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Profiling E-grocery Customers for Personalized Promotion Actions

Sofia Kalaitzidou

**UNIVERSITY CENTER OF INTERNATIONAL PROGRAMMES OF STUDIES
SCHOOL OF SCIENCE AND TECHNOLOGY**

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Student Name: Sofia Kalaitzidou
SID: 3305180010
Supervisor: Prof. Georgios Stalidis

I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

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Abstract

This dissertation was written as part of the MSc in e-Business and Digital Marketing at the International Hellenic University. The growing online shopping across many products and services categories has been embraced by customers and the understanding of their behavior is the main key to improve their satisfaction and experience. Specifically, the purpose of this dissertation is to profile e-grocery customers of one of the largest supermarket chains in Greece and propose personalized promotion actions for their marketing strategy.

Firstly, the transition from offline to online grocery is presented as general background giving interesting insights, followed by the review of the existing literature exploring and defining customer profiles. Afterwards, cluster analysis methods were applied on a real e-grocery sales dataset, extracting valuable information, and classifying customers according to their characteristics into segments, which showed significant similarities with profiles identified in the literature review. The findings of the data analysis were matched with marketing theory knowledge in order to suggest personalized promotion actions that would best fit selected customer profiles.

Keywords: online grocery shopping, digital marketing, customer profile, customer segmentation, loyalty, personalized promotion, dataset analysis.

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1 Introduction

Before starting this study, I believe that it is vital to make a short reference to *Ethos*. From antiquity until today there has been a wealth of discussion about the word *Ethos*, which is well known in personal, sociological, political, rhetorical and many other aspects of life. *Ethos* is our character, which spawns from adopting ourselves into doing something and behaves in a certain way and under certain circumstances [1]. Behavior is a natural consequence of character, reflecting how we perceive and response to stimuli and it is well understood how important they are, so societies continue to exist and progress as a life organism.

A study in customer behavior figure reveals what and how people think, need, care about, prefer, purchase once or more than one time etc. These outcomes are very important for businesses because in their strategy growth, which aims to increase market share within an industry, the customer satisfaction is crucial and different from customer to customer. Working with targeted audiences, analyzing, and profiling them can help businesses to understand their customers' needs and adopt innovative ideas to satisfy them all. All the above can be easily understood and applied in physical stores because customer basis is clearly defined by location, age, preferences, and interpersonal relationships. While companies grow and expand to become multinational companies, then there is a danger to lose control of their customer basis. As digitalization has invaded many areas of our everyday lives, it was expected to affect the way that companies operate. The most difficult thing at this point is not to satisfy your customer but to understand your customer without having direct and physical contact and this can be achieved by getting and analyzing data from your e-customer.

The purpose of this study is to profile e-grocery customers of one of the largest supermarket chains in Greece, understand their behavior and create targeted marketing strategies. It is a big challenge and very alluring to manage to have satisfied e-grocery customers. Additionally, this study presents a review of existing literature about customer profiling and especially the general types of customer that have been reported in the literature.

E-grocery companies hold vast amount of data regarding their customers and technology helps them to go one more step forward and achieve to acquire knowledge about each customer and apply the best personalized promotion actions. For this study we have to analyze and understand e-grocery customer behavior through collected data of their online transactions and figure out and propose certain marketing strategies in order to optimize existing customer experience.

Chapter 4 presents data collection, cluster analysis, customer segmentation, cluster description, customer characteristics per cluster, customer characteristics per segment and at the last part of this chapter all results are presented and clarified. All the above were produced by Microsoft Expectation Maximization (EM) Algorithm of the Analysis Services Data Tool and IBM SPSS Statistics software.

At the next chapter personalized promotion actions are presented with the aim of increasing sales, revenue, and market share. Using results from dataset analysis and technology (tools and applications), promotions will be suggested in accordance with customer segmentation. Finally, the effectiveness of personalized promotion actions depends on how well monitored and evaluated are.

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2 From Offline to Online Grocery

In 2013 the first e-grocery shop was launched in Greece as innovative expansion of an existing physical store [2]. A few years later pure e-grocery stores came in this era, offering a sufficient variety of products. This digital transformation is one of the most challenging cases since technology has affected human life and brought new experiences with it.

The intention of this study is to profile e-grocery customers for personalized promotion actions, thus basic information about traditional and online groceries and some useful general definitions are mentioned below.

2.1 *Brick or Click choice*

2.1.1 Brick-and-Mortar choice

People in the previous years could not understand and believe the idea of purchasing online food products, fresh vegetables and all other products for cleaning, personal care, baby care and pet care.

By shopping in a traditional grocery as a daily habit, the customer has personal involvement in the whole process interacting with other customers, employees, and representatives of the grocery store. While starting the shopping journey, the customer pushes his trolley through the aisles, following a shopping list or not, selecting products on his own (especially fresh vegetables, meat and refrigerated products), checking for offers, beneficial discounts and getting free samples of products. Convenience is the great factor and advantage for brick-and-mortar stores; customers enjoy and proceed in their purchases in a pleasant environment [3].

One step further, and as it is well known in every sector of human's life the technological revolution has brought about significant changes in the way that traditional stores have been operating. The adoption of innovative ideas using Internet of Things to change and improve daily in-store processes got positive feedback from customers [4],[5]. For instance, the use of

price checking machines directly from the customer, the provision of free Wi-Fi while a customer is in store, and the change in the payment method by using credit cards, or mobile applications for contactless payments. Also, the Queue Busting solution increases the customer's satisfaction because it eliminates the time customer waits in the queue checkout. Another important and assistive service is the creation of mobile applications for blind people, which can help them to navigate in the store, choose products, check ingredients and nutrition details using their voice, RFID and QRcode [6].

From the above it is well understood that the use of Internet of Things in the grocery store can reinforce the customer's confidence and provide to him unique experience while shopping. Additionally, all this effort from the retailer' perspective brings very positive results for them, all satisfied customer become loyal and increase their purchases both in value and frequency.

2.1.2 Click choice

Nowadays everyone using their mobile or other device can easily search, select and purchase anything without thinking the time and location barriers just with a mere click [7]. As a logical consequence of technological progress in this area, the transformation from in store shopping groceries into e-groceries has become a reality. Even though the purpose of this study is to profile e-grocery customers, it is interesting to briefly mention some points about customer's reaction and the necessary actions from the company's perspective.

Firstly, as it was expected customers showed resistance to this innovation. This is a standard reaction occurred instinctively due to the little information that they have and the fear of something unfamiliar [8]. To overcome this barrier, it is necessary for the customer to familiarize with the new concept and to continue interaction through the new channel. Obviously, customer could not magically switch over to the new concept and at this point companies should support this effort.

From the research amassed that customers who had proceeded in conducting more than three online transactions, expressed positive feedbacks, and reported that they will repeat it again [9].

Additionally, companies must work hard on the e-grocery project in order to get the competitive advantage by implementing certain strategies and attract customer's attention and the recipe to do so is simple: *give value to your customer*. The most important thing is that companies do not change their nature and what they sell but the way that they serve customers and the fact that their intention is to create a strong engagement with them [10]. This engagement comes when customer is satisfied and loyal by receiving benefits [11]. This is the whole point of this theory and to achieve this e-grocery companies should work properly on three basic factors: *Convenience, Quality and Price*.

Convenience: In actuality convenience is an important part of human's everyday life and everyone needs and looks for a convenient -without struggles- life. Much in the same way, e-grocery companies work hard to achieve this customer centric approach [7],[12],[13]. And consequently, for this study, convenience is:

- Easy registration process with few steps for the completion of the online transaction.
- Save time, by providing a 24x7 ordering process, from any location by any device.
- Delivery service at customer's premises with the opportunity of selecting certain time period in the day.
- Rich assortment of products with clear description and proper images.
- Ability to process previous orders and re-order in a fast way.
- Trustable transactions.
- Available all payment methods.

Quality: The other important factor is quality, which is very close to customer satisfaction and expectations. After his experience is customer satisfied? Did he get what he expected? By all these it is well understood that in the case of e-grocery quality is defined by:

- The condition of products, how well packaged they are, under which circumstances their transfer was executed, especially for refrigerated products, vegetables, and fruits.
- The provided services, for instance, to have customer care representatives well-skilled to support customers' claims and respond to unexpected incidents.

- The polite, well informed, and willing to serve delivery personnel. Also, one important thing here is their workwear appearance.
- The feedback from other customers.

Price: This is also one other critical parameter for the customer. In the case that we need a product or a service we must pay for it. Online groceries have always available items prices so as customer can easily have access, check them, and ensure best prices. One other important contribution of e-groceries is the ability to give special prices and offers via personalized promotions so as to engage customer.

2.2 General Definitions

At this point the reference of Loyalty, Reward, Personalization and Cross selling & Upselling is required because they are related with established practices of retailing, for both customer analysis and retailer's strategy implementation.

2.2.1 Loyalty

In a person's life loyalty is characterized as the heavyweight and fundamental value of commitment and devotion. A loyal customer is always important for the retailer and this comes by providing the finest experience without deceiving him. Every positive experience reinforces his satisfaction and after this feeling, loyalty follows consequently [14]. Customer loyalty derives from his impression that he is a winner in this mission and benefits such as profitability and revenue come back to the retailer afterwards. Through loyalty programs the retailers reward their customer and enhance their existing satisfaction by offering points, discounts, and coupons and in parallel measure whether their relationship remains strong by monitoring customer's reactions [15]. In order to achieve a successful loyalty program a retailer should encourage communication with customers and increase their convenience.

2.2.2 Reward

In simple words the Latin phrase Quid Pro Quo is translated as the action to give and take, and it is almost synonymous with the meaning of reward. In retail strategy reward is a satisfying return or offer to customers due to a relationship (existing or potential). In the highly competitive online environment where competition between the retailers is intense and, in some cases, unfair, they make efforts to keep or increase their market share. The fear of losing customers is an everyday issue and to attract and retain them the retailers will resort to using such reward systems as incentives. By implementing the aforementioned rewards, the retailers are creating an engagement with the customers and as long as they reciprocate, this relationship becomes stronger [15]. However, the retailers should always pay attention to the relation between customer reward and their profitability, so as to avoid risking their profits.

Additionally, it is worth mentioning that in literature, there some references discussing how the reward system should work properly, in the terms of customer types: existing and potential. Concluding, potential customers should not receive same rewards in relation to existing customers [16].

2.2.3 Personalization

Personalization is the procedure of collecting customer data and with the valuable contribution of technology to create personalized experiences for the customer [17]. Looking backward when few advertisements promoted products or services to everyone (mass marketing), the meaning of personalization did not exist and as years passed, customer behavior changed as they became very selective regarding their needs and interests. So now personalization provides an individualized shopping experience to customer and benefits the retailer's profits and loyalty [18].

2.2.4 Cross-selling & Upselling

Cross selling & Upselling are two basic sales techniques for achieving the growth of sales and revenues [19], additionally both of them are aiming at a customer's satisfaction, loyalty, and positive reviews. For these reasons, their efficiency lies on how well organized and targeted

they are. The aim of Cross-selling is to increase the total value of the transaction by adding in the basket additional products (complementary purchase) along with the already selected products [20]. With Upselling, a customer is motivated to change the initial selected product by choosing something other better in features or quality with greater value. In this case the purpose is for the customer to spend more than the intended money by changing his option with the suggested ones [21].

3 Customer Profiles

The study of customer profiles is an important concern in the marketing strategy and decision making of companies because on this depends their growth [22]. Thus, their scope is to approach in an efficient and accurate way customers, understand their needs and offer appropriate solutions for each one of them. There is no one solution for all customers but individualized solutions according to customer profile [23]. From a general perspective of humanity, the most obvious difference between humans is gender, after that follows a range of other difference categories and this means that human's life is based on diversity. Keeping this as motivation, we understand why it is important to segment customers, build their profiles and finally offer them appropriate recommendations [24].

