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## **Business Plan of E-shop Development**

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## ΠΕΡΙΛΗΨΗ

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Σε αυτή τη διπλωματική εργασία αρχικά γίνεται μια ανάλυση του Ηλεκτρονικού Εμπορίου. Πιο αναλυτικά εξηγείται τι είναι το Η.Ε. και δίνεται ο ορισμός του. Ακολουθεί το ιστορικό του Η.Ε. καθώς και οι κατηγορίες στις οποίες αυτό μπορεί να χωριστεί. Αναλυτικά φαίνονται τα αρνητικά και τα θετικά του Η.Ε. τόσο για τους πελάτες όσο και για τους επιχειρηματίες. Παρουσιάζονται επίσης κάποια στατιστικά που αφορούν τις ηλεκτρονικές αγορές.

Αμέσως μετά βλέπουμε τι είναι ένα ηλεκτρονικό κατάστημα και ένα απλό παράδειγμα πως αυτό λειτουργεί. Τα συστήματα διαχείρισης περιεχομένου είναι ένα σημαντικό κομμάτι καθώς σχετίζονται με την τροποποίηση του περιεχομένου ενός διαδικτυακού ιστότοπου. Εν συνεχεία βλέπουμε ποιες είναι οι πιο γνωστές πλατφόρμες για το Η.Ε., ποια είναι τα κύρια χαρακτηριστικά της καθεμιάς, τόσο τα θετικά όσο και τα αρνητικά. Παρουσιάζονται και κάποια στατιστικά που αφορούν την προτίμηση χρήσης της εκάστοτε πλατφόρμας τόσο στην Ελλάδα όσο και παγκοσμίως.

Τέλος, γίνεται η ανάλυση ενός επιχειρηματικού σχεδίου ενός ηλεκτρονικού καταστήματος. Πιο αναλυτικά αναγράφονται η αποστολή, το όραμα, το προϊόν, η αγορά και το προφίλ του επιχειρηματία για το συγκεκριμένο ηλεκτρονικό κατάστημα. Ακολουθεί η ανάλυση SWOT, το Capex-Opex και η ανάλυση του ύψους της προσφερόμενης τιμής. Δεν θα μπορούσε να λείπει η ανάλυση του υπολογισμού της προβλεπόμενης ζήτησης του προϊόντος, η οποία έχει γίνει βάσει της χρήσης των μοντέλων Gompertz και Logistic. Στο τελευταίο κομμάτι γίνεται η παρουσίαση του υπολογισμού των ταμειακών ροών, της καθαρής παρούσας αξίας, του εσωτερικού βαθμού απόδοσης, της περιόδου αποπληρωμής της αρχικής επένδυσης καθώς και του νεκρού σημείου.

## ABSTRACT

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In this thesis, an analysis of E-Commerce is first made. It is explained in more details what E-commerce is and its definition is given. The history of E-commerce follows as well as the categories into which this can be divided. In detail the pros and cons of the E-commerce are presented, both from the client's and the entrepreneur's point of view. There are also some statistics concerning online purchases.

Afterwards we can see what an online store is and a simple example of how it works. Content management systems are an important part as they relate to modifying the content of an online site. Furthermore, the most well-known eCommerce platforms are presented with their main positive and negative features. There are also some statistics on the preference of using each eCommerce platform in Greece and worldwide.

Finally, the analysis of the business plan for the E-shop development is made. More specifically, the mission, vision, product, market and entrepreneur's profile for the E-shop are listed. This is followed by the SWOT analysis, Capex-Opex and the pricing analysis. The analysis of the financial forecasting for the product based on the use of the Gompertz and Logistic models could not be missing. The last section presents the cash flow calculations, the net present value, the internal rate of return, the payback period of the initial investment and the break-even point.

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## TABLE OF NOTATIONS

EDI	Electronic Data Interchange
EFT	Electronic Funds Transfer
B2C	Business to Customer
B2B	Business to Business
B2G	Business to Government
C2C	Customer to Customer
C2B	Customer to Business
C2G	Customer to Government
G2C	Government to Customer
G2B	Government to Business
G2G	Government to Government
CMS	Content Management System

SEO	Search Engine Optimization
GNU	General Public License
OSL	Open Software License
AJAX	Asynchronous JavaScript and XML
SSL	Secure Sockets Layer
SaaS	Software as a service
PHP	Hypertext Preprocessor
MySQL	My Structured Query Language
SWOT	Strengths Weaknesses Opportunities Threats
HTML	Hypertext Markup Language
CAPEX	Capital Expenditures
OPEX	Operating Expenses
MSE	Mean Squared Error
MAPE	Mean Absolute Percentage Error
NPV	Net Present Value
IRR	Internal Rate of Return



## 1. Intro to E-commerce

The penetration of electronic computers into the daily life of the average human in the "advanced" world is now an undeniable and irreversible event, as well as the development of telecommunications in the various forms (fiber optics, mobile phones, and satellite connections). In the recent past, the transactions and purchases of the consumers and merchants' sales respectively were made using purely conventional means. In order to buy what they wanted or to accept a service, consumers had to go to the place of the supplier of the goods or services. Nowadays, the way of trading has changed radically. One of the new and fastest ways of serving the consumers is e-commerce, which is growing at a very high rate.

The need for e-commerce stems from the requirement of businesses and governments for better use of computer and telecommunications technology to improve communication with customers, citizens, consumers, business processes and the exchange of information in-house, and among businesses as well. E-commerce offers the possibility of exchanging both products (such as consumer goods) and services (for example, information services, financial and legal services) between two or more parts using computers while it includes many different activities such as: e-trade in goods and services, delivery of digital content (intangible goods), e-buying and e-selling stockholding, commercial auctions, government procurements and sales direct to consumer as well as marketing and after-shopping service.

## 2. The definition E-commerce



Figure 1 e-Commerce

By the term commerce we mean the resale of material goods or services for profitability. Commerce can be the industry, the craft industry and in general any work that contributes directly or indirectly to the prosecution of trade, such as banks, commercial agents, etc. Accordingly, E-commerce (electronic commerce) is defined as the trade providing goods and services that are carried out remotely by electronic means, based on electronic data transmission. E-commerce is a complete online transaction without the need of the physical presence of the parties, the sellers' or the buyers. By simply defining it, we could say that e-commerce is the communication and the conclusion of commercial transactions using electronic means between businesses, or between businesses and their customers. Commercial transactions include the exchange of value such as money, between organizations and individuals. For the same reason value exchange is important for e-commerce as well because without it, we would not be able to talk about commerce. E-commerce includes all these processes: development, promotion, sale, delivery, service and payment for products and services. Of course, the range of exchanges that are conducted electronically has grown a lot with the widespread use of the Internet.

### 3. **How E-commerce began**

The evolution and course of e-commerce is indissolubly linked to the development of computer networks and the Internet.

In the 1970s, these technologies first appeared:

- EFT: Electronic transfer of money from banks through private networks. This system is still relying on banks today to ensure that money is transferred securely to the company or to the person who requested the specific action.
- EDI: Electronic data exchange in businesses started to have the ability to electronically send their orders and to issue electronically invoices.

This contributed to the modernization of processes between businesses as the automation had increased, thus reducing documents and data on paper and allowing businesses to communicate electronically.

In the 1980s, credit cards, automated bank machines and telephone deposits are were being developed, which are also forms of e-commerce. Since the '90s and then because the internet evolved significantly and became known to more users, the E-commerce is being deepen and expanding into new areas. To that contributes also that electronic networks provide new forms of communication such as e-mail, e-conference, discussion groups and file transfer (FTP).

In the middle of this decade, personal computers dominate mainly Windows operating systems. Windows is an operating system that offers great ease of use, solving the problem of publishing and finding information on the Internet.

Businesses are now targeting to a wide range of consumers, everywhere in the world without the need for the consumer to be at the sales point. This fact strengthens the trade and the market, which from domestic becomes now international. Today, e-commerce includes everything, from digital content orders for direct online consumption to ordering products and services. Establishing encryption methods for the content and identifying the identity of the emails' sender, as well as the relevant legislation in the import-export and communications sectors, guarantee the safe conduct of international electronic transactions.

E-commerce is now becoming a very cheap way to make a huge volume of transactions. Additionally, it helps in operating many different business activities parallel at the same time, which allows small businesses to compete the larger ones on much more favorable terms.

