it?

2nd pillar: Perception and general knowledge about the plant-based milk category

- Do you know any P.B milk flavors?

-Can you give me some brand names?

- Have you ever tried it before?

-Which do you consider as a leader for the PB category?

-Why don't you consume it?

-When you hear P.B milk, what comes to your mind?

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3rd pillar: Purchase intention about plant-based milk

-Are you intend to buy P.B milk in the future? (why or why not)

4th pillar: Perception and knowledge about the broader impact of meat and dairy consumption to the health, environment and animal welfare

-Have you ever given the topic any thoughts?

- Any knowledge about the health implications that the dairy products' consumption has?

-Any knowledge about the environmental effects of animal farming?

- **Video**

After knowing the environmental and health problems related to meat consumption, would you reconsider your choice of drinking C.B milk?

5th pillar: Criteria and barriers of the product selection

a) Price

b) Availability

c) Information available

d) Gatekeeper

e) Food neophobia

f) Other barriers you have, and they are not already discussed?

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6th pillar: Taste test

a) Blind test

- Do you like the taste? Would you replace it with the one you drink this period?

b)The revelation of the brand

-Any comments? Discussion about the packaging

-Would you buy it?

-Do you consider replacing it with your C.B./P.B. milk?

Appendix 2: Quantitative Analysis - Questionnaire

Q1. Are you currently living in Greece?

Yes/No

Q2. Describe your diet.

Omnivorous/ Flexitarian/ Pescatarian /Vegetarian/ Vegan

Q3. How much do you spend on food/week?

0-50€/51€-100€/101€-150€/ 150€ <

Q4. Please state the frequency of which you **currently** consume the following types of milk.

	1	2	3	4	5	6	7
Cow milk							
almond milk							
coconut milk							
soy milk							
Oat milk							
Rice milk							

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pistachio milk							
Walnut milk							

Q5. Please state the frequency of which you intend to consume the following types of milk **in the future** from 1(Never) to 7 (every day).

	1	2	3	4	5	6	7
Cow milk							
almond milk							
coconut milk							
soy milk							
Oat milk							
Rice milk							
pistachio milk							
Walnut milk							

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Q6. Please indicate your degree of agreement on a scale from 1(strongly disagree) to 7 (strongly agree).

	1	2	3	4	5	6	7
I think consuming plant-based milk alternatives is good for my health.							
The fact that plant-based milk alternatives are good for my health is important to me.							
I think plant-based milk alternatives are tasty.							
The fact that plant-based milk alternatives are tasty is important to me.							
I think consuming plant-based milk alternatives is better for the animals.							
The fact that plant-based milk alternatives are better for the animals is important to me.							
I think consuming plant-based milk alternatives is environmentally friendly.							
The fact that plant-based milk alternatives are environmentally friendly is important to me.							

Q7. Please indicate your degree of agreement on a scale from 1(strongly disagree) to 7 (strongly agree).

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	1	2	3	4	5	6	7
My friends think I should consume plant-based milk alternatives.							
What my friends think about my consumption is important to me.							
My family thinks I should consume plant-based milk alternatives.							
What my family thinks about my consumption is important to me.							
My colleagues/classmates think I should consume plant-based milk alternatives.							
What my colleagues/classmates think about my consumption is important to me.							
The celebrities & the influencers I follow, propose that I should consume plant-based milk alternatives.							
What the celebrities & the influencers I follow, propose for my consumption is important to me.							

Q8. Please indicate your degree of agreement on a scale from 1(strongly disagree) to 7 (strongly agree).

	1	2	3	4	5	6	7

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I think that having a balanced diet is good for health.							
The fact that having a balanced diet is good for health is important to me.							
I think that eating organic food is good for my health.							
The fact that eating organic food is good for my health is important to me.							
I think that exercising is good for my health.							
The fact that exercising is good for my health is important to me.							
I think that maintaining healthy body weight is good for my health.							
The fact that maintaining healthy body weight is good for my health is important to me.							

Q9. Please rate the statements below on a scale from 1(strongly disagree) to 7 (strongly agree).

	1	2	3	4	5	6	7
Plant-based milk alternatives are too expensive							
Expensive products make my purchase more unlikely.							