The review we performed showed that in the existing marketing research literature, some general customer profiles are mentioned but there are no clearly defined e-grocery customer profiles. This study is an attempt to outline specific customer types -personas- and to identify their characteristics based on the literature. These customer profiles are then matched (as described in the next chapters) with information extracted from a real e-grocery dataset. In this way, we will be able to classify online customers to known profiles and suggest personalized actions for them.

3.1 What is customer profile?

Customer profiling is a description of characteristics which are representing him as well as possible. In essence, profiling could be likened to a puzzle and its small, dissimilar pieces (characteristics) which match together and create the whole image (profile). Marketing values the importance of profiling customers and continuously emphasizes its severity as it was mentioned above. In this case, several studies refer to two main kinds of characteristics in customer profiling: *Demographic and Behavioral Characteristics* [24], [25].

3.1.1 Demographic Characteristics

Demographic Characteristics: Each category describes people at different levels and focuses on having reliable and updated data for the further analysis of customer's behavior.

The basic categories of Demographics are:

- **Age:** Certainly, age affects customer's behavior and determines thinking and decisions. For instance, younger people enjoy entertainment, lifestyle and they are willing fashion followers. On the contrary, older people watch TV, are conservative and rarely change habits.
- **Gender:** Another element that affects customer's behavior. Keeping in mind the distinction between male and female, it is well understood that they have many differences in shopping behavior, from selecting color of a shirt until buying a car.
- **Income:** Also, one other parameter of affecting customer's behavior is income that has been acquired from all sources. According to their income they budget how they will use their money: for basic expenditure, pleasure, entertainment, luxury life and take the right decisions.
- **Occupation:** Obviously, occupation has the same results as income does. Also, occupation affects and the way of dressing (formal/informal), the choice of a car, etc. and consequently customer behaves accordingly.
- **Education:** Depending on the educational level customers can search, collect information, and make the right choices. Knowledge is power as it is well known, so customers make the decision with reasonable criteria having confidence and also they cannot be deceived by others.
- **Marital Status:** Marital status can affect customer's behavior, as single people tend to be more impulsive, without giving second thoughts (sometimes) in comparison with married people.
- **Family Size:** In this case big families need more money to cover their needs. So, these customers will spend much money for their needs, respectively.

From the above it is not difficult to understand that even though they are very important, they are not static characteristics. This means that every customer changes as time passes or tends to behave differently and prioritize his needs elsewhere.

Previous studies have shown that every category of demographic characteristics affects customers to a different degree. For instance, there was a research regarding customer behavior in Bosnia and Herzegovina and the results revealed gender, income and marital status as the most impulsive characteristics which affect customers [26]. Additionally, research regarding customer behavior for online shopping in India, showed that age, gender, education, and income impacted customer behavior [27]. The impact of demographics is reported in other research, again from India and particularly from Punjab, Haryana, New Delhi and Chandigarh. Having examined it from the various demographic characteristics such as gender, age, job, marital status, level of education and income, concluded that only gender and marital status had impact on customers' behavior [28].

Another study based on customer behavior and food packaging concludes that income is the only demographic characteristic that affects customer behavior and strongly recommends companies to take it into account [29]. It seems a little surprising that age or gender did not affect customer behavior for this case, but it is respected and acceptable. Furthermore, store selection is one other fundamental choice of customers. Considering what may affect them, the most important demographic characteristics were the family size (large families, spending large amounts on groceries, select hypermarkets which offer extra discounts and have great variety in products and prices, so they can save money), income, occupation, and education [30]. Also, the last three dimensions seem to be interdependent: if customer is well educated it is very likely to have a remarkable occupation and consequently get a high salary and opt to purchase from anywhere ignoring lower prices and offers.

Going a little further, there is an interest in a study which is dealing with age as a demographic characteristic and customer behavior. The study refers to clothes purchases, and age is the most important element that affects buying behavior, and after that follow gender, income, occupation, education level [31]. In addition, age and gender are important elements affecting

customers on visiting luxury resorts, for example young men visiting such places feel unique and blessed [32].

Finally, this review could not be completed without referring genders and their differences in shopping behavior. From a study which concentrates on brand loyalty women seem to be more committed to a brand and prone to impulse buying in comparison with men [33]. Men tend to be more focused on their shopping and what they are searching for.

3.1.2 Behavioral Characteristics

Behavioral characteristics are not so stable as demographic, but they are more powerful and adaptable due to their nature. Ordinarily, customer in order to take a decision has to give answers to questions like why, where, what, how to buy a product or a service under certain circumstances and respond accordingly to each case [34]. Through those characteristics customer's behavior is more understandable and gives detailed data which clearly describes his activity in the online shopping journey. Behavioral data resembles the traces that had been left behind in the forest from Hansel and Gretel in the homonymous classic fairy tale of Grimm and behavioral traces give information about customer's attitude and help market segmentation. Consequently, it is important to observe customer's preferences very carefully, considering the below points [34], [35] which affect and indicate behaviors:

- Occasions: Customer's life is full of occasions, some of them are normal in their daily lives and others not, for example birthdays, holidays, Christmas, happy moments and even mourning. Marketing processes must recognize each occasion and accordingly approach customers using online practices (in company's website, via social media or email).
- User Status: The categorization here starts from non-users, who have never had contact with the product, and follow ex-users who used to buy the product but now they do not. Probably something went wrong in the process and company must take marketing actions to regain customer. For potential users the goal here is to make them purchase, first-time users are strangers who first time have bought product and regular users who know and buy the product.

- Usage rate: How often a customer makes a purchase in other words visits a website. For instance, some e-grocery customers visit the website very frequently and buy all products, these are heavy users. Those who do not buy frequently are called medium users and light users buy less and some of them they do not buy again.
- Buyer readiness: There are six stages describing customer's readiness sequentially regarding product knowledge and final purchase. Starting with awareness, customers may have not any idea about the product, afterwards he gets knowledge about it and expresses his emotions by liking it (or not). Next comes his preference instead of other competition and conviction comes when customer has been informed very well about the product and ends up purchasing it.
- Loyalty status: Hard-core loyals are the favorable customers because they are dedicated to the product. Split-loyals prefer and sometimes purchase also from elsewhere, shifting-loyals move from one to other and last are switchers showing their infidelity and do not stay on as loyal customers.
- Attitude: Is customer's expression of being enthusiastic, positive, indifferent, negative, and hostile about a product.

For the e-grocery case behavioral data are exported via customer action on the website or company's applications. User actions are the levels of frequency they login in the site, the needed time to search for products, to make comparisons between them, also how engaged and loyal is customer and all other habits that he has in the online shopping journey.

Previous research showed that online purchases help companies have valid and real data from the transactions to understand customer needs and solve problems. Working with certain methods and tools per each case makes it easier to extract safer results. Thus, RFM model is suggested as reliable tool for the behavior analysis. The acronym RFM stands for Recency (customer's last purchase from now), Frequency (how many times customer had purchased in certain time period), Monetary (how much money customer had spent in certain time period) and can give detailed behavioral information to companies in order to organize their marketing strategy [36].

From another study in food sales, through the observation and evaluation of products per transaction the issue of how to set marketing campaigns per customers came up. Interestingly, the results showed that it is vital to have different campaigns for a group of customers and on the other hand to have the same marketing campaigns for other groups [23]. Based on the above-mentioned theory it is easy to assume that first-time users probably need certain and personalized promotion contrary to regular customers.

A further parameter that attracts the retailers' interest is impulsive shopping, as it is one of the reasons for increasing their revenues. During their online journey the customers sometimes indicate the tendency to react impulsively and purchase extra products than the expected [37]. In another study the customer's positive mood drives to impulsive purchases [38] because the customer feels a certain convenience in a well-designed and easy to use online shop. In addition, there is one type of shopper called 'variety seeking' and his philosophy is to always search for alternative products (even though he may be satisfied with those that he purchases already) and he tends to make impulsive purchases [39].

With online shopping, the customer has the opportunity during his search to get benefits due to some special offers or promotions (also this could happen via promotion with emails and messages via social media) and by this, to proceed an impulsive purchase at any time and from anywhere. Should the customer visit an offline shop to get his beneficial promotion offer, it is very likely not to go because of the inconvenience and many other reasons [40].

3.2 Behavioral or demographic characteristics? Or both?

According to recent literature and studies, in order to understand customer preferences and attitude companies should become predictive, being one step ahead from customer's thoughts and create the general feeling of trust. Thus, in customer segmentation demographics do not play a significant role anymore and behavioral operate more effectively [25]. Focusing on customer behavior is vital and gives pluralistic insights by capturing his intention at the moment in which he is gathering information to learn, read, watch, and of course purchase something (micro-moments) [41]. Also, the research via behavioral characteristics does not rely on

assumptions and possibilities but focuses on customer's reactions by scanning his online traces [42].

The above reference is acceptable partially, and it is not right to be absolute and nullify demographics' contribution. The truth is somewhere in the middle because the most important and what matters is the best possible understanding of customer and therefore all available mediums are employed to serve this scope and have a meaningful desired result. After that companies should settle on their strategy for personalized actions and promotions in order to retain customer loyalty, increase their value and have the right forecasting. So, behavioral characteristics are in a more advantageous position now, but also demographics are still important.

3.3 Customer Segmentation

Customer segmentation defines distinct groups of customers, who have similar characteristics as described above. The segmentation can be implemented either by demographic or by behavioral characteristics. For instance, customer segmentation is necessary for one basic purpose, to give insights for a successful and accurate marketing strategy to companies [35], [43].

In the digital era, implementing marketing strategies is not an easy process as it was many years ago. In previous times, small or medium companies had short ranges, serving certain customer bases, and succeeded to manage it. Also, large companies had simple practices in their marketing strategies by covering general needs and without truly understanding customer intentions. Nowadays, there are millions online customers all over the world and no matter the size of the company, a marketing strategy's success depends on the right customer segmentation.

From the recent available literature there have been selected and presented basic customer profiles for groceries. Customers although shopping from the same point they have different needs and behavioral attitudes, and this is highlighted by the following segmentation.

For the purpose of this study the following customer profiles are referred:

- Loyal Customer

- Offer Hunter or Bargain Customer
- Impulse Customer
- List Shopper
- Healthy Believer
- Private Label Shopper

3.3.1 Loyal Customer

This customer makes all grocery shopping frequently from one retailer and is dedicated without making market research and comparisons to other competitors. He does not care so much about prices and spends high amounts on transactions because he is clearly satisfied with the retailer's products and services. Also he is willing to make recommendations to others, very easily through online environments (social media, messaging applications) or with the traditional way 'Word Of Mouth' and he is characterized by the tendency to justify or even forgive any mistakes. He considers it as a duty and does it with a great pleasure, to give feedback and advice the retailer to make changes for better services provision [44], [45]. He needs to get quality products and services, to follow certain process and he does not like to change habits. By this he stays engaged and the relationship between him and the retailer becomes stronger and long lasting, feeling unique is vital for his loyalty. Additional, age is interdependent with loyalty status and this means that an older customer stays loyal because he does not like to change buying habits and he is in love with one retailer [46].

From the retailer's perspective loyal customer is very important, needed and desirable because of the high transaction value and of course his frequency. The retailers should invest on loyal customer by rewarding him and the more reward he gets, the more retailer will receive as well [47].

3.3.2 Offer Hunter or Bargain Customer

This customer is not dedicated and loyal to just one retailer, because his main purpose is to hunt for offers and he is willing to search everywhere [48]. Another important characteristic of his buying behavior is that he tries to stock up on products on offer and feels relieved by doing

this, without purchasing anything else impulsively [48]. It is more probable to have a lower income, and this is the reason behind hunting for the best prices available. The basic thing here is the retailer to understand that it is very difficult to change the offer hunter's behavior and the only thing that the retailer earns from this relationship is to increase revenues. For that reason, the retailer should continue reminding these customers about offers. Nevertheless, the retailer should take action in order to make the customer loyal to some extent. One way to do so is to inspire him through stimuli in his grocery shopping and offer him an extraordinary experience. In the online shop, incredible stimuli can happen and attract customer's interest with the support of technology [49].