#### 4. eCommerce Timeline

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1969	CompuServe, the first major firm for eCommerce, is founded.
1979	Michael Aldrich invented the online shopping, the Teleputer which was a center of a combination of PC, TV and telecommunications networking technologies.
1982	Boston Computer Exchange was the first eCommerce platform which existed even before the Internet became widely available to everyone and it was for selling

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	used computers. It was founded by Alexander Randall 5th and Cameron Hall. The same year Minitel was invented, which was an online service for Videotex.
1990	World Wide Web was invented by Tim Berners-Lee. From then on anyone can browse eCommerce sites.
1992	The Book Stacks Unlimited e-bookstore was created by Charles M. Stack.
1994	The Netscape Navigator was created, which particularly is a web browser. Furthermore, Ipswitch appeared which was the first available Server for sale and directly download.
1995	The biggest eCommerce companies, Amazon and E-bay launch. Amazon was founded by Jeff Bezos while E-bay was founded by Pierre Omidyar. At the same year the National Science Foundation with the NSFNET (National Science Foundation Network) allows the use of the Internet to the public.
1996	DoubleClick is for online advertising. It was founded by Kevin O'Connor and Dwight Merriman.
1997	Initial release of VirtueMart.
1998	PayPal was introduced as a security e payment system for online money transfers. In 2000 it fused with X.com and from then on PayPal became very famous.
1999	Many online marketplaces launch. One is Zappos for shoes and others, another one is Tradera like E-bay and also Alibaba.com. At the same year Amazon invented the 1-Click patent for faster purchases.
2000	Google AdWords, known today as Google Ads, launches as a manner of advertising an online store to the public with the use of the Google search tool.
2004	Anthony Casalena launched publicly Squarespace.

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2005	Etsy was introduced, which is an online market especially for individual, small, handmade sellers. Etsy was created by Robert Kalin, Chris Maguire, and Haim Schoppik. Moreover, Amazon Prime was launched. Amazon Prime is a service from Amazon in order for the customers to get free two-day delivery and other benefits.
2006	Shopify launches. It was founded by Tobias Luetke, Daniel Weinand and Scott Lake in 2004.
2007	PrestaShop was founded by Bruno L��v��que, Igor Schlumberger.
2008	Magento launches.
2009	For the first time debit and credit cards were accepted by retailers anywhere. This was founded by Jack Dorsey and Jim McKelvey and they named it Square from the firm's square shaped card readers. BigCommerce also launches. The founders of BigCommerce are Eddie Machaalani and Mitchell Harper.
2010	OpenCarts' initial release.
2011	Google Wallet or Google Pay Send was a peer-to-peer payment service for sending or receiving money via a cell phone or a computer with no cost. Today this service is included in Google Play. Stripe, founded from Patrick Collison and John Collison, created a software for online payments. WooCommerce was first released and its original authors were Mike Jolley and James Koster.
2013	China is now the biggest eCommerce market all over the world. Facebook allows now sponsor posts which aim to give publicity to these posts.
2014	Apple Pay, a mobile app, was showed up for those who have an Apple device and want to use it for payments. The online marketplace Jet.com launches aiming to the lowest pricing for longer shipping and mass ordering. Alibaba's Singles' Days' sales rise at US\$9.3 billion.

2015	Android Pay was launched by Google. Pinterest adds the possibility for those who want to sell their Pins. Cyber Monday sales reach \$3 billion. Alibaba's Singles' Days' sales rise at US\$14.3 billion.
2016	Alibaba's Singles' Days' sales rise now at US\$17.7 billion.
2017	Instagram Shopping came to the foreground. Cyber Monday sales reached the \$6.59 billion.

Table 1 eCommerce Timeline

## 5. Categories of E-commerce

There are many and varied types of E-commerce as well as many ways to characterize them. Typically, we distinguish the types from the market relationship, i.e. who sells to whom. The m-commerce type is the only one distinguished based on the technology. Below is the analysis of the types of E-commerce.

	Business	Consumer	Government
Business	B2B	B2C	B2G
Consumer	C2B	C2C	C2G
Government	G2B	G2C	G2G

Table 2 Forms of Transactions between Stakeholders

### B2B

B2B e-commerce is the largest form of e-commerce with about \$ 3.6 trillion dollars in US transactions in 2010, and businesses are mainly engaged with sales to other businesses. Basically, it can be characterized as the e- wholesale trade. The absolute value of B2B e-commerce is

potentially huge. There are two key business models that are used in this kind: the network market points, which include electronic distributors, electronic vendors, exchanges and business partnerships, and private industrial networks that include networks of individual companies and networks covering a whole industry.

## B2C

The most referent type of e-commerce is e-commerce between businesses and consumers, according to which e-businesses aim to attract private consumers. Basically, it is the retail e-commerce. There are seven different B2C business models that belong to that category: gates, retailers, hardware providers, brokers, service providers and community service providers. This category spread rapidly with the development of the World Wide Web and Internet payment technologies. Now there are shopping centers all over the Internet that offer every kind of consumer good. Specifically, IT companies, the first to enter this e-commerce site, have established a new Internet market and offer on- line software products, as well as services, upgrades and technical support to their customers.

## B2G

E-commerce B2G concerns transactions between companies and public administration bodies as well as the sale of various products to government agencies by businesses. For example, in the United States, details of forthcoming government procurement are published on the Internet and companies can respond electronically. This category is still the early stages, but it is going to expand rapidly. Already several applications are planned to be developed in order to serve the transactions of citizens and businesses with public administration bodies. In this category of applications belong the TAXIS program, which has been operating the last years in Greece and through which tax returns, VAT returns, etc. can be submitted. Also, the website [www.e-gov.gr](http://www.e-gov.gr) is working, which aspires to gather all online government services.

## C2B

This type of E-commerce is not that much popular also, but it is growing in prevalence. It refers to the consumers selling goods or services to businesses, and it is equivalent to a single proprietorship serving a bigger business. Reverse auctions, service sites for example Upwork, and the frequent blog monetization strategies such as affiliate marketing or Google AdSense also belong to that category.

## C2C

E-commerce C2C allows consumers the ability to sell to each other with the help of an online purchasing service provider such as eBay or Amazon. In 2010 the size of the C2C global market was over 80 billion dollars. In this type of e-commerce, the consumer prepares the product for sale, he/she exposes it to an auction or sale and relies on the online purchasing service provider to provide directory, search engine and transaction features in order to make products viewable, discoverable, and payable.

## C2G

This category covers all transactions between consumers and public agencies. More specifically it has to do with individuals paying the government for taxes or tuition to universities.

## G2B

G2B E-commerce refers to the information and services that are provided to the businesses by the government. The information is shared through a network of government websites. The businesses use that information to apply for needed permissions for example when starting a new business and for other specifications.



## G2C

The G2C E-commerce alludes to those activities that are performed between the government and its citizens or consumers, including paying taxes, registering vehicles, and providing information and services.

## G2G

Government to government is the electronic sharing of data and/or information systems intergovernmental, namely between government agencies, departments or organizations. The goal of G2G is to support e-government initiatives by improving communication, access to data and data exchange.

## m-Commerce

Mobile commerce refers to the use of wireless digital devices for online transactions, i.e., connection of personal computers, small laptops, tablets and smart phones on the Web. After connecting, consumers can carry out transactions such as banking, travel bookings, purchase and stock price comparison prices, etc. Briefly it is the process of buying and selling products or services via wireless technology.

## 6. Advantages of E-commerce

E-commerce is developing a range of benefits for both consumers and businesses which are developed below.

- Sell Internationally

Access to new markets due to the worldwide diffusion of digital networks and the two-way communication, e-commerce represents a new channel for the sale of existing products.

The businessman now has the ability to sell the products anywhere in the world. This also helps consumers in remote areas to order what they need without having to travel to the specific store to buy it.