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Plant-based milk alternatives are not easily available at my regular supermarket store.							
The poor availability of Plant-based milk alternatives in the supermarket store makes my purchase more unlikely.							
Information about plant-based milk alternatives is difficult to access.							
The poor accessibility of info about plant-based milk alternatives makes my purchase of plant-based milk alternatives more unlikely.							
I cannot decide freely over what I consume in my household.							
Not being able to decide freely over what I consume in my household makes my purchase of plant-based milk alternatives more unlikely.							
I do not like to try new foods.							
The fact that I don't like to try new foods makes my purchase of new products more unlikely.							
I value the cultural and traditional aspects of food.							
The traditional aspect of food makes me more inclined to purchase.							

Q10. Please state your degree of agreement on a scale from 1(strongly disagree) to 7 (strongly agree).

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Concerning the brands in the plant-based category:	1	2	3	4	5	6	7
I know the brand Alpro							
Alpro is a brand I trust							
I know the brand Olympos.							
Olympos is a brand I trust.							
I know the brand Delta.							
Delta is a brand I trust.							
I know the brand Adez.							
Adez is a brand I trust.							
I know the brand Vitam.							
Vitam is a brand I trust.							

Q11. Gender

Female/male/other

Q12. Age

18-24/ 25-31/ 32-39/ 40-46/ 47-55/ 56-62/ 62 and up

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Q13. Occupation

Student/ Working/ Searching for work/ Retired

Q14. Education

Secondary school/ Bachelor/ Master/ PhD

Q15. Monthly Personal Income

<700€/ 701€-1000€/ 1001€-1500€/ 1500 an up/ Prefer not to answer

Q16. How important is healthy eating for you?

Not at all						Very Important
1	2	3	4	5	6	7

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Appendix 3: Dummy variables Analysis

Equation 2:

$$\mathbf{B{\sim}BI} = \mathbf{w_1 Aact} + \mathbf{w_2 SN} + \mathbf{w_3 Gender} + \mathbf{w_4 Age1} + \mathbf{w_5 Age2} + \mathbf{w_6 Age3} + \mathbf{w_7 Age4} + \mathbf{w_8 Age5} + \mathbf{w_9 Age6} + \mathbf{w_{10} Occupation1} + \mathbf{w_{11} Occupation2} + \mathbf{w_{12} Occupation3} + \mathbf{w_{13} Occupation4}$$

Regarding the equation 2, the dummy variables are the below:

Gender = 1 if gender is male and = 0 otherwise,

Age1 = 1 if age is 18-24 and = 0 otherwise,

Age2 = 1 if age is 25-31 and = 0 otherwise,

Age3 = 1 if age is 32-39 and = 0 otherwise,

Age4 = 1 if age is 40-46 and = 0 otherwise,

Age5 = 1 if age is 47-55 and = 0 otherwise,

Age6 = 1 if age is 56-62 and = 0 otherwise,

Occupation1 = 1 if occupation is "Student" and = 0 otherwise,

Occupation2 = 1 if occupation is "Working" and = 0 otherwise,

Occupation3 = 1 if occupation is "Unemployed" and = 0 otherwise.

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Equation 3:

$$\begin{aligned}\mathbf{B{\sim}BI} = \mathbf{w_1 Aact} + \mathbf{w_2 SN} + \mathbf{w_3 Gender} + \mathbf{w_4 Age1} + \mathbf{w_5 Age2} + \mathbf{w_6 Age3} + \mathbf{w_7 Age4} + \mathbf{w_8 Age5} \\ + \mathbf{w_9 Age6} + \mathbf{w_{10} Occupation1} + \mathbf{w_{11} Occupation2} + \mathbf{w_{12} Occupation3} \\ + \mathbf{w_{13} Occupation4} + \mathbf{w_{14} Income1} + \mathbf{w_{15} Income2} + \mathbf{w_{16} Income3} \\ + \mathbf{w_{17} Income4} + \mathbf{w_{18} Education1} + \mathbf{w_{19} Education2} + \mathbf{w_{20} Education3}\end{aligned}$$

Regarding the equation 3, the dummy variables are below:

Income1 = 1 if monthly personal income is less than 700€ and = 0 otherwise,

Income2 = 1 if monthly personal income is 701€-1000€ and = 0 otherwise,

Income3 = 1 if monthly personal income is 1001€-1500€ and = 0 otherwise,

Income4 = 1 if monthly personal income is 1501€ and up and = 0 otherwise,

Education1 = 1 if educational level is "secondary high school" and = 0 otherwise,

Education2 = 1 if educational level is "Bachelor" and = 0 otherwise,

Education3 = 1 if educational level is "Master" and = 0 otherwise.

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