3.3.3 Impulse Customer

Customers from this category are the most beloved and desirable for the retailers, as they purchase products spontaneously, even without initially having such an intention, thus increasing the retailer's revenues. Emotions and mood rather than rational thought drive them to do this and especially for purchases of low value or lifestyle items, clothes, shoes, food [50]. By this it is understood that his grocery basket is not always the same, he probably does not use a shopping list, his income allows these purchases, and thus he could be easily influenced to buy something impulsively due to consumerism. It is important to highlight that the retailers should organize their marketing strategy very well and proceed with due actions. First, a well-designed, attractive, and useful site or application construction which increases customer's experience inclines them towards browsing with all the necessary information, without any complicated processes and easy check out process. After that they should work on alerting customers via recommendation and promo discounts in their social media accounts, or during their purchase process by cross-selling and upselling techniques [51]. A customer from this category feels satisfied with recommendations, interprets that as the retailer's mindfulness and continuous to purchase. Moreover, the customer becomes more impulsive when purchases from online instead of offline shops due to the conditions that make transactions easier and contactless [52]. In addition to this advantage, social media, and other customers' reviews (which is a valuable contribution) make customers more impulsive [53].

3.3.4 List Shopper

List Shopper makes purchases using an already prepared product list. These are usually women who are responsible for meal preparation or those customers who want to purchase in accordance with their budget and do not want to divert from the value of their basket [54], [55]. Also, from statistical research it has been proved that customers aged 50 and over tend to use shopping list whereas younger customers do not have this habit so much [55]. In addition, customers who follow a healthy lifestyle keep a shopping list to avoid shopping other products [56].

Living in age where the pace of life is very intense and time is limited, shopping lists are important in physical grocery stores so that customers remember everything they need and stop moving around aimlessly in grocery's aisles. The e-grocery customers can also have a list and due to the innovative and useful environment of the site or application can easily search and select products. One step further to this is that they could select and copy previous order lists in the current basket (by keeping brands and changing quantities) and saving time through this process hence, convenience is strengthened.

Although List Shoppers have scheduled their purchases, sometimes they could select products out of their list due to some promo discounts for instance. This behavior could be affected by sending them personalized promo offers or by cross-selling and upselling techniques.

3.3.5 Healthy Believers

One other important customer segmentation which has increased in popularity over the last years is healthy believers. As a trend concerns people of all ages and not only youngsters. Youngsters are fixated on their weight and their appearance and adjust their grocery purchases within these parameters (57). Older people select healthy living products because of health issues and are concerned a lot about their nutrition and quality life [58]. This category also includes, those with special eating habits like vegetarian, vegans and people who want lactose or gluten free products. In a similar way, women, as compared to men, think and care more about healthy nutrition for the good of their family (especially those who have small children) [58]. Healthy believers want to ensure wellbeing, and they are searching products with the

most best nutrition values ignoring prices (57). Several studies have shown that customers are willing to pay, even though these products are more expensive and from that it is understood that in this customer segmentation group have a higher income (59). In order to make their experience unique and attract their interest, the retailer's marketing strategy should focus on digital storytelling techniques, informing and providing them nutrition education and accurate product information. In this way, they are evoking customer emotions, controlling their feelings and strengthening their loyalty engagement by making them subconsciously carry out transactions based on their needs (57).

3.3.6 Private label Shopper

For this customer segment there has been a lot of conversation due to the tremendous growth in retailing market. More and more customers are selecting private label products instead of famous brands. Literature says that low income customers buy PL products because they achieve to balance quality at the right price for [60], [61]. Customers are satisfied in the terms of quantity and mostly of quality and this means that they trust this product selection, continue to purchase, and do not hesitate to expand the selection to other product categories [60]. In this category family size and income drive the product selection [62] as it is well known that PL products have lower prices in comparison with famous brands. Also, studies have shown that there are customers who prefer to do market research and select the appropriate products themselves. In this process they select PL products, and they are willing to share their experience with others much more easily [63]. For this category of customers marketing strategies should focus on promoting PL products, offering discounts, or even though offering free samples of these products while delivering online purchases.

4 E-grocery Dataset Analysis

The ultimate objective of this chapter is to classify e-grocery customers to known profiles as described in the previous chapter and for that reason a real e-grocery dataset was analyzed. More specifically, after conducting a discussion with Data Analysts of a large Greek supermarket chain, we were informed about the nature, the value and characteristics of the collected data and we were permitted to have access to a dataset that covers a certain period. Real and anonymized data, due to strict GDPR, was available in an editable format and SPSS statistics software was used to classify them.

4.1 Data Collection

Data was collected from online transactions over the period of forty (40) weeks. Table 1 shows transactions per customer and table 2 shows the details of each transaction such as items, quantities, discounts, etc.

Table 1: Transaction Table

Transaction Table	
Customerid	Customer Id
Id	Transaction Id
SaleDate	Order Date
DeliveryDate	Delivery Date
Amount	Transaction Value
Ticket	Payment with Tickets
Viva	Credit Card Payment Method
Cash	Cash Payment method
Rating	Transaction Evaluation

Table 2: Transaction Detail Table

Transaction Detail Table	
Customerid	Customer Id
Id	Transaction Id
SaleDate	Order Date
Itemcode	Product Code
Qty	Product Quantity
Amount	Paid Item Value
Discount	Discount Amount
Private Label	Private Label Product
Bio	Bio Product
Description	Product Description
ProductGroupHL	Product Group High Level
ProductGroupDescrHL	Product Description Group High Level
ProductGroupLL	Product Group Low Level
ProductGroupDescrLL	Product Group Description Low Level

IBM SPSS Statistics software was used to classify data and a table occurred with 11.076 rows, each row corresponds to one customer, and also 400 columns with KPI's which refer to their transaction data. The creation of many of KPI's was based on 18 product groups High Level:

- Cold cuts & Cheese products
- Pastry products
- Dairy & Refrigerated products
- Pet food
- Liquor products
- Cleaners/Detergents
- Cosmetics
- Frozen products
- Coffee & Beverages
- Canned products
- Meat products
- Vegetables & Fruits (Greengrocers)
- Grocery products

- Household products
- Diapers & Napkins
- Breakfast products
- Snacks

The dataset consisted of the following: Total transaction amount, product quantities, weekly presence, number of transactions and the share of each product group on total customer basket (e.g. 15% of total purchase is placed on dairy products) for each customer and for every product group.

Furthermore, the dataset contains for each customer: the number of different product SKUs, the number of total transactions, the number of daily and monthly presence, the total cumulative amount, the total cumulative discounts, the average basket per transaction and per month, the average number of items per transaction and per month, items and amount of Bio and Private label products.

All the above KPIs were scored with values from 1 to 5 based on histograms. To define the strict limits between values, it was necessary to exclude records which referred to less than 3 transactions. Weekly presence is a counter of how many weeks during the examined period the customer purchased even a single product for every product group. For every product group the customers' weekly presence was sorted, and then divided into 5 equal groups. The limits of these equal groups for every product category defined the appropriate score for every customer for every product category. The final result looks like the example in the following table 3.

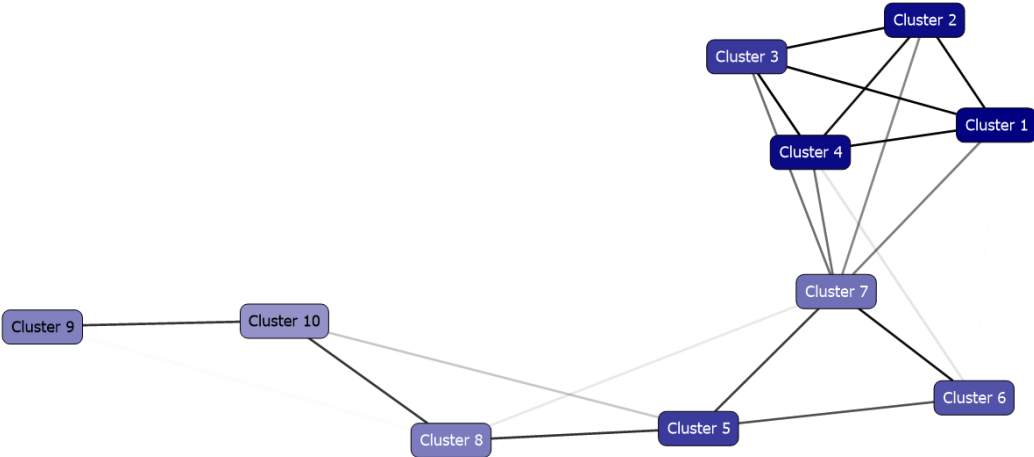
Table 3: Customer and Product Category

	Dairy products	Liquor products	Meat products	Snacks	Vegetables & Fruits	Frozen products
Customer x	1	4	5	5	2	5
Customer y	3	5	3	5	3	1
Customer z	1	2	4	1	5	3

The KPI for weekly presence on product groups resulted as the most appropriate for consuming behavior analysis. Either for small or organized households, customer weekly presence in all basic product groups, regardless of quantities, or amounts, is the most appropriate loyalty KPI for each customer. The rest of the KPIs were used as descriptive characteristics for each cluster/segment that derived from the weekly presence score clustering.

4.2 Clustering

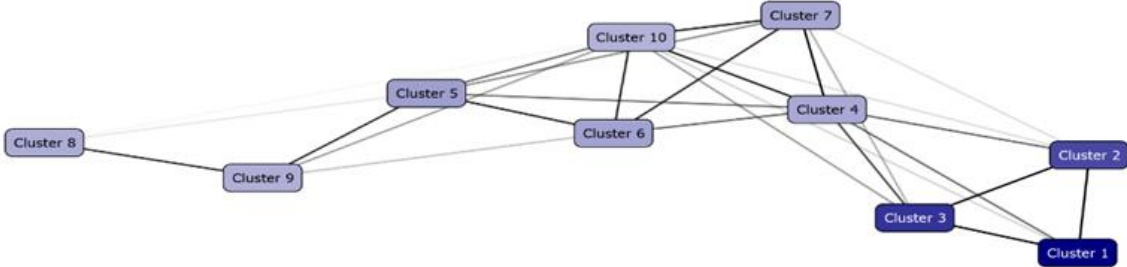
As mentioned before the KPI of weekly presence score for every product group, for every customer was the input for clustering. At the initial attempt of creating the model, data of weekly presence of all product groups were imported in Analysis Services tool and by using the algorithm clustering (EM) the following clusters (picture 1) occurred:



Picture 1: Diagram Clusters

The above picture 1 describes with details the relationships between clusters. Different colors give information for the quantity of incidents that exist in each cluster, so the darkest color means crowded cluster. Also, vicinity is very important for these clusters because the closer the clusters are, the more similarities they have. Similarities are also indicated by the lines connecting them. The darker the line connecting the clusters the more similarities among them.

After examining the impact of all product groups on each cluster, it can be concluded that there are some product groups such as pastry, canned, dairy, grocery, household products, coffee & beverages that do not affect cluster results and it is preferable to exclude them. This is because these categories were purchased from most customers proportionally to their transactions. The more frequent a customer, the more the weeks of presence in these categories. To clarify this more, for example meat products are not purchased by most customers. There are customers that are frequent buyers and prefer not to buy meat online. By extracting all those Product groups which are not so crucial for the analysis, the following cluster diagram is configured (picture 2).



Picture 2: Diagram Clusters

Table 4 shows clusters and how many customers exist in numbers and percentage in each cluster.