- Better, ongoing and always available service

E-commerce operates 24 hours a day, 7 days a week, without breaks which is a very powerful competitive tool. Products purchased by the consumer are delivered in a very short space of time, and usually he or she can track the progress of his order at any time. E-commerce can improve customer service by automating the response process to the most common questions. Thanks to the global network access, a large business with a small number of staff can maintain a single 24-hour support center capable of responding inquiries that cannot be answered automatically from its database directly to customer all around the world. E-commerce creates a new relationship between vendors and customers, with frequent and direct communication, the provision of richer, personalized information, and the collection of customer preferences and behavior. Customer relationship is one of the first features of a business that changes with the application of e-commerce. The business must be genuinely sensitive to the needs and wishes of customers and adjust its output or inventories to demand fluctuations, which are directly informed by customer inquiries through the network. This is an activity that adds value to the business's marketing. E-commerce is achieved in many cases better and faster customer service. Directly connected service increases customer satisfaction. Instead of having a telephone service at an online store, for example, customers can be given direct access to their personal account. This saves time and money for the business.

- Saving time

By taking advantage of the benefits offered to him, the consumer can constantly be informed about the products of each store without having to spend time to visit the physical store. In that way the consumer can find what he needs and at the same time he does not need to spend energy or time searching for hours.

- Low financial cost

Using a digital network for publishing and transmitting information in electronic form can reduce costs compared to paper publishing. Some areas where cost reduction is directly visible include digital document transmitting, business-to-business and business-to-suppliers communications, as well as customer support on a 24-hour basis without the need for a call center. In general, for a business, sales can be increased without increasing the expenses.

- Attractive offers for the customers

Another good point of E-commerce is the inexpensive prices compared to the prices in the physical stores. E-commerce allows the simplification and automation of many activities, particularly those relating to customer or supplier communications. Thus, the overall cycle from designing the product to delivery to the final consumer is simplified, many steps involving the use of intermediates are eliminated or consolidated, and the cost of production and disposal of products is reduced. Moreover, E-commerce reduces logistical problems and can put a small business on an equal level with others bigger. Unlike a regular store, there is no physical presentation space for the products. This makes e-commerce much more cost-effective. Also, in many cases a service over the internet costs less than if it was done physically. An example is financial transactions that can be done electronically in a fast and efficient way. In general, i.e. no staff, infrastructure, power energy etc. are needed and so the prices can get lower.

- Plenty of options available

The competition is now very big since the E-commerce has no geographical borders. As a result, the consumer has also the ability to select what he/she wants from a huge variety and also, he/she can compare the prices of the same product/service in a very big range.

- Available reviews

Customers have now the ability to leave comments/reviews for the product they bought, for example if they are satisfied, if they took what they expected etc. Doing that helps a lot the new customer to decide whether the product fits his expectations or not.

- Acknowledging easier the needs and the preferences

E-commerce helps consumer-vendor interaction. So, companies collect information on consumer needs, interests, preferences and behavior. This knowledge is valuable and can tailor the strategies of the businesses accordingly to attract more people or to improve a product or even to create new products.

- Environment friendly

All the electronic transactions have helped in the decrease of the use of paper, since all the information has been digitized. That is very important especially nowadays that our environment is under threat.

## 7. **Disadvantages of E-commerce**

Respectively there are some restrictions of E-commerce that appear to both consumers and businesses and we can see them below.

- Lack of personal contact

E-commerce cannot offer the interaction offered by personal service. Shopping through online stores is impersonal; the consumer never gets to know the provider. This means that there is limited feedback on how people view the products and the services being offered. If the only element is buying or not products, then it is insufficient to evaluate the change or the improvement both the strategy of an online store and its products and services.

Successful business use of e-commerce typically involves strategies for acquiring and implementing customer feedback and criticism. This helps businesses understand, anticipate and respond to the changing needs and preferences of customers, which is important due to the constant changes that occur on the Internet.

- Unsure about the quality

In the case of e-commerce, consumers can not test the product, see it or touch it before its delivery. This often creates serious problems and the consumer can never be sure of his purchase. More precisely E-commerce does not leave the field free for all our human senses like smell, touch and taste. There are many ways in which the internet does not transfer the wealth of the world's experiences. This lack of information covering the entire range of senses suggests that people are buying generic goods or things over the internet they have seen or experienced previously and for which there is little doubt.

- Security issues

There is always the risk for the consumer to become a victim of fraud, since in order for electronic transactions to take place, it is often necessary to enter personal information, such as the credit card number. In general, market security over the internet is one of the factors that sometimes inhibit consumers in making online purchases. There are cases where there is a lack of protection on the buyer's personal data and on the security of transactions. The existence of computer viruses also creates a climate of mistrust. Viruses cause unnecessary delays, destroy files, storage problems, and other similar difficulties. The risk of hackers accessing files and accounts adds more stress to both businesses and consumers. The consumer shopping online has to check all the information that concerns his transaction. The supplier on the other hand is obliged to indicate all his details on the website, namely his identity, his main activity, the geographical address, the commercial register in which he is registered, the registration number, if he/she is registered, and all of the details of the competent supervisory authority if the activity of the supplier is subject to an authorization regime. It is also necessary that the identity of the sender of a message

can be confirmed so that the recipient can be sure that the message is actually received by the person who signs it and has not been falsified by a third party.

- E-commerce is not for everyone

E-commerce is not addressed to everyone, but only to those who know how to use the internet. Therefore, for example older people have difficulty, or they do not even try to make purchases from the Internet. Moreover, the exponential increase in the amount of available information through digital infrastructure makes it more and more difficult to separate and find specific information. Users want to be able to find information with the least effort, but often lack the tools and knowledge required for an effective search. Businesses want to support their digital infrastructure, but they have difficulty in choosing the right equipment and software, which is often due to the constant change of specifications. Also, even if a business has found the right solution, its prospective customers may have trouble finding the business, a typical vicious circle case.

- Late delivery and return

Sometimes the products even though it is written that the delivery will take only a few days, it does not reach at the correct time and the customer must wait for much longer without knowing exactly how long. The procedure of returning a product involves also a difficulty. The customer has questions on the way the products will be returned, who will pay for the return fees, how long will that procedure take etc.

- Cost of transactions

The total cost of transactions is affected by the cost of transporting the goods. For example, any benefits arising from the purchase of products by a company based in Greece are cut off from the cost the consumer has to pay if they are to be delivered to the United States of America. High delivery costs inhibit the purchase of individual goods from different businesses abroad. It is preferable to purchase all the products from one company because they can be packed and shipped all together, thus the delivery costs are burdening.

- E-commerce is highly competitive

Nowadays, everyone has the ability to build their own e-shop without the need for special processes. However, customers will restrict their purchases only to well-known websites or pages that usually have been suggested to them by someone else. As a result, it is difficult for a new small business to get well known and there comes the need for E-marketing.

- During a site crash no one can buy

In case of site crash no one can access the site. For a business to avoid it, they have to ensure that their website is hosted on the right platform.

## 8. **Statistics about Online Purchases**

According to the statistics from Eurostat (<https://ec.europa.eu/eurostat/home?>), in the following charts we can see the penetration of E-commerce. Individuals include both males and females from the ages of 15 till 75 years old.

In the first chart is shown the internet purchases by individuals that have taken place in Greece from 2009 till 2018. We can see that the online purchases in our country have raised a lot the last 9 years. Obviously with the radical technological changes, more and more people get familiar with the online purchases. The rate of increase from 2009 till 2018 is around 375%.

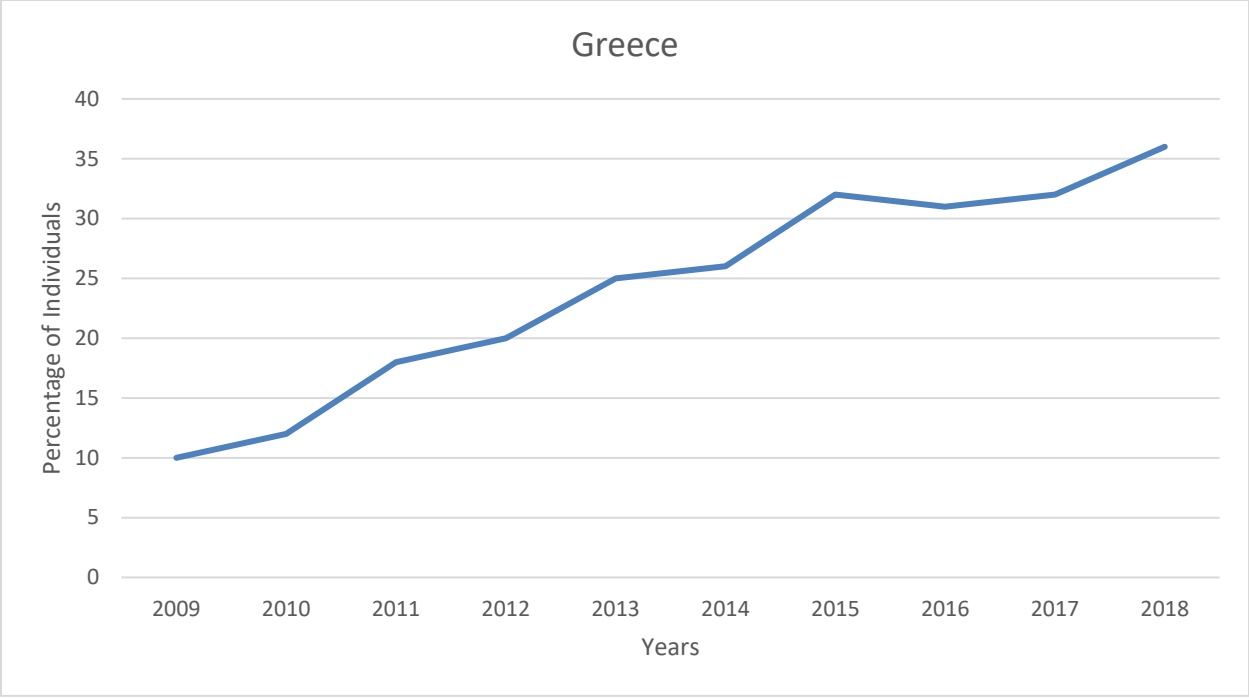


Figure 2 Internet Purchases by Individuals, Greece, 2009 till 2018

In the second chart we can see the percentage of the individuals that made internet purchases in thirty-three European countries in the year 2018. As shown below our country is somewhere in the middle as far as online purchases are concerned during 2018, whereas the countries with the bigger percentages are Denmark, United Kingdom and Netherlands. The countries with the lowest percentages are Montenegro, Romania and Bulgaria.



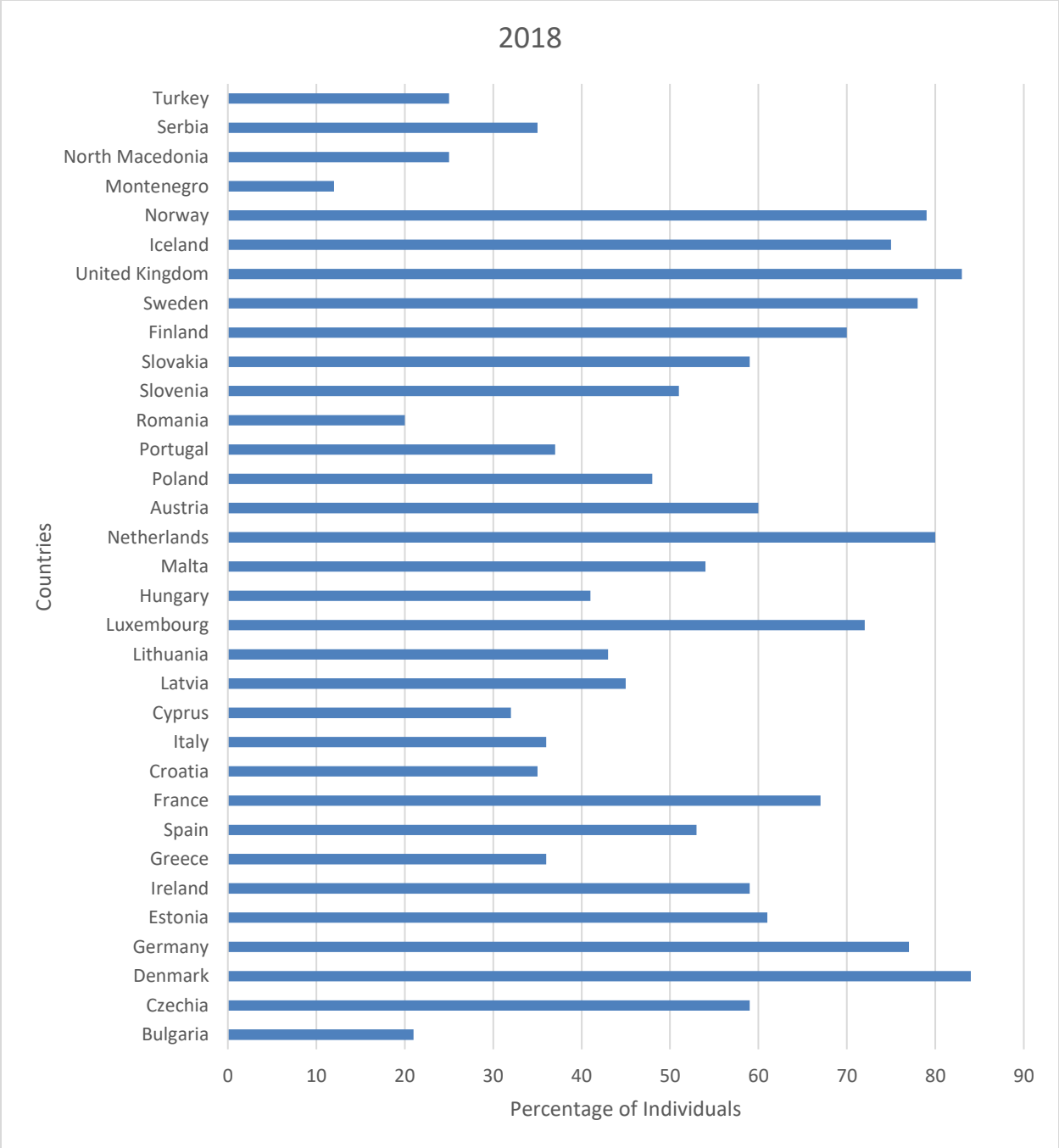


Figure 3 Percentage of Individuals that made Internet Purchases in thirty-three European countries, 2018

The following graph shows us that the main barrier is that people prefer to shop in person than online. Obviously, people are not yet that used to buy something without seeing it, touching it etc. and also that they prefer that personal contact when buying. Data given are from Eurostat

(<https://ec.europa.eu/eurostat/home?>) and they concern also individuals of both sexes at the ages 15 till 75.

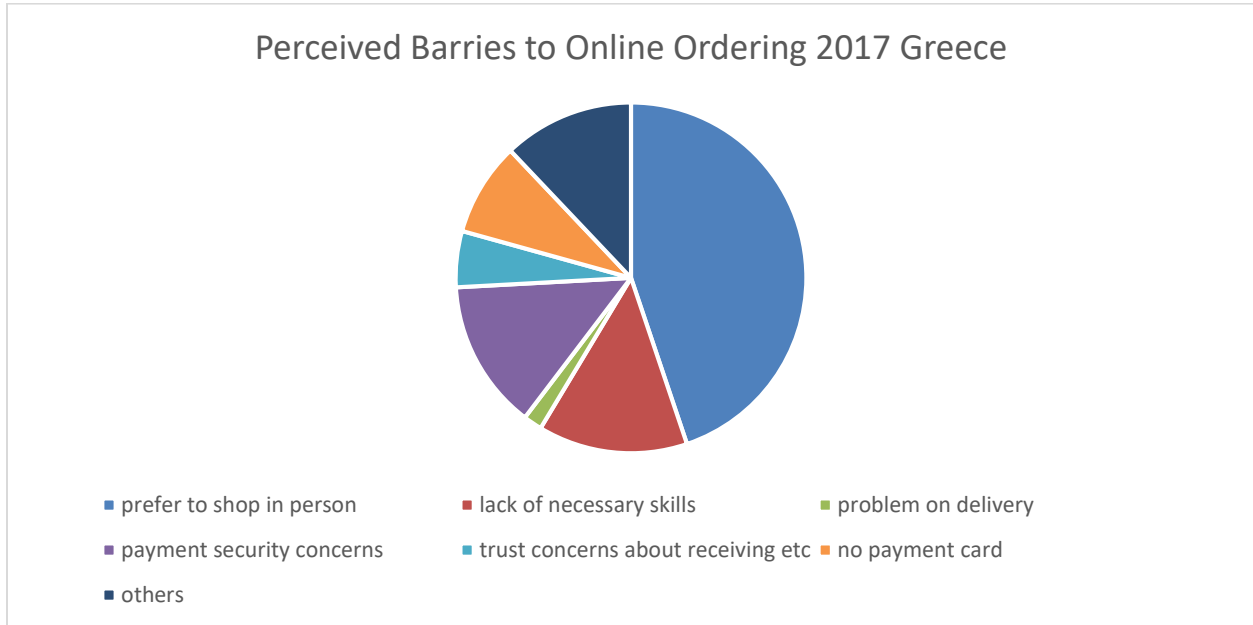


Figure 4 Perceived Barriers to Online Ordering, Greece, 2017

The following graph shows the percentage of the individuals that order online based on the type of the purchases in Greece in the year 2018. As we can see the highest percentage of online purchases concern clothes and sports goods and in the second place comes the travel and holiday accommodation. All the other types of purchases still tend to be under the 10% of the individuals.