Table 4: Cluster Analysis

Cluster	Number of Customers	Percentage
Cluster 8	734	6,63%
Cluster 9	706	6,37%
Cluster 5	850	7,67%
Cluster 6	819	7,39%

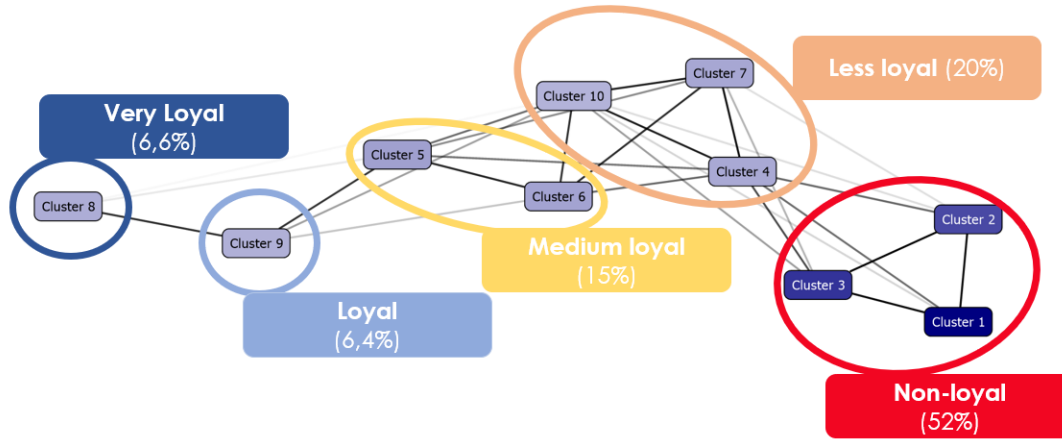
Cluster 10	676	6,10%
Cluster 7	788	7,11%
Cluster 4	768	6,93%
Cluster 3	1.820	16,43%
Cluster 2	1.629	14,71%
Cluster 1	2.286	20,64%
Total	11.076	100%

4.3 Customer Segmentation based on loyalty

Examining the purchases frequency of the basic product groups on the above clusters, five basic segments as regards loyalty were distinguished (picture 3). The clustering algorithm was based on weekly purchases per product group. As a next step, the resulting clusters were grouped in market segments by analyzing clusters' characteristics.

Loyalty in our analysis means that the customer frequently purchases (on weekly basis) all the basic product groups, regardless of quantities and amounts. It would not be meaningful to consider transaction amounts as the most important indicator for loyalty because small households (e.g., single persons) which purchase from all basic product groups but do not spend a lot of money for e-grocery are considered more loyal in comparison with households which spend a lot of money for purchasing e-grocery, but they do not select all basic product groups. We identified 5 segments, in decreasing order of loyalty:

- Very loyal customers
- Loyal customers
- Medium loyal customers
- Less loyal customers
- Non-loyal customers



Picture 3: Five basic segments

In table 5, the distribution of e-grocery customers to loyalty segments is shown. More than 50% belong to non-loyal customers.

Table 5: number of customers per segment

Segment	Number of customers	Percentage
Very loyal customers	734	6,63%
Loyal customers	706	6,37%
Medium loyal customers	1.669	15,07%
Less loyal customers	2.232	20,15%
Non-loyal customers	5.735	51,78%
Total	11.076	100%

4.4 Cluster Description

The objective of cluster description is to present customer segments and their characteristics in accordance with product groups (variables), their score and probability of having this score in the certain product group. Extreme scores (1 and 5) of clusters have stable probability in comparison to the medium/middle scores which have instable probability.

4.4.1 Very Loyal Customers

Table 6: Cluster 8 Variables & Probability

Cluster 8		
Variables	Values	Probability
Cold Cuts	5	90,96%
Cosmetics	5	87,90%
Liquor Store	5	84,26%
Detergents	5	83,24%
Papers	5	81,22%
Frozen	5	79,24%
Snacks	5	78,39%
Greengrocers	5	76,21%
Breakfast	5	69,50%
Butchery	5	51,15%
Diapers And Napkins	5	47,96%

The above table 6 shows that very loyal customers purchase all product groups, but they express limited preferences for butchery and breakfast. Moreover, there is a great probability to purchase diapers and napkins with more frequency, and this proves that loyal customers are households which consist of women and maybe children. This insight is also confirmed by the below descriptive characteristics of clusters, where 52% of customers appear to have purchased products for children.

Very Loyal customers Characteristics – Cluster 8

- 9 months basket: **1.483,81€**
- Items in 9 months: **786**
- Weighted monthly basket: **233,55€**
- Average basket per visit: **56,06€**
- Average transactions: **18,68**

Products for children: 52% of customers have purchased products for children.

Products for elderly people: 15,5% of customers have purchased products for elderly people.

Bio products: 70,7% of customers have purchased bio products.

Private label products: 100% of customers have purchased PL products in percentage of items **18%** (this means that **18%** of purchased products are from the private label category).

4.4.2 Loyal Customers

Table 7: Cluster 9 Variables & Probability

Cluster 9		
Variables	Values	Probability
Cold Cuts	4	64,91%
Detergents	4	52,60%
Cosmetics	4	51,30%
Greengrocers	4	42,94%
Liquor Store	4	42,09%
Snacks	5	39,47%
Frozen	4	38,73%
Breakfast	4	38,23%
Papers	5	37,49%
Butchery	1	34,64%
Frozen	5	34,55%
Liquor Store	5	33,24%
Diapers And Napkins	1	32,32%

The above table 7 shows that loyal customers prefer snacks, frozen products, papers, and liquor products much more. They purchase cold cuts, cheese products, snacks, cleaners, cosmetics and do not prefer butchery products.

Loyal customers Characteristics – Cluster 9

- 9 months basket: **722,87€**
- Items in 9 months: **388**
- Weighted monthly basket: **160,02€**
- Average basket per visit: **52,29€**
- Average transactions **9,78**

Products for children: 30,3% of customers have purchased products for children.

Products for elderly people: 12,7% of customers have purchased products for elderly people.

Bio products: 55% of customers have purchased bio products.

Private label products: 99,9% of customers have purchased PL products, in percentage of items 20,2% (this means that 20,2% of purchased products are private label category).

4.4.3 Medium loyal customers

Table 8: Cluster 5 Variables & Probability

Cluster 5		
Variables	Values	Probability
Frozen	4	56,13%
Greengrocers	4	54,83%
Detergents	4	50,83%
Cosmetics	4	50,14%
Breakfast	4	49,51%
Cold Cuts	3	45,96%
Cold Cuts	4	44,93%
Papers	3	42,74%
Butchery	1	39,95%
Cosmetics	3	39,35%
Liquor Store	3	38,87%
Diapers And Napkins	1	38,62%
Snacks	3	37,55%

Medium loyal customers of cluster 5 prefer frozen products, greengrocers, cleaners, and cosmetics much more, as they also express limited preferences for papers and liquor products purchases, while they do not prefer butchery products (table 8). In general, they purchase food and non-food products.

Medium loyal customers Characteristics – Cluster 5

- 9 months basket: **442,96€**
- Items in 9 months: **234**
- Weighted monthly basket: **144,49€**

- Average basket per visit: **53,98€**
- Average transactions **5,73**

Products for children: 30,9% of customers have purchased products for children.

Products for elderly people: 9,8% of customers have purchased products for elderly people.

Bio products: 50,8% of customers have purchased bio products.

Private label products: 99,8% of customers have purchased PL products, in percentage of items **18,5%** (this means that **18,5%** of purchased products are private label category).

Table 9: Cluster 6 Variables & Probability

Cluster 6		
Variables	Values	Probability
Cold Cuts	3	73,42%
Snacks	3	61,59%
Cosmetics	3	61,31%
Diapers And Napkins	1	55,98%
Papers	3	54,21%
Liquor Store	3	52,57%
Greengrocers	3	41,76%
Frozen	4	39,66%
Butchery	1	36,99%
Cosmetics	1	35,74%
Detergents	1	34,08%

Medium loyal customers of cluster 6 prefer frozen products, cold cuts, cheese products, snacks, and cosmetics much more. Some of them purchase papers, liquor products and greengrocers, while they do not prefer butchery products and do not purchase cleaners (table 9).

Medium loyal customers Characteristics – Cluster 6

- 9 months basket: **287,37€**
- Items in 9 months: **153**
- Weighted monthly basket: **136,25€**
- Average basket per visit: **52€**

- Average transactions **3,66**

Products for children: 17% of customers have purchased products for children.

Products for elderly people: 5,7% of customers have purchased products for elderly people.

Bio products: 39,6% of customers have purchased bio products.

Private label products: 99,3% of customers have purchased PL products, in percentage of items 18,6% (this means that 18,6% of purchased products are private label category).

4.4.4 Less loyal customers

Table 10: Cluster 10 Variables & Probability

Cluster 10		
Variables	Values	Probability
Butchery	1	86,33%
Greengrocers	1	79,90%
Cosmetics	3	66,07%
Papers	3	59,13%
Detergents	2	58,28%
Cold Cuts	1	55,00%
Liquor Store	1	45,85%
Diapers And Napkins	1	41,31%
Frozen	1	41,03%
Cold Cuts	2	37,08%
Breakfast	1	35,57%

Less loyal customers of cluster 10 prefer non-food products, such as cosmetics, papers, and cleaners much more. Very few customers purchase cold cuts and they do not prefer greengrocers, butchery, liquor, and frozen products (table 10).

Less loyal customers Characteristics – Cluster 10

- 9 months basket: **221,46€**
- Items in 9 months: **114**
- Weighted monthly basket: **113,81€**
- Average basket per visit: **55,11€**

- Average transactions **2,88**

Products for children: 25,6% of customers have purchased products for children.

Products for elderly people: 10,2% of customers have purchased products for elderly people.

Bio products: 27,8% of customers have purchased bio products.

Private label products: 97,6% of customers have purchased PL products, in percentage of items **18,7%** (this means that **18,7%** of purchased products are private label category).

Table 11: Cluster 7 Variables & Probability

Cluster 7		
Variables	Values	Probability
Cold Cuts	2	79,87%
Diapers And Napkins	1	66,11%
Cosmetics	1	61,49%
Greengrocers	2	61,24%
Detergents	1	60,79%
Frozen	3	50,37%
Liquor Store	1	50,06%
Liquor Store	2	46,46%
Snacks	3	46,00%
Papers	2	41,57%
Cosmetics	3	38,51%
Breakfast	3	38,32%
Breakfast	2	38,16%
Detergents	2	37,81%
Butchery	2	35,54%

Less loyal customers of cluster 7 prefer to purchase frozen products, snacks, breakfast products and cosmetics much more. They also purchase cold cuts, cheese products and greengrocers and some of them purchase cleaners, papers and butchery products (table 11).

Less loyal customers Characteristics – Cluster 7

- 9 months basket: **198,07€**
- Items in 9 months: **105**

- Weighted monthly basket: **131,94€**
- Average basket per visit: **54,14€**
- Average transactions **2,31**

Products for children: 12,6% of customers have purchased products for children.

Products for elderly people: 4,9% of customers have purchased products for elderly people.

Bio products: 32,6% of customers have purchased bio products.

Private label products: 99,1% of customers have purchased PL products, in percentage of items **19,8%** (this means that **19,8%** of purchased products are private label category).

Table 12: Cluster 4 Variables & Probability

Cluster 4		
Variables	Values	Probability
Cosmetics	1	79,72%
Butchery	1	77,41%
Greengrocers	1	71,70%
Diapers And Napkins	1	69,20%
Detergents	1	66,23%
Liquor Store	1	57,69%
Cold Cuts	1	54,20%
Cold Cuts	2	45,58%
Breakfast	1	45,20%
Papers	2	43,94%
Frozen	2	43,86%
Snacks	2	42,80%
Liquor Store	2	41,77%
Breakfast	2	40,39%

Less loyal customers of cluster 4 prefer to purchase cold cuts, cheese, frozen products, snacks, liquor, breakfast products and papers much more, while they do not prefer fresh products like greengrocers and butchery. In general, they prefer food and do not purchase cosmetics and cleaners (table 12).