Figure 5 Online Purchases, Greece, 2018

In the last graph is shown the frequency of the online purchases that took place in Greece in the year 2018 for the last three months. Based on the chart we see that the biggest percentage, specifically the 34% of the individuals have never bought from the internet. That is something unexpected thinking that technology has entered into our lives for good. Nevertheless, we could assume that this could be due to the older people that are not that used with the technology and probably that percentage will be totally different in the next generation.

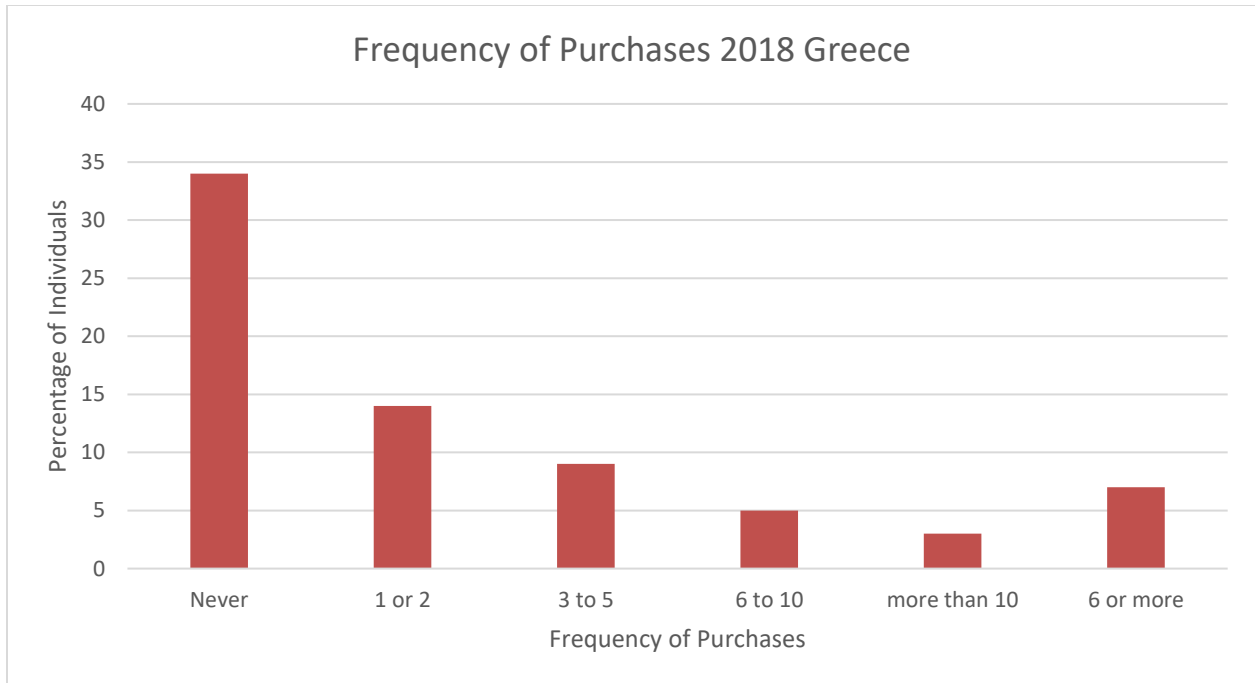


Figure 6 Frequency of Purchases, Greece, 2018

## 9. E-shop



Figure 7 E-shop

The e-shop is the term used by someone to refer to a site through which different types of sales can be made. In order to operate properly, it requires proper and frequent care, courteous attitude towards customers, prompt service and direct response of customer e-mails. E-shop as physical shops are geared around a transaction, an exchange of money for materials or services.

If someone wants to create an e-shop, they must follow some steps. Initially, the products for sale must necessary be identified. Then the range of the buyers must be determined, to whom the products of the e-shop will be addressed. To create an e-shop, there is no need for a physical store. Thus, the only requirement for a businessman for the creation of the e-shop is the shop's statement to the relevant department of the Tax Office and the professional starting for himself. The terms and procedures applicable to a physical store are exactly the same as those of an e-shop.

The next step is to select a domain name and find a company that is responsible for developing the online shop in order to be functional, reliable, and secure. Of course, for small retailers or for new ones there is the option of making their page on their own using a user-friendly environment platform in case they do not have programming knowledge. Thereupon a decision must be taken on how to group the available products at the web page. Of course, a database system is required so that checks of the items can be made in order to be aware of the available stock at any time. Subsequently, the payment methods of the customers' orders must be determined. Nowadays, the most well-known ways of payment are cash on delivery, web or not bank deposit and credit card payments or PayPal payments. However, in order for on-line payments to be available, the trader should contact a bank that has an on-line payment system. Consequently, a courier company must be found that will deliver the products. In that way can be accomplished better products' prices and immediate delivery and receipt of customer orders. Furthermore, it is easier to determine the exact transporting cost as well as the time of delivery.

A refund product policy or money refund should be set in case of problem with the product. Moreover, there must exist the ability to cancel an order within a certain period of time since it is made. The terms of use of the online shop should also be specified. That is, the user's rights and obligations, the terms of transactions and payment methods, the rights and obligations of the owner of the e-shop and everything else that is necessary for the proper operation of the shop.

#### **i. How works a classic E-shop**

For the user's point of view, a classic e-commerce system works like that. A customer sits at a computer and searches for the things she/he wants to order. At that point her/his browser using the

Internet makes a two-way communication with the Web Server of the store. The Web Server sends the list of the selected items to the order manager in order to check if they are in stock through searching in the database. The stock database establishes if there is stock in that item otherwise estimates how long will it take the supplies to come. In case the item is in stock the order manager communicates with the merchant system so the customer can pay by card. After some checks the bank computer affirms the accuracy of the data and the available funds. Then the transaction is authorized by the merchant system. After that the Web server is notified about the successful transaction. Now the customer sees a message in her monitor, usually it is like “thank you, the order was successful”. Right after the warehouse receives a request from the order manager to deal with the items. Someone takes the collected items and delivers them to the destination. Then, a confirmation email is sent from the warehouse computer to the customer so as to inform the customer that his/her order is on its way. Of all the procedure the only visible to the customer is the monitor of her computer and the arrived order.

## 10.CMS



Figure 8 CMS

A content management system (CMS) is a software for collaborative creation, editing and organization of content mostly in websites, but also in other forms of media. These can consist of

text and many other forms of input such as image, video, java animation, design templates, databases, etc. Anyone with access rights can operate such a system, even the one who does not have much knowledge of programming or HTML, since the majority of the systems have a graphical user interface. It is really easy to manage the site from the beginning of the creation up to continuous maintenance. There are also offered a wide variety of functionality such as Modules and Plugins that can be very helpful. Having as a principle the philosophy of object-oriented programming, these systems constantly offer solutions to any problems that arise along the way.

Special emphasis is placed on media-neutral data management at CMS. For example, content can be retrieved as a PDF or HTML document if desired; The formats are only generated when the query is fully dynamic. Mostly a database is used for this. In addition, there are flat-file content management systems in which the contents are stored in files.

Content management systems have to do the following:

- ✓ Have the ability to assign different roles and responsibilities to different users and content categories /types
- ✓ Identify the potential users and their roles
- ✓ Define the processing procedures as a workflow
- ✓ Have the possibility to send messages (e.g. via e-mail) to those who are responsible as soon as the content of certain documents changes
- ✓ Tracking and managing different versions of a document
- ✓ Semantic ordering of content
- ✓ Publishing the content in a repository (for example a database)
- ✓ Export or import content to or from another working environment.

Content management systems are in a big scale independent from the platform, as they are written in scripting languages. PHP, Ruby, Python and JavaScript which are the most common script languages are supported by the most popular web servers (Apache, IIS). The actual content is usually stored in databases because they provide database indexes for categories, lists and feeds

and they also allow faster access. Content can also be saved in text files in case of smaller CMS. MySQL as a database is supported by almost all CMS, but often PostgreSQL or Microsoft SQL Server are also used. Content management systems associate the stored content with stylesheets and submit them to the delivering web server. As far as software architecture is concerned, the most common used is the design model controller. These software elements are usually installed together, due to the close connection and dependency between them. For open-source CMS, there are the bundles LAMP and for development environments XAMPP. Physically CMS run on hosts, which are offered however by hosts as Webhosting or as Application service. Especially open-source CMS try not to offer all possible or desired functions, but to enable the integration of Plugins through server-side hooks and client-side standard libraries.

There are two kinds of CMSs, the Open Source and the Proprietary or Closed Source. The main differences between Open and Closed Source CMSs are below:

- i. In the Open Source CMS, the code is available to anyone and as a result anyone can publish, manage, change, edit and delete it. Furthermore, anyone can download the source code and modify it or develop it the way he/she wants. In addition, the source code of a Closed Source CMS is closed to the public and the management of it belongs to the creator and it cannot be modified by anyone else.
- ii. Open Source CMS usually costs less or in some cases it is free, while Closed Source CMS usually costs more both for the creation and the maintenance
- iii. The development community of the Open Source CMS does frequent updates and also many plugins and themes are contributed, while Closed Source might offer less themes or plugins but probably more out of the box capabilities
- iv. Open Source due to free code tend to be less secure, while Closed ones are considered more secure since the code is private
- v. In the Open Source more hands-on are required in the management while in the Closed, since it is paid, there is no need for hands-on use



- vi. Furthermore, Closed Source CMS is often better for a company because it can be given unique solution and support at any time, things that do not exist with an Open Source system even though much information exists all over the Internet
- vii. On the other hand, a Closed Source system is risk because no one knows if the development team or individual is trustworthy and if is going to last.

## 11. eCommerce Platforms

E-commerce platforms are software specified in selling products. Any ecommerce platform that allows adding and managing content can be considered a CMS. When used in online retailing, the CMS will be used to manage the product catalogue of a store. Compared with CMSs themselves, eCommerce platforms have more sophisticated functionalities to serve stores and companies with large product catalogs. Below are presented the most well-known eCommerce platforms, their advantages and disadvantages.

### i. Open Source Platforms

#### a. Opencart



Figure 9 OpenCart

Opencart is an Open Source eCommerce management system. It is written in PHP, while it uses MySQL database and runs on AJAX(Asynchronous JavaScript and XML) technique. It has a

free installation version, based on the GNU (General Public License). It has a big community which is very active and provides technical support to the users. It is ideal for beginners.

The positives of Opencart are the following:

- ✓ Flexible and free
- ✓ Many and customizable extensions and modules
- ✓ A big range of specialized templates and themes (free and paid)
- ✓ Many payment gateway options
- ✓ Ability to work with many languages and currencies
- ✓ Active forums for support
- ✓ Environment management in Greek

The negative about Opencart is that we can say that it requires more technical knowledge than other platforms for example WooCommerce. Although it is friendly to SEO, compared to WooCommerce is behind. Being an Open Source system, it does not combine hosting, and someone has to pay for extensions and security as well.

## b. **WooCommerce**



Figure 10 **WooCommerce**

WooCommerce is a Plugin from WordPress that specifies in the transaction of a WordPress site into an online store. It is an Open Source platform, which means that developers, designers and marketing people all over the world work on it in order to improve it. It is written in PHP. Usually it is ideal for smaller businesses or businesses that are new.

The main pros of WooCommerce are:

- ✓ Flexible
- ✓ User friendly environment
- ✓ Big range of plugins, themes, extensions and templates
- ✓ Big community resulting to unlimited support
- ✓ Super SEO friendly
- ✓ Very fast installation
- ✓ Many payment gateway options
- ✓ Environment management also in Greek language

The negative about this platform is the difficult management when the products are to be too many. Furthermore, the frequent updates lead to additional administrative effort except the one of the maintenance. It is only available with WordPress. Lastly, although it is free it charges for hosting and SSL certification.

### c. VirtueMart



Figure 11 VirtueMart

VirtueMart is basically an extension to Joomla or Mambo CMSs. It is an Open Source eCommerce component written in PHP and uses MySQL database. It is released under the General Public License.

The main good points of VirtueMart are:

- ✓ Free
- ✓ Many plugins and extensions

- ✓ A great number of features

A big weakness is that someone must be an expert to handle it. Additionally, it lacks in mobile compatibility out of the box. Hosting is not included as well.

#### d. PrestaShop



Figure 12 PrestaShop

PrestaShop is a free Open Source eCommerce platform. It is also written in PHP with support to MySQL database, like OpenCart. PrestaShop is also under the OSL (Open Software License).

The advantages of that platform are:

- ✓ Free
- ✓ User friendly environment
- ✓ SEO friendly
- ✓ Many statistical facilities are offered
- ✓ Integration to other marketplaces like E-bay, Amazon etc.
- ✓ Accessible code for developing, changing etc.
- ✓ Big community
- ✓ Huge variety of themes and templates

The disadvantages are that it also need technician knowledge and it does not offer hosting. One more is that the support is under payment and the templates as well.

#### e. Magento



Figure 13 Magento

Magento is also an E-commerce platform. It is also PHP based and an Open Source software. Magento has a free Community Edition, which is very powerful, and the paid Enterprise Edition for large companies which are in need for more advanced features and special options.

The pros of Magento are:

- ✓ SEO friendly
- ✓ Accessible code, extensions, plugins and modules
- ✓ Big range of templates and themes (from Magento or other marketplaces)
- ✓ Big developer community
- ✓ Supports multiple languages, currencies and provides tax-rates depend on location
- ✓ Advanced security features and dedicated patches

On the other hand, it requires for sure a basic level of web development knowledge. Moreover, it needs a lot of space for installation. Although there are many templates only a few are free of charge. One should pay for hosting, plugins and of course templates. Moreover, it is very friendly SEO but it comes after Shopify and WooCommerce.

## ii. Closed Source Platforms

### a. Shopify



Figure 14 Shopify

Shopify is the most used-popular SaaS eCommerce platform right now. Shopify uses the Liquid language, which is open source and it was built based on Ruby on Rails. Shopify is not a free software, but it gives the beginners the opportunity to make a 14 days free trial.

The reasons why this platform is so popular are:

- ✓ Super easy use, not at all programming knowledge needed
- ✓ Most flexible and feature-full
- ✓ Super SEO friendly
- ✓ Unlimited hosting
- ✓ Integrated with Amazon
- ✓ Dozens free mobile optimized themes
- ✓ 24/7 support
- ✓ Many payment gateways
- ✓ Additional sales channels and incorporation with other marketplaces like Amazon
- ✓ Very secure

The main disadvantage of this platform is that the code is not accessible by anyone, so they cannot change it. Furthermore, it might cost the business a lot at the end because of the templates,

additional plugins, themes etc. which mostly cost or due to the use of external payment gateways. Lastly, although it has a beta in six other languages, Greek are not included yet.

## b. Squarespace



Figure 15 Squarespace

Squarespace is a SaaS eCommerce platform. It is purchasable but it offers a 14 days free trial. Squarespace is ideal for those who want to publish content regularly and at the same time in a very attractive manner.

So, the most important positives are:

- ✓ It offers mobile apps
- ✓ Very good-looking templates
- ✓ Hosting included
- ✓ 24/7 support

A negative about Squarespace is that it works only with two payments gateways, Stripe and PayPal. What is more is that it is not that much SEO friendly. Furthermore only high experienced developers can edit the code.