Less loyal customers Characteristics – Cluster 4

- 9 months basket: **136,08€**
- Items in 9 months: **71**
- Weighted monthly basket: **90,81€**
- Average basket per visit: **45,19€**
- Average transactions **2,14**

Products for children: 12,8% of customers have purchased products for children.

Products for elderly people: 4,6% of customers have purchased products for elderly people.

Bio products: 22,1% of customers have purchased bio products.

Private label products: 94,1% of customers have purchased PL products, in percentage of items 17,7% (this means that 17,7% of purchased products are private label category).

4.4.5 Non-loyal customers

Table 13: Cluster 3 Variables & Probability

Cluster 3		
Variables	Values	Probability
Cold Cuts	1	99,99%
Greengrocers	1	99,98%
Cosmetics	1	99,90%
Detergents	1	99,86%
Liquor Store	1	99,82%
Butchery	1	79,36%
Papers	2	70,15%
Diapers And Napkins	1	69,66%
Snacks	2	69,16%
Breakfast	2	61,08%
Frozen	2	56,62%
Frozen	1	43,34%
Breakfast	1	38,92%
Snacks	1	30,83%
Diapers And Napkins	3	30,28%
Papers	1	29,81%
Butchery	2	20,62%

Non-loyal customers of cluster 3 purchased papers, snacks, breakfast, and frozen products. One out of three purchases more diapers and napkins (table 13).

Non-loyal customers Characteristics – Cluster 3

- 9 months basket: **102,37€**
- Items in 9 months: **55**
- Weighted monthly basket: **101,51€**
- Average basket per visit: **63,71€**
- Average transactions **1,05**

Products for children: 10,9% of customers have purchased products for children.

Products for elderly people: 4,6% of customers have purchased products for elderly people.

Bio products: 21% of customers have purchased bio products.

Private label products: 95,3% of customers have purchased PL products, in percentage of items 19,5% (this means that 19,5% of purchased products are private label category).

Table 14: Cluster 2 Variables & Probability

Cluster 2		
Variables	Values	Probability
Cosmetics	1	100,00%
Liquor Store	1	100,00%
Detergents	1	100,00%
Cold Cuts	1	100,00%
Greengrocers	1	99,99%
Diapers And Napkins	1	84,18%
Frozen	2	70,84%
Snacks	2	65,03%
Papers	1	56,48%
Butchery	1	55,92%
Breakfast	2	51,61%
Breakfast	1	48,39%
Butchery	2	44,08%
Papers	2	43,52%
Snacks	1	34,97%
Frozen	1	29,16%
Diapers And Napkins	3	15,82%

Non-loyal customers of cluster 2 purchased mostly frozen products, snacks, breakfast, butchery products and papers. They differ from cluster 3 customers because they purchased more butchery products and less diapers and napkins (table 14).

Non-loyal customers Characteristics – Cluster 2

- 9 months basket: **89,67€**
- Items in 9 months: **47**
- Weighted monthly basket: **89,17€**
- Average basket per visit: **56,82€**
- Average transactions **1,03**

Products for children: 5,3% of customers have purchased products for children.

Products for elderly people: 1,9% of customers have purchased products for elderly people.

Bio products: 18% of customers have purchased bio products.

Private label products: 91% of customers have purchased PL products, in percentage of items **18,4%** (this means that **18,4%** of purchased products are private label category).

Table 15: Cluster 1 Variables & Probability

Cluster 1		
Variables	Values	Probability
Cold Cuts	1	100,00%
Cosmetics	1	100,00%
Greengrocers	1	100,00%
Detergents	1	99,92%
Liquor Store	1	99,68%
Butchery	1	88,81%
Breakfast	1	84,11%
Frozen	1	81,89%
Diapers And Napkins	1	77,25%
Snacks	1	75,70%
Papers	1	57,92%
Papers	2	42,08%
Snacks	2	24,30%
Diapers And Napkins	3	22,38%
Frozen	2	18,11%
Breakfast	2	15,89%
Butchery	2	11,19%

Non-loyal customers of cluster 1 purchased mostly papers, snacks and napkins. They have a similar behavior to customers of cluster 2 and differ from them because they do not prefer butchery products and purchase many more diapers and napkins.

Non-loyal customers Characteristics – Cluster 1

- 9 months basket: **63,96€**
- Items in 9 months: **31**
- Weighted monthly basket: **62,10€**
- Average basket per visit: **44,54€**
- Average transactions **1,05**

Products for children: 8,4% of customers have purchased products for children.

Products for elderly people: 4,2% of customers have purchased products for elderly people.

Bio products: 13,9% of customers have purchased bio products.

Private label products: 76,3% of customers have purchased PL products, in percentage of items 17,9% (this means that 17,9% of purchased products are from the private label category).

Aggregate tables of clusters descriptive characteristics

Table 16: a. Descriptive Characteristics of clusters

Cluster	9 months basket	Items in 9 months	Weighted monthly basket	Average basket per visit	Average days of presence
Cluster 8	1.483.817	786	233,55	56,06	18,68
Cluster 9	722.874	388	160,02	52,29	9,78
Cluster 5	442.963	234	144,49	53,98	5,73
Cluster 6	287.378	153	136,26	52,01	3,66
Cluster 10	221.467	114	113,81	55,11	2,88
Cluster 7	198.076	105	131,94	55,14	2,31
Cluster 4	136.089	71	90,81	45,19	2,14
Cluster 3	102.376	55	101,51	63,71	1,05
Cluster 2	89.670	47	89,17	56,82	1,03
Cluster 1	63.960	31	62,10	44,55	1,05

Table 17: b. Descriptive Characteristics of clusters

Cluster	Products for children	Products for elderly people	Bio products	PL	PLQtyPct
Cluster 8	52,0%	15,5%	70,7%	100,0%	18,0%
Cluster 9	30,3%	12,7%	55,0%	99,9%	20,2%
Cluster 5	30,9%	9,8%	50,8%	99,8%	18,5%
Cluster 6	17,0%	5,7%	39,6%	99,3%	18,6%
Cluster 10	25,6%	10,2%	27,8%	97,6%	18,7%
Cluster 7	12,6%	4,9%	32,6%	99,1%	19,8%
Cluster 4	12,8%	4,6%	22,1%	94,1%	17,7%
Cluster 3	10,9%	4,6%	21,0%	95,3%	19,5%
Cluster 2	5,3%	1,9%	18,0%	91,0%	18,4%
Cluster 1	8,4%	4,2%	13,9%	76,3%	17,9%

From tables 16 and 17, a more rounded view of clusters and their descriptive characteristics is formed. Generally, it should be noted that the more loyalty declines gradually, the most value and items of baskets are reduced, and additionally visits to e-grocery. There is one little differentiation occurred in clusters 10 and 7 of Less loyal customers, where customers of cluster 10 have spent slightly more money in 9 months but their weighted monthly basket is lesser than the basket of cluster 7. This could be correlated to the fact that cluster 10 consists of customers who purchase more non-food products, while in cluster 7, customers purchase mostly food products and in comparing them, it shows that non-food products are generally more expensive. However, it is also possibly related with customer's income. The confirmation of the above hypothesis could be carried out through a customers' focus group. The same thing is observed with customers of clusters 4 and 3, but in this case the differentiation occurs on product groups. Cluster 4 customers purchase cold cuts and cheese products that cluster 3 customers do not. Moreover, cluster 3 customers purchase diapers and napkins that cluster 4 customers do not. Because their transactions are very few, it is impossible to extract accurate results.

4.5 Customers characteristics per cluster

The following tables represent the scored by 1-5 KPI's for promo hunters, bio products, premium products, private label products, products for children and products for elderly people, and indicate the percentage of customers in each score for each cluster. Clusters are sorted in a descending order from very loyal to non-loyal customers. Additionally, color intensity reflects higher percentages in each cluster, the more intense the coloring, the larger the amount of customers with the specific score. Each row refers to one cluster and illustrates how the customers are distributed among the scores 1 to 5. The total sum of each row is 100%.

4.5.1 Promo Hunters

Table 18: Promo hunters per cluster

Cluster	Disc1	Disc2	Disc3	Disc4	Disc5
Cluster 8	12,81%	20,16%	24,66%	22,62%	19,75%
Cluster 9	17,00%	21,25%	23,80%	19,55%	18,41%
Cluster 5	17,53%	20,71%	21,06%	18,94%	21,76%
Cluster 6	22,59%	19,29%	18,07%	18,44%	21,61%
Cluster 10	16,27%	15,83%	17,31%	22,19%	28,40%
Cluster 7	25,25%	18,40%	17,64%	19,54%	19,16%
Cluster 4	27,86%	19,14%	13,80%	14,84%	24,35%
Cluster 3	25,88%	16,15%	16,59%	17,97%	23,41%
Cluster 2	29,65%	16,88%	14,49%	13,63%	25,35%
Cluster 1	33,38%	11,24%	12,69%	11,29%	31,41%

The variable presented in this table (Table 18) is the scored KPI with rates from 1 to 5 of the initial variable "amount of products on offer%". The initial variable included the ratio of products on offer to the total products purchased by a customer. Based on the initial variable "amount of products in offer%" the customers were scored between 1 and 5 according to the method described in 4.1, and so the higher the score from 1 to 5 the more promo hunter the customer.

It is observed that e-grocery loyal customers are not offer hunters to a great extent. Medium loyalty customers are evenly distributed in score categories. But there are some customers

(22,59%) in cluster 6 purchasing mostly cold cuts, cheese products, snacks that are not promo hunters. Conversely, a great portion of Less loyal customers (28,4%) in cluster 10 are offer hunters. As loyalty descends, a more intense color in margins (higher percentage) is observed, less loyal and non-loyal customers tend to be in the very extreme ends, which means they are less or too much offer hunters.

4.5.2 Bio products

Table 19: Bio products per cluster

Cluster	BIO1	BIO2	BIO3	BIO4	BIO5
Cluster 8	37,33%	9,26%	10,76%	17,30%	25,34%
Cluster 9	53,68%	10,06%	12,18%	13,31%	10,76%
Cluster 5	59,88%	10,00%	11,41%	8,71%	10,00%
Cluster 6	72,16%	9,16%	7,81%	6,72%	4,15%
Cluster 10	79,44%	7,99%	6,07%	4,73%	1,78%
Cluster 7	78,43%	7,87%	7,36%	4,82%	1,52%
Cluster 4	83,59%	7,29%	5,34%	2,99%	0,78%
Cluster 3	85,82%	5,99%	5,16%	2,36%	0,66%
Cluster 2	88,58%	5,03%	3,74%	2,27%	0,37%
Cluster 1	90,90%	4,16%	3,28%	1,36%	0,31%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “items of bio products”. The higher the score 1-5, the more bio products were purchased. Based on the initial variable “items of bio products” the customers were scored between 1 and 5 according to the method described on 4.1, and so the higher the score from 1 to 5, the more promo hunter the customer is.

The above table 19 illustrates that purchases of bio products do not show great repeatability in all clusters. One out of four very loyal customers purchase bio products frequently and also customers from clusters 5 and 9 seem to express interest for bio products, as they purchase from the greengrocers category.

4.5.3 Premium products

Table 20: Premium products per cluster

Cluster	Status1	Status2	Status3	Status4	Status5
Cluster 8	16,49%	19,07%	24,80%	20,03%	19,62%
Cluster 9	22,52%	17,99%	19,26%	19,97%	20,25%
Cluster 5	18,71%	19,88%	19,53%	21,76%	20,12%
Cluster 6	21,73%	20,02%	18,32%	20,88%	19,05%
Cluster 10	19,67%	19,38%	19,97%	16,27%	24,70%
Cluster 7	21,83%	21,83%	18,65%	17,13%	20,56%
Cluster 4	22,01%	18,49%	19,53%	18,62%	21,35%
Cluster 3	22,14%	18,13%	17,58%	16,54%	25,60%
Cluster 2	25,66%	17,62%	17,07%	16,82%	22,84%
Cluster 1	25,02%	17,02%	15,62%	13,69%	28,65%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “premium products”. The initial variable has rates from 1 to 300 and the higher the rate, the more premium the customer. Based on the initial variable, all customers were scored between 1 and 5 according to the method described on 4.1

The above table 20 shows that very loyal and loyal customers do not purchase many premium products. From the Less loyal customers in cluster 10, one out four purchases to a great extent premium products. Also, in this cluster there are many promo hunters and it can be concluded that a high percentage of these customers hunt promos and offers in order to purchase premium products at lower prices. Less loyal and non-loyal customers purchase either many premium products or almost none at all.

4.5.4 Private label products

Table 21: Private label products per cluster

cluster	PL1	PL2	PL3	PL4	PL5
Cluster 8	21,80%	17,30%	20,98%	22,75%	17,17%
Cluster 9	18,84%	21,39%	17,85%	19,55%	22,38%
Cluster 5	18,24%	21,41%	21,06%	19,88%	19,41%
Cluster 6	20,63%	21,37%	19,66%	19,17%	19,17%
Cluster 10	23,82%	19,67%	15,98%	18,20%	22,34%

Cluster 7	19,04%	17,51%	22,34%	19,42%	21,70%
Cluster 4	30,08%	17,06%	17,71%	17,32%	17,84%
Cluster 3	21,04%	16,87%	18,96%	20,77%	22,36%
Cluster 2	27,50%	16,33%	17,80%	17,99%	20,38%
Cluster 1	40,99%	14,70%	13,21%	13,69%	17,41%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “amount of PL products%”. The initial variable included the ratio of PL products to the total number of products purchased by customer. Based on the initial variable, all customers were scored between 1 and 5 according to the method described in 4.1 Table 21 illustrates very clearly that all e-grocery customers purchase private label products to a different degree, some of them more and some others less. The general conclusion is that as loyalty declines, private label products seem to be less preferable. Loyal customers trust PL products more than non-loyal customers do.

4.5.5 Products for children

Table 22: Products for children per cluster

Cluster	Child1	Child2	Child3	Child4	Child5
Cluster 8	47,96%	11,44%	8,31%	12,67%	19,62%
Cluster 9	69,69%	9,35%	6,37%	8,36%	6,23%
Cluster 5	69,06%	12,47%	6,24%	8,47%	3,76%
Cluster 6	83,03%	8,91%	3,42%	3,66%	0,98%
Cluster 10	74,41%	10,21%	6,66%	5,62%	3,11%
Cluster 7	87,44%	7,36%	2,66%	2,16%	0,38%
Cluster 4	87,24%	5,73%	2,73%	3,39%	0,91%
Cluster 3	89,07%	6,21%	2,91%	1,48%	0,33%
Cluster 2	94,72%	3,62%	0,86%	0,80%	0,00%
Cluster 1	91,56%	4,20%	2,10%	1,44%	0,70%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “items of products for children”. The higher the score of 1-5, the more products for children are purchased. Based on the initial variable, all customers were scored between 1 and 5 according to the method described in 4.1

Products for children (table 22) were mostly bought by Very loyal customers (52% of customers), by medium loyal customers (30% of customers) and by Less loyal customers (25% of customers – from the average of 3 clusters). From the medium loyalty customer category, cluster 5 stands out with the percentage 31%. Cluster 5 customers purchase food and non-food products and they do not show great repeatability on purchasing products for children.

4.5.6 Products for elderly people

Table 23: Products for elderly people per cluster

Cluster	Elders1	Elders2	Elders3	Elders4	Eldersl5
Cluster 8	84,47%	4,50%	3,81%	2,86%	4,36%
Cluster 9	87,25%	2,41%	4,11%	2,69%	3,54%
Cluster 5	90,24%	2,00%	3,65%	2,71%	1,41%
Cluster 6	94,26%	2,81%	1,59%	0,73%	0,61%
Cluster 10	89,79%	1,78%	3,70%	3,40%	1,33%
Cluster 7	95,05%	2,41%	1,78%	0,51%	0,25%
Cluster 4	95,44%	0,65%	1,56%	1,69%	0,65%
Cluster 3	95,38%	2,25%	1,65%	0,66%	0,05%
Cluster 2	98,10%	0,74%	0,98%	0,18%	0,00%
Cluster 1	95,76%	0,61%	1,71%	1,27%	0,66%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “items of products for elderly people”. The higher the score of 1-5, the more products for elderly people are purchased. Based on the initial variable, all customers were scored between 1 and 5 according to the method described in 4.1.

E-grocery customers do not significantly purchase products for elderly people. Very loyal (16% of customers) and loyal (13% of customers) customers purchased those products. From medium and Less loyal customers, clusters 5 and 10 are distinguished and 10% of customers have purchased products for elderly people (table 23). Customers from cluster 5 purchase online food and non-food products and those from cluster 10 mostly purchase non-food products.

4.5.7 Pet products

Table 24: Products for elderly people per cluster

Cluster	Pet1	Pet2	Pet3	Pet4	Pet5
Cluster 8	92,37%	2,45%	1,23%	1,63%	2,32%
Cluster 9	89,80%	2,41%	2,12%	2,27%	3,40%
Cluster 5	91,29%	2,24%	3,06%	1,41%	2,00%
Cluster 6	89,99%	2,44%	3,05%	2,44%	2,08%
Cluster 10	91,86%	2,22%	2,07%	2,07%	1,78%
Cluster 7	91,88%	1,65%	2,28%	3,05%	1,14%
Cluster 4	92,84%	0,52%	1,56%	1,95%	3,13%
Cluster 3	95,38%	0,88%	1,65%	1,21%	0,88%
Cluster 2	95,21%	0,37%	1,41%	1,29%	1,72%
Cluster 1	96,41%	0,13%	0,70%	1,01%	1,75%

The variable presented here is the scored KPI with rates from 1 to 5 of the initial variable “items of pet products”. The higher the score of 1-5, the more pet products are purchased. Based on the initial variable, all customers were scored between 1 and 5 according to the method described in 4.1.

The above table 24 shows that e-grocery customers do not purchase pet products so much. From loyal and Less loyal customers of clusters 9 and 6, 10% of them have purchased pet products in comparison with other clusters. Customers from cluster 6 mostly prefer cold cuts, snacks and cosmetics (shampoo, shower gel, deodorant etc.) so we conclude that their customer profile does not indicate an organized household because they do not purchase products for children and purchase more pet products. Additionally, loyal customers from cluster 9 who mostly prefer snacks, frozen products, papers, liquor products, cleaners, greengrocers, and do not purchase butchery products buy slightly more pet products than other clusters.

4.6 Customers characteristics per segment

In this sub-chapter, in order to extract meaningful insights and patterns in data on a higher level, we conduct the above analysis for the customer segments.

4.6.1 Promo Hunters

Table 25: Promo hunters per segment

Segment	Disc1	Disc2	Disc3	Disc4	Disc5
Very Loyal	12,81%	20,16%	24,66%	22,62%	19,75%
Loyal	17,00%	21,25%	23,80%	19,55%	18,41%
Medium Loyalty	20,01%	20,01%	19,59%	18,69%	21,69%
Medium to Non-Loyal	23,43%	17,88%	16,22%	18,73%	23,75%
Non-Loyal	29,94%	14,40%	14,44%	14,07%	27,15%

4.6.2 Bio products

Table 26: Promo hunters per segment

Segment	BIO1	BIO2	BIO3	BIO4	BIO5
Very Loyal	37,33%	9,26%	10,76%	17,30%	25,34%
Loyal	53,68%	10,06%	12,18%	13,31%	10,76%
Medium Loyalty	65,91%	9,59%	9,65%	7,73%	7,13%
Medium to Non-Loyal	80,51%	7,71%	6,27%	4,17%	1,34%
Non-Loyal	88,63%	4,99%	4,01%	1,94%	0,44%

4.6.3 Premium products

Table 27: Premium products per segment

Segment	Status1	Status2	Status3	Status4	Status5
Very Loyal	16,49%	19,07%	24,80%	20,03%	19,62%
Loyal	22,52%	17,99%	19,26%	19,97%	20,25%
Medium Loyalty	20,19%	19,95%	18,93%	21,33%	19,59%
Medium to Non-loyal	21,24%	19,94%	19,35%	17,38%	22,09%
Non-Loyal	24,29%	17,54%	16,65%	15,48%	26,03%

4.6.4 Private Label products

Table 28: Private label products per segment

Segment	PL1	PL2	PL3	PL4	PL5
Very Loyal	21,80%	17,30%	20,98%	22,75%	17,17%
Loyal	18,84%	21,39%	17,85%	19,55%	22,38%
Medium Loyalty	19,41%	21,39%	20,37%	19,53%	19,29%
Medium to Non-loyal	24,28%	18,01%	18,82%	18,32%	20,56%
Non-Loyal	30,83%	15,85%	16,34%	17,16%	19,83%

4.6.5 Products for children

Table 29: Products for children per segment

Segment	Child1	Child2	Child3	Child4	Child5
Very Loyal	47,96%	11,44%	8,31%	12,67%	19,62%
Loyal	69,69%	9,35%	6,37%	8,36%	6,23%
Medium Loyalty	75,91%	10,72%	4,85%	6,11%	2,40%
Medium to Non-Loyal	83,42%	7,66%	3,90%	3,63%	1,39%
Non-Loyal	91,67%	4,67%	2,01%	1,27%	0,38%

4.6.6 Products for elderly people

Table 30: Products for elderly people per segment

Segment	Elders1	Elders2	Elders3	Elders4	EldersI5
Very Loyal	84,47%	4,50%	3,81%	2,86%	4,36%
Loyal	87,25%	2,41%	4,11%	2,69%	3,54%
Medium Loyalty	92,21%	2,40%	2,64%	1,74%	1,02%
Medium to Non-Loyal	93,59%	1,61%	2,28%	1,79%	0,72%
Non-Loyal	96,30%	1,17%	1,48%	0,77%	0,28%

4.6.7 Pet products

Table 31: Pet products per segment

Segment	Pet1	Pet2	Pet3	Pet4	Pet5
Very Loyal	92,37%	2,45%	1,23%	1,63%	2,32%

Loyal	89,80%	2,41%	2,12%	2,27%	3,40%
Medium Loyalty	90,65%	2,34%	3,06%	1,92%	2,04%
Medium to Non-Loyal	92,20%	1,43%	1,97%	2,37%	2,02%
Non-Loyal	95,75%	0,44%	1,20%	1,15%	1,46%

Very loyal customers are not characterized as promo hunters and compared to other customers, they purchase more bio products and products for children and elderly people. Also, they purchase moderately premium products and almost 8% of them purchase pet products. The most interesting fact about them is their loyalty in purchasing private label products.

Loyal customers (as in very loyal) are not particularly promo hunters. They purchase bio products and products for children and elderly people. They purchase fewer products from these categories, than very loyal and more than the rest of the customer categories. They are evenly distributed among premium categories (1-5) and prefer private label products more than very loyal customers. It is the segment with the greatest percent of customers (10.2%) that purchased pet products.

Medium loyal customers are more promo hunters than very loyal and loyal customers but purchase less bio products, products for children and elderly people. Also, they purchase moderately premium and private label products and almost 9% of them purchase pet products.

Less loyal customers are either promo hunters or not at all. A small portion of them purchase online bio products, products for children and elderly people. It is obvious that they rarely purchase online groceries. Although they are not very premium, one out of five customers (22,09%) in this segment prefer premium products. Finally, 8% of them purchase pet products.

Non-Loyal customers are either promo hunters or not all. They express the same behavior in purchasing premium products with Less loyal customers and they do not prefer private label products, as they probably do not trust them.