### c. BigCommerce



Figure 16 BigCommerce

BigCommerce is a SaaS eCommerce platform. It is a cloud-based solution especially for medium to large size businesses. It is based on Stencil and Handlebars languages. BigCommerce offers a free trial for 15days.

The main advantages of BigCommerce are:

- ✓ 24/7 support
- ✓ Hosting included
- ✓ Integration with many other platforms
- ✓ Accessible code for changes
- ✓ SEO friendly
- ✓ Many templates and themes
- ✓ Many payment gateways and no transaction fees
- ✓ The biggest variety of built-in features

On the other hand, it is quite difficult for a beginner due to the complex terminology. Another con is that it does not have a mobile app. Of course, the majority of the templates and themes costs.

Having seen the most popular and most used eCommerce platforms we conclude that each eCommerce platform offers a different packet combination while it lacks in different points as well. Each business must acknowledge its needs and based on them a decision should be taken for the most appropriate choice of platform. One last observation is that everything costs and the final cost, speaking either for open or closed source platforms, depends on the choices made for the



themes, modules etc. or the maintenance and service. Nevertheless, an eCommerce platform is dynamic and it needs daily maintenance and upgrade.

## **12. Statistics about eCommerce platforms usage**

In the following chart we can see the distribution for websites that use eCommerce technologies, as far as Greece is concerned. We now see that e-commerce platforms have penetrated a great deal in Greece as well. As far as the below statics are concerned the ½ of the pie is shared to OpenCart and WooCommerce, which means that these are the most used in Greece. That is also shown in the second table. From the 21,777 detections of websites using eCommerce in Greece, the 4,279 is using the OpenCart and the 4,120 is using the WooCommerce.

# eCommerce Usage Distribution in Greece

Distribution for websites using eCommerce technologies

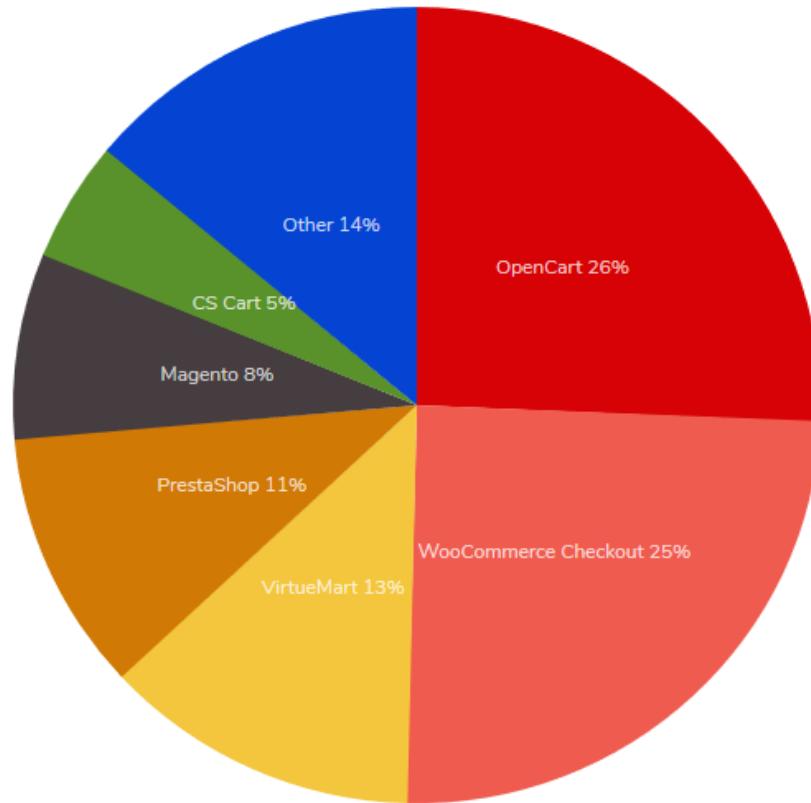


Figure 17 Distribution for Websites using eCommerce Technologies, Greece

## Top In eCommerce Usage Distribution in Greece

Technology	Websites	%
 OpenCart	4,279	4.54
 WooCommerce Checkout	4,120	4.37
 VirtueMart	2,112	2.24
 PrestaShop	1,761	1.87
 Magento	1,256	1.33
 CS Cart	815	3.74
 osCommerce	440	0.47
 Shopify	371	1.7

Figure 18 Top in eCommerce Usage Distribution, Greece

We can see below the distribution for websites that use eCommerce technologies on the entire internet. We observe here that on the entire internet the 23% is using the Shopify. Contrast to the statistics from Greece where Shopify is the less used eCommerce platform. In the second place, as in the statistics from Greece, is the WooCommerce. OpenCart which is first in the above statistics is on the entire internet in the third place. I believe that the reason why we have that deviation is due to the fact that OpenCart has also a Greek website, so it is easier and more helpful to the Greek people. Of course, many other platforms exist that are less known. From the second table, it is obvious that there are 1,071,900 Shopify websites from the 10,956,948 detections of eCommerce websites on the entire internet.

## eCommerce Usage Distribution on the Entire Internet

Distribution for websites using eCommerce technologies

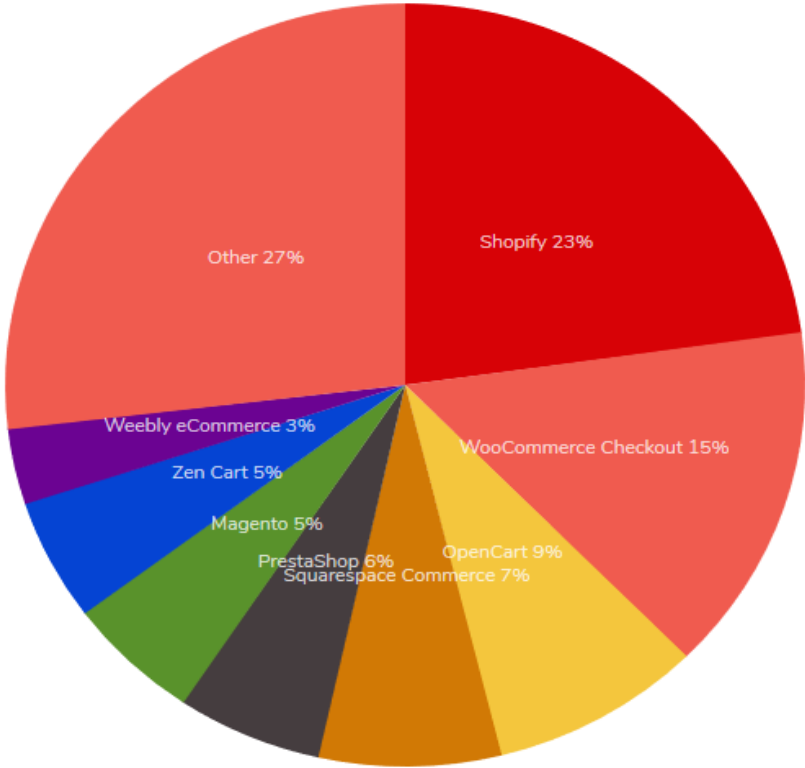


Figure 19 Distribution for Websites using eCommerce technologies on the Entire Internet

## Top In eCommerce Usage Distribution on the Entire Internet

Technology	Websites	%
 Shopify	1,071,900	9.78
 WooCommerce Checkout	694,015	6.33
 OpenCart	400,990	48.55
 Squarespace Commerce	345,499	3.15
 PrestaShop	275,277	2.51
 Magento	254,773	2.33
 Zen Cart	242,374	2.21
 Weebly eCommerce	149,927	1.37
 Ecwid	137,606	1.26

Figure 20 Top in eCommerce Usage Distribution on the Entire Internet

<https://trends.builtwith.com>

## 13. Business Plan

A business plan is a summary of the operations and activities of the owner, manager, or entrepreneur of a business with the purpose of organized and detailed forecasting all the possible parameters. It is a written design of the model that the business is expected to follow. Below follows the Business Concept, the Financial Forecasting and the Cash Flow Calculations for the herbal beauty products E-shop.

### i. Business Concept

A business concept in general is simply an idea for a business. In it are included many information, first of all the product or the service itself, the target and also the unique proposition why this product/service is going to make sales and as result give that business the advantage over

the competitors. The product can be a brand new one or an approach to an existing one. That business concept is embodied into the business plan.