4.7 Results review

As shown by the results of the Dataset analysis e-grocery customers show significant similarities with some customer profiles of the literature review in chapter 3. In this analysis, customer segmentation was based on loyalty, which is meant as customer's purchasing frequency

(weekly presence) from all basic product groups and the result was that 50% of customers are not loyal. By all accounts, most customers select and prefer Private Label products reinforcing the idea of selecting quality products at lower prices and also feeling confident and safe. Additionally, customers of all segments select Bio products which means they have a healthy lifestyle and customers (apart from one segment) are not offer hunters to a great extent.

Once the process of data analysis was concluded and e-grocery customer behavior was illustrated, customer's needs were understood. However, there is one more critical step to satisfy their needs, affect their decisions and become loyal customers. In the next chapter, an attempt of suggesting personalized promotion actions is presented, aiming at specific company goals.

5 Personalized Promotion Actions

5.1 *General*

Overall, every business uses promotion as a communication channel with customers to keep them alert about a brand product or service, increase sales, revenue, and market share. At this point, it is important to note that promotions in order to retain existing customers (who have acknowledgement of a brand) are preferable and cost effective, as a new customer's acquisition is more expensive.

Traditionally, the marketers used to implement general promotion strategies to achieve company's goals for each case. Thus, in previous years only one promotion action seemed to be sufficient for all customers, but nowadays this technique is antiquated as customers clearly express their preferences, have different needs and want to feel unique, through direct and personal communication. Additionally, the customers are at a more advantageous position in the digital era as they search and select the most suitable retailer with just a few clicks, and never forget who treated them better and added value to their experience. This is the reason that customers expect personalized promotion and there is no better solution than this.

For this study, personalized promotion actions for existing e-grocery customers will be suggested while the intended scope is to increase visits (customer presence), sales to as many product groups and retain existing customers. The retailers -in order to accomplish this goal- use technology and collected data from transactions to acquire knowledge about each customer and apply the best personalized promotion actions. Nowadays every company uses technology, owns vast amount of data and the important thing is to understand that a desired outcome becomes reality through technology (tools and applications) and data contribution.

Going a step forward, the retailer after analyzing transactional data, can settle on a marketing strategy by implementing different types of promotions for different customer profiles in a more digital way, using mobile applications, websites, emails, and of course social media.

5.2 Personalized Promotions

As it was mentioned before, promotions will be suggested in accordance with customer segmentation. However, the attention should be focused on the way of providing them and this means that it is right to invest more on actions for customers who show frequent presence and purchase from all (or almost all) product groups, as returned benefits to the retailer are more warrant and safe.

Also, the key thing to remember and never forget is that the retailer must adapt a more gradual approach, using personalized promotions and not expect to change customers purchasing behavior from one day to the next. For instance, the idea of turning a non-loyal customer to very loyal customer in a short period of time leads to an epic failure but by targeting a nearby segment each time, it is more probable to achieve and transform one to a loyal customer. Obviously, all results must be monitored and evaluated by the retailer relating to goal's accomplishment.

As mentioned in previous chapter, basic customer profiles were reported (five segments) and, below personalized promotions for e-grocery customers are presented.

5.2.1 Promotion actions for Very Loyal and Loyal Customers

These customers are precious, and the retailer must make efforts to keep them. They need to feel appreciated and for that reason they must be rewarded. It is very kind to give rewards because this means that the retailer is aware of how special customers are and feels that is his duty to return all this trust. Using social media accounts, email and mobile applications the retailer can communicate to customers attractive discounts and special promos emphasizing the financial benefit, exclusively for them, especially in product categories that they have already purchased online. Although the idea of discounts and coupons seems to be descent, their effectiveness cannot be denied.

Moreover, one further other action is to surprise customers through personalized promotions. Delightful surprises are happy emotions that everyone appreciates, enjoys in everyday life. For instance, one scenario is to get premium services from the retailer such as short delivery time for their orders in comparison with others. Therefore, after finishing e-grocery shopping,

customers can receive the purchased order in one or two hours. Another scenario is to send them premium products with a handcrafted written note for their birthday or another occasion. As these customers purchase frequently, the retailer could set up this surprise a few days before or after this occasion. This is an amazing way to attract customer's interest and make them feel unique all the while, enjoying this privilege and bringing vitality to their life.

Moving forward, personalized recommendations are very useful for the customers. For example, a great portion of the customers purchases bio products and recommendations about other products' (that have not yet been purchased) nutritional value, diet plans, expiration date are always welcome. Also, special tips from nutritional advisors could be shown as pop-up messages to customers during their purchases, giving information about bio products and right combinations, expanding product selection or even select products that have not been purchased recently.

Results from the dataset analysis have shown that very loyal and loyal customers do not prefer to purchase from butchery and greengrocers product groups. Their inconvenience is well known, and it is a good idea to make them express their feelings and thinking by answering online surveys. The most common way is to send surveys to their email; however, one other innovative way is to answer surveys at the checkout process of an online transaction. Customers will appreciate the retailer's interest and honestly and will share their thoughts. At the same time, the customer will get discount coupons for purchases in these products groups. The retailer using social media could share eye-catching stories (videos or photos), saying more with less words about the origin of a product (as people need to know where their food comes from), about product safety, hygiene, and packaging, and thus to approach them effectively. A memorable storytelling could positively affect customers, increase sales and also could be shared by customers to other people as they need to reward your endeavor.

5.2.2 Promotion actions for Medium Loyal Customers

For medium loyal customers the retailer aims to increase their presence and basket size. Almost 30% of customers purchases products for children and this means that are families which have not selected all needed products in the retailer's basket. So, there is a high probability to

convince the customer to purchase from other product groups by implementing personalization into marketing actions. Cross-selling and upselling techniques boost product promotion, recommending specified products based on customer's preferences and needs. For example with cross-selling, liquor products and snacks could be demonstrated while customer purchases cold cuts as a subtle combination with a heading: "other people also purchased" or "this is for you".

The retailer using push notifications in mobile apps can send personalized messages to customers in real time and drive them to purchase more. For instance, these messages could inform customers about a special discount for paper products this week if they purchase previous saved orders. Also, customers could be informed about their status in the retailer's loyalty program and push notifications give some information. Sending a message like: "Dear John, you need 20 more points to get the extra loyalty program's discount of 10€" it is very likely to convince him and make him impulsively purchase.

5.2.3 Promotion actions for Less Loyal Customers

As it was mentioned above, the more loyalty declines gradually, the most value and items of baskets are reduced, and additionally visits to e-grocery. Less loyal customers are not dedicated to the retailer and this can be a consequence of brand unawareness. Keeping in mind that all customers are not promo hunters, purchase few items from certain products groups and in some cases spend more money than others, we assume that there is a great probability to reach and convince them.

By persuading customers to subscribe to brands social media accounts and accept newsletters through email, they become members of brand's family and become aware about the nature, vision, mission of this brand. Also, they can review other people's opinions and feedback, which is one of the most important assets for the retailer as it is a free advertising and promotional method. Also, in social media accounts the retailer can run giveaways with small or big prizes to gain visibility, for example the prize could be like this: "Get all weekly groceries for free today", customer should write a comment or like this giveaway and automatically participate in the

contest. These kinds of actions are delightful surprises and make customers more enthusiastic and impulsive.

Moreover, push notification messages can be used to inform and make the customer understand the processes and new features of e-grocery for example, tips for navigating and searching products, delivery information, and payment methods. Notifications should be frequent but not too excessive to lead to a customer's annoyance (while muting notifications), as this is the worst and most undesirable scenario.

During e-transaction, a live support chat is an effective tool for communicating with a customer in real time, giving information, or solving questions and problems. Customer appreciates the retailer's interest and feels safe and valuable in his shopping journey while saving time. In fact, live support chat can bring more sales and promote upselling alternatives.

5.2.4 Promotion actions for Non-Loyal Customers

50% of e-grocery customers are non-loyal and this result must not disappoint the retailer. Such cases are a humbling experience and challenge for the retailer as there are way (always long-term) to turn them into loyal (if they turn) and the fact that all acquired knowledge (about them) is invaluable for the retailer. There is a Jewish old saying "Even the dust that a customer leaves has some value and is a profit" which means that non-loyal customers with a low frequency presence and few products purchased are always worth the retailer's attention.

The retailer should provide great experience and also spread the feeling that he cares about the customer. Customer will feel comfortable once it is understood that one retailer can serve and give everything he needs, instead of having many supply channels as this process can make him exhausted at some point. Personalized messages, or short surveys like "Tell me, what cosmetics do you use?", "Did you like the free sample of cold cuts or cheese products?", "Did you find everything you need?", "Tells us your opinion about private label products", "Packaging was good?" can alert them. Depending on their answers and their willingness, the retailer may give or offer some extra discounts.

Employing the power of existing reviews for purchased items or feedback of buying experience (on social media accounts) can boost the brand's reputation and positively affect non-loyals.

For cases that a customer had once purchased a product in previous orders, sending to the customer a personal email with other's reviews may affect and encourage him to repurchase. Furthermore, results from the dataset analysis have shown that non-loyal customers do not prefer private label products, which are favorable to other customers. Price, quality, and other's reviews are the most suitable incentives in combination with personalized recommendations for food and non-food would persuade customers to purchase. Additionally, the retailer could offer free samples of private products along with delivered orders to the customers. And in cases that customers increase their purchases, the retailer could offer the opportunity to select from a variety of free samples in accordance with their liking.

5.3 Monitoring Promotion Results

All marketing actions serve certain goals each time. For the scope of this dissertation personalized promotion actions were proposed increasing visits to e-grocery and expanding products selection with the intention to increase revenue and market share.

The effectiveness of promotion actions is very important and depends on how well actions have been prepared, monitored, and finally evaluated relating to goal's accomplishment. Nevertheless, as all the above are not the aim of this dissertation, it is strongly recommended to be the next step for future research.

6 CONCLUSION

This dissertation is an attempt to profile e-grocery customers of one of the largest supermarket chains in Greece for personalized promotion actions.

During the whole process it was understood that the human as evolves over time, affects societies, economies, and culture while in parallel is being affected by many external factors. Technology is the most important factor which influences every single aspect of life and promises to meet and solve human's needs. Thus, the technology has principal role in this dissertation, as with technological know-how and tools, the digital transformation of brick-and-mortar groceries was perceived and finally accepted. Moreover, the customer behavior and profiles were efficiently approached and in relation to existing literature, diversity of customer's profile and need for personalization were understood.

Afterwards, a real e-grocery dataset was analyzed, and customer profiles were recorded. Results showed similarities with certain customer profiles of the literature review and personalized promotion actions were suggested in order to increase visits (customer presence), and sales to as many product groups and retain existing customers.

From all of the above, companies must adapt a more customer centric approach in their business strategy and give all their efforts to support it, with regard not overpromising but to over deliver on their promise. Consequently, they will be rewarded morally and practically as customer will express complete devotion and trust (the verb 'trust' is more powerful than verb 'love') and perceive the retailer's understanding as care.

References

- [1] Aristotle, (2006), *Ethica Nikomachia*. Translated from ancient Greek by D. Lypourlis. Athens, Zitros
- [2] Tanea Team, (2013), *The first online supermarket in Greece*, Ta Nea online, Athens, 10 January. Available at: <https://www.tanea.gr/2013/01/10/economy/to-prwto-kainotomo-online-soypermarket-stin-ellada/> (Accessed: 02 September 2020)
- [3] Terblanche, Nic S. (2018). Revisiting the supermarket in-store customer shopping experience, *Journal of Retailing and Consumer Services*, 40:48-59
- [4] Pantano, E., Priporas, C. V., Sorace, S., & Iazzolino, G. (2017). Does innovation-orientation lead to retail industry growth? Empirical evidence from patent analysis. *Journal of Retailing and Consumer Services*, 34, 88-94
- [5] Bauerová, R. (2019). Online Grocery Shopping Acceptance: The Impact on The Perception of New Technologies and Loyalty in Retailing, *Central European Business Review*, 3, 18-34
- [6] López, D., Lorigo, T., López, U., (2011). Indoor Navigation and Product Recognition for Blind People Assisted Shopping, *International Workshop on Ambient Assisted Living*, June 2011, 33-40
- [7] Ramachandran, K. K., Karthick, M., Kumar, S., (2011). Online Shopping In The UK, *International Business & Economics Research Journal*, 10, 23-35
- [8] Viorel, C., Adam, C. R., (2013). The Consumer Resistance Behavior towards Innovation, *Procedia Economics and Finance Journal*, 6, 457-465
- [9] Smith, C., (2019). How omnichannel grocers can win as shopping moves online, Available at: <https://www.thinkwithgoogle.com/consumer-insights/online-grocery-shopping-behavior/> (Accessed: 09 September 2020)
- [10] Deloitte, (2017). The grocery digital divide-How consumer products companies can deliver on the new digital imperative, *Deloitte Digital*, 1-12
- [11] Ramus, K., Nielsen, N., (2005). Online grocery retailing what do consumers think?, *Internet Research*, 3, 335-352
- [12] Jangid, L., Mishra, S., Mathur, H., Songara, S., (2020). Online Shopping: A Future Market, *International Advanced Research Journal in Science*, 1-3
- [13] Paulo, D., Costa e Silva, S., Ferreira Bernardo M., (2018). How convenient is it? Delivering online shopping convenience to enhance customer satisfaction and encourage e-WOM, *Journal of Retailing and Consumer Services*, 44, 161-169

- [14] Constantinides, E., (2004). Influencing the online consumer's behavior: the web experience, *Internet Research*, 14, 111-126
- [15] Torres-Moraga, E., Vásquez-Parraga, A. Z., Zamora-González, J., (2018). Customer satisfaction and loyalty: start with the product, culminate with the brand, *Journal of Consumer Marketing*, 25, 302-313
- [16] Meyer-Waarden, L., Benavent, C., (2019). Grocery retail loyalty program effects: Self-selection or purchase behavior change?, *Journal of the Academy of Marketing Science*, 3, 345-358
- [17] Wirtz, J., Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., Klundert, J., Gurhan Canli, Z., Kandampully, J., (2013). Managing brands and customer engagement in online brand communities. *Journal of Service Management*, 24, 223-244.
- [18] Li, K. J., (2019). Behavior-Based Quality Discrimination, *Manufacturing & Service Operations Management*, 1-27
- [19] Ntawanga, F., Calitz, A.P., Barnard, L., (2008). Maintaining Customer Profiles in an E-commerce Environment, *ACM International Conference Proceeding Series*, 338, 169-179
- [20] Hyken, S., (2017). Personalized Customer Experience Increases Revenue and Loyalty, *Forbes*, Jersey City, 29 October 2019 Available at: <https://www.forbes.com/sites/shephyken/2017/10/29/personalized-customer-experience-increases-revenue-and-loyalty/#30d436ed4bd6>
- [21] Kubiak, B. F., Weichbroth, P., (2010). Cross And Up-selling Techniques in E-Commerce Activities, *Journal of Internet Banking and Commerce*, 15
- [22] Kamakura, W., (2007). Offering the Right Product to the Right Customer at the Right Time, *Journal of Relationship Marketing*, 41-58
- [23] Theodoridis, P. K., Chatzipanagiotou, K. C., (2009). Store image attributes and customer satisfaction across different customer profiles within the supermarket sector in Greece, *European Journal of Marketing*, 43, 708-734
- [24] Apeh, E., Žliobaite, I., Pechenizkiy, M., Gabrys, B., (2012). Predicting Multi-class Customer Profiles Based on Transactions: a Case Study in Food Sales, *SGAI Conf. Computer Science, Business*, 213-218
- [25] Ntawanga, F., Calitz, A.P., Barnard, L. (2009). Customer Profiling as a Service on the Internet, 11th *Annual Conference on World Wide Web Applications*, Cape Peninsula University of Technology, 2-4 September 2009

- [26] Puška, A. ,Stojanović, I., Šadić, S., Bečić, H., (2018). The Influence of Demographic Characteristics of Consumers on Decisions to Purchase Technical Products, *Singidunum Journal of Applied Sciences*, 15, 1-16
- [27] Rampi, F. M., Saerang, D. P. E., Rumokoy, F. S., (2014). The Influence of Demographic Factors (Age, Gender, Education and Income) on Consumer Buying Behavior of Online Shop, *Jurnal EMBA*, 2, 90-98
- [28] Sharma, K., Kaur, S., (2015). The Impact of Demographic Factors on Impulse Buying Behaviour of Online and Offline Consumers (A Case Study of Punjab, Haryana, New Delhi and Chandigarh), *International Journal of Engineering Technology, Management and Applied Sciences*, 3, 63-69
- [29] Minooei, O., Mokshapathy, S., Zare, M., Zare, M., (2015). Importance of Food Packaging and Its Relation to the Consumer's Demographic Profile, *International Journal of Business and Management Invention*, 4, 08-11
- [30] Kashif Iqbal, H., Mudasar Ghafoor, M., Shahbaz, S., (2013). Impact of Demographic Factors on Store Selection: An Insight in Pakistani Society, *Journal of Marketing Management*, 33-45
- [31] Aloomaa, A. G., Lawan, A. L., (2013). Effects of Consumer Demographic Variables on Clothes Buying Behaviour in Borno State, Nigeria, *International Journal of Basic and Applied Science*, 4, 791-799
- [32] Ahn, J., (2020). Effectiveness of demographic characteristics in understanding Malaysian customers' perceived value of the integrated resort sector, *Journal of Vacation Marketing*, 26, 195-210
- [33] Tifferet, S., Herstein, R., (2012). Gender differences in brand commitment, impulse buying, and hedonic consumption, *Journal of Product & Brand Management*, 21, 176-182
- [34] Walters, M., Bekker, J., (2017). Customer Super-Profiling Demonstrator to Enable Efficient Targeting in Marketing Campaigns, *South African Journal of Industrial Engineering*, 28, 113-127
- [35] Kotler, P., Kotler, K. L., (2011). *Marketing Management*, New Jersey, Pearson Education, Inc.
- [36] Hosseini, M., Shabani, M., (2015).New approach to customer segmentation based on changes in customer value, *Journal of Marketing Analytics*, 3, 110-121
- [37] Muruganantham, G., Bhakat, R. S., (2013). A Review of Impulse Buying Behavior, *International Journal of Marketing Studies*, 5, 149-160
- [38] Cho, J., Ching, G., Luong, T., (2014). Impulse buying behavior of Vietnamese consumers in supermarket setting, *International Journal of Research Studies in Management*, 3, 33-50

- [39] Sharma, P., Sivakumaran, B., Marshall, R., (2010). Impulse buying and Variety seeking: A trait-correlates, *Journal of Business Research*, 63, 276-283
- [40] Hui, S. K., Inman, J. J., Huang, Y., Suher, J., (2013). The Effect of In-Store Travel Distance on Unplanned Spending Applications to Mobile Promotion Strategies, *Journal of Marketing*, 77, 1-16
- [41] Gevelber, L., (2015). *Why Consumer Intent Is More Powerful than Demographics*, Available at: <https://www.thinkwithgoogle.com/consumer-insights/consumer-trends/why-consumer-intent-more-powerful-than-demographics/> (Accessed: 11 October 2020)
- [42] Rogers, C., (2019). Why behaviour beats demographics when it comes to segmentation, Available at: <https://www.marketingweek.com/behaviour-demographics-segmentation/> (Accessed: 11 October 2020)
- [43] An, J., Kwak, H., Jung, S., Salminen, J., Jansen, B., (2017). Customer segmentation using online platforms isolating behavioral and demographic segments for persona creation via aggregated user data, *Social Network Analysis and Mining*, 8, 1-19
- [44] Townsend, M., (2019). *The 7 Characteristics That Define a Loyal Customer*, Available at: <https://www.moderntiredealer.com/articles/15908-the-7-characteristics-that-define-a-loyal-customer> (Accessed: 14 October 2020)
- [45] The Young Entrepreneur Council, (2016). *9 Sure Signs of a Loyal Customer*, Available at: <https://smallbiztrends.com/2016/09/how-to-identify-a-loyal-customer.html> (Accessed: 14 October 2020)
- [46] Vilkaite-Vaitone, N., Skackauskiene, I., (2020). Service Customer Loyalty: An Evaluation Based on Loyalty Factors, *Sustainability*, 12, 3-20
- [47] Hofman-Kohlmeyer, M., (2016). Customer Loyalty Program as a Tool of Customer Retention, *CBU International Conference Proceedings*, 4, 199-203
- [48] Brophy, M., (2019). *What Is a Shopper Profile: 8 Types of Shoppers*, Available at: <https://fitsmallbusiness.com/shopper-profile/> (Accessed: 20 October 2020)
- [49] Kaur Chhabra, G., (2012). How to Handle Different Types of Retail Shoppers and Make Shopping a Memorable Experience for Them, *International Journal of Marketing and Technology*, 2, 209-217
- [50] Verhagen, T., van Dolen, W., (2010). The influence of online store beliefs on consumer online impulse buying: A model and empirical application, *Information & Management*, 48, 320-327

- [51] Wells, J. D., Parboteeah, V., Valacich, J. S., (2011). Research Article Online Impulse Buying: Understanding the Interplay between Consumer Impulsiveness and Website Quality, *Journal of the Association for Information Systems*, 12, 32-56
- [52] Lim, Y. M., Cham, T., (2014). A profile of the Internet shoppers: Evidence from nine countries, *Telematics and Informatics*, 32, 344-354
- [53] Kazi, A. G., Khokhar A. A., Qureshi, P., Murtaza, F., (2019). The Impact of Social Media on Impulse Buying Behaviour in Hyderabad Sindh Pakistan, *International Journal of Entrepreneurial Research*, 2. 8-12
- [54] Thomas, A., Garland, R., (2004). Grocery shopping: list and non-list usage, *Marketing Intelligence & Planning*, 22, 623-635
- [55] Food Marketing Institute, Shopping Trends, *U.S Grocery Shopper Trends 2015*, Available at: <https://www.fmi.org/docs/default-source/document-share/fmitrends15-exec-sum-06-02-15.pdf> (Accessed: 20 October 2020)
- [56] National Institute of Aging, Healthy Eating, *Shopping for Food That's Good for You*, Available at: <https://www.nia.nih.gov/health/shopping-food-thats-good-you> (Accessed: 20 October 2020)
- [57] Wernbom, J., (2020). Healthy believers: 4 types of health conscious consumers, Available at: <https://www.bayneurope.com/en/four-types-of-health-conscious-consumers/1106600> (Accessed: 24 October 2020)
- [58] Kurnia, P., Sun, X., Collins R., (2013). People's perceptions towards organic food in Yogyakarta Province, Indonesia, *Acta Horticulturae*, 185-192
- [59] Drugova, T., Curtis, K., Akhundjanov S., (2020). Organic wheat products and consumer choice: a market segmentation analysis, *British Food Journal*, 122, 2341-2358
- [60] Beneke. J., (2010). Consumer perceptions of private label brands within the retail grocery sector of South Africa, *African Journal of Business Management*, 4, 203-220
- [61] Valaskova, K., Kliestikova, J., Krizanova, A., (2018). Consumer Perceptions of Private Label Products: An Empirical Study, *Journal of Competitiveness*, 10, 149-163
- [62] Nyengerai, S., Manjoro, E., (2014). Household Size and Brand Perception: The Case of Store Brands in Zimbabwe, *International Journal of Academic Research in Business and Social Sciences*, 4, 98-104
- [63] Bhatt, S., Bhatt, A., (2016). Segmenting Private Label Shoppers: An Empirical Study, *International Journal on Customer Relations*, 2, 30-39