More specifically for the herbal beauty products E-shop:

- Mission-Vision

The mission of the business is to provide beauty in the most natural way, for all ages, without bother and time.

The vision of our business is to become the largest e-shop selling herbal cosmetics.

- The product

The company is engaged in the import and sale of herbal beauty products through the electronic platform. Our company will launch a package of natural cosmetics, five in total per package. The customer will be able to choose their own color combination.

- The market

Natural products are becoming more and more appealing in our lives, and this great turn of the consumers has been identified as a particular phenomenon in the market. It is noticed that businesses with such natural products are gaining an increasing share of the market.

In general, the cosmetics industry, due to its nature and the consumers that it directs, is always experiencing in a smaller degree the consequences of the economic crisis.

- Who am I

I am a girl with studies in telecommunications and economics and I want by using all of my knowledge to create this startup business. I am interested in the eCommerce market, more specifically in the field of natural cosmetics and beauty.

### a. SWOT Analysis

SWOT analysis is a strategic planning tool used to analyze an enterprise's internal and external environment. This analysis helps each business to decide in relation to the objectives it has set, given the environmental conditions in which it operates.

The acronym of the name is explaining below:

Strengths: these characteristics of the enterprise that give it the advantage over the competitors.

Weaknesses: these characteristics of the firm that place it at a disadvantage compared to others.

Opportunities: the elements in the business environment that could be exploited by the business to its benefit.

Threats: the elements in the firm's environment that could cause problems to it.

The main reason why SWOT is so powerful, is because without much thought, it can help someone see opportunities that they can take advantage of. And of course, by understanding the weaknesses of the business, threats can be managed and minimized that otherwise would affect the business in a negative way. More than that, looking at the competitors and at the same time at yourself while using the SWOT framework, can be very helpful. Doing that a strategy can be created in order for the business to distinguish itself from the competitors and as a result to compete in the market in a successful way.

Here follows the SWOT Analysis for my E-shop:

#### **STRENGTHS:**

24/7 operation

Reduce customer time, easy purchases from home

Small number of employees

Few start-up costs, does not require special facilities

Exclusive products in our country

Products with great reputation abroad

Competitive product price, directly from manufacturer to customer

Ease of electronic transactions

Good contact with the client (via e-mail, social media, online chat)

Collaboration with already established distribution channels (ELTA courier, ACS etc.)

Design and upgrade of the web site inhouse (I do not depend on an external partner)

### **WEAKNESSES:**

Lack of a face-to-face interaction

Not all of the market is familiar with shopping online

There is not yet a reputation-name on the market

Restricted chapters, cost on ad

Depending on the area, on the selected courier and on the number of delivery days, the shipping costs may increase a lot the final price

Absence of experienced manager in order to emerge

### **OPPORTUNITIES:**

Great penetration of the Internet

Reliable online buyers

The youth communities that are the main target market are active users of the Internet

Turn of the market into more natural solutions

Even younger people start using cosmetics and as result the number of potential customers is increasing

### **THREATS:**

Unreliable pages that have made the buyers hesitant about online shopping

Unpredictable and constantly changing consumer needs (makeuptrends)

Already a very competitive part of the market and likely to grow in the near future

A rapidly growing industry, can push the government into taxing

Invalid political factors that affect imports (e.g. capital controls)

#### **b. Capex–Opex**

Capital expenses (CAPEX) and operating expenses (OPEX) are two different business expenses categories. Between these two categories there are distinct differences.

CAPEX refers to all assets, either material or intangible, which are used to generate more business and therefore revenue. CAPEX is an investment in the business. It adds value to shareholders. These expenditures are made taking into account future benefits. These investments could involve physical goods as machines, equipment, property or service as device upgrades. It is usually shown in the financial statement as cash flow or investment in facilities, machinery or similar funds. Actually, they will be used for more than one year meaning that their life will extends beyond the accounting period in which they were purchased. Depreciation of these assets is carried out each year until it is zero and that's why their budget is separated from the operational one.

OPEX refers to expenditure incurred for the maintenance and operation of assets generated through CAPEX. Daily operating expenses for sales and administration and R&D are considered OPEX. Basically, they are those costs for a company to run its operations daily. OPEX



are short term costs and they are used in the same accounting period as the one in which they were purchased. Thus, OPEX is an expense that is necessary to maintain the assets. Earnings before interest, the number that everyone is interested in from the shareholders to the management, reaches the OPEX deduction from operating income.

Here follows the CAPEX-OPEX of the business:

CAPEX	OPEX
Hardware equipment  Premises	Technical Support  Accountants  Advertising  Software

Table 3 CAPEX-OPEX

**c. Pricing**

Pricing is defined as a business process for determining the sale price of a good or a service. Of course, it should cover both the average production cost and the extra profit of the trader. The price is determined theoretically in marginal levels of the cost and revenue. Although, in the free market there are various techniques and strategies that are followed. In all cases the pricing precedes the costing, while its derivatives are the price list and the invoice.

Actually, the process of pricing the products is a basic element of a company's marketing. Although as the time passes there are also other factors except the price that are very important to the buyer's behavior, nevertheless price remains one of the most important factors determining the market share of the company and its profitability. The price is the only one of the components of the marketing mix that generates revenue. As a result, it is really important, the right pricing strategy to be chosen for each product.

On the other hand, unfortunately, many companies do not properly handle pricing. For example, it is very common that pricing is cost-oriented or not reviewed often enough in order to incorporate the market changes. In some cases, it has been observed that pricing to be determined independently of the other elements of the marketing mix. In some other cases it even does not differ enough for different products, segments and market situations.

To avoid such phenomena, the business should take many things into account. Some of these are: its objectives, sales, customer share, and other internal factors such as product line and service. Moreover, it is important for the company to look at its competitors, buyers and affiliates that affect supply and distribution channels. Finally, it should always be remembered that it moves in a more general environment (economic, political, legal) that has an influence on it.

So, in my company, the price bid of the offered beauty package is set at that level in order to cover the costs of the business and also to respond to the price elasticity of market demand.

Ideally, the products would be priced 5 to 6 times over the cost, because of the Spanish financial situation this is not something possible. As a result, the price will be formed 1/2 times over the cost so that the business can survive and grow.

- ♦ The package of the five products that is imported, costs the company 10 € / package
- ♦ Transport costs for the company for the transportation of raw materials is 0,50 € / package
- ♦ Fixed Expenses consisting of State Taxes, Rentals, Advertising and Employee Salaries charge the retail price by € 0.06 / package, given the forecast demand.

Therefore, according to the above, the final sales price of the offered product will range from € 15 to € 19 and this will depend on the sales of each year and is presented in detail in the Excel file as well as in below figures.

## **ii. Financial Forecasting**

Financial forecasting is the prediction or estimation of how the company's' financial outcomes will be formed in the future. In this section we will see the analyzation of the calculation of the forecasting demand of the product using two growth models, the Gompertz as well as the Logistic model for the years 2019 to 2021.

A Gompertz curve, is a sigmoid function developed by Benjamin Gompertz. It is a type of mathematical model for a time series where growth is slower at the beginning and at the end of a time period. The Gompertz reliability model is often used in the analysis of the reliability data. This is more applicable when the data set follows a smooth curve, as well as the data used for the prediction of the demand in the e-commerce sector, from the official Eurostat website.

Likewise, the Logistic function can be used to illustrate the progress of the diffusion of an innovation through its life cycle.

Although the image and the numbers of the two models have many similarities, there are fundamental differences between the two with the most important to be that the Gompertz function is asymmetrical while Logistic is symmetrical.

The results of the forecast are presented in detail in the below figures of this chapter and in the Excel file using the datafit program to calculate the necessary constants. According to the results, both models anticipate a gradual increase in demand over the next three years. The most suitable model in that case was made after comparing the mean squared error (MSE) and the mean absolute percentage error (MAPE). Since the minimization of the mean squared error is identical to the effectiveness and the mean absolute percentage error measures how much the predictions fall out as percentages of the actual value of the variable.

Therefore, the Logistic model is preferred compared to the Gompertz, whereas the MAPE values are equal for both models, the MSE value for the Logistic model is lower. The graphical representation of the actual data compared to the two forecasting models is presented right after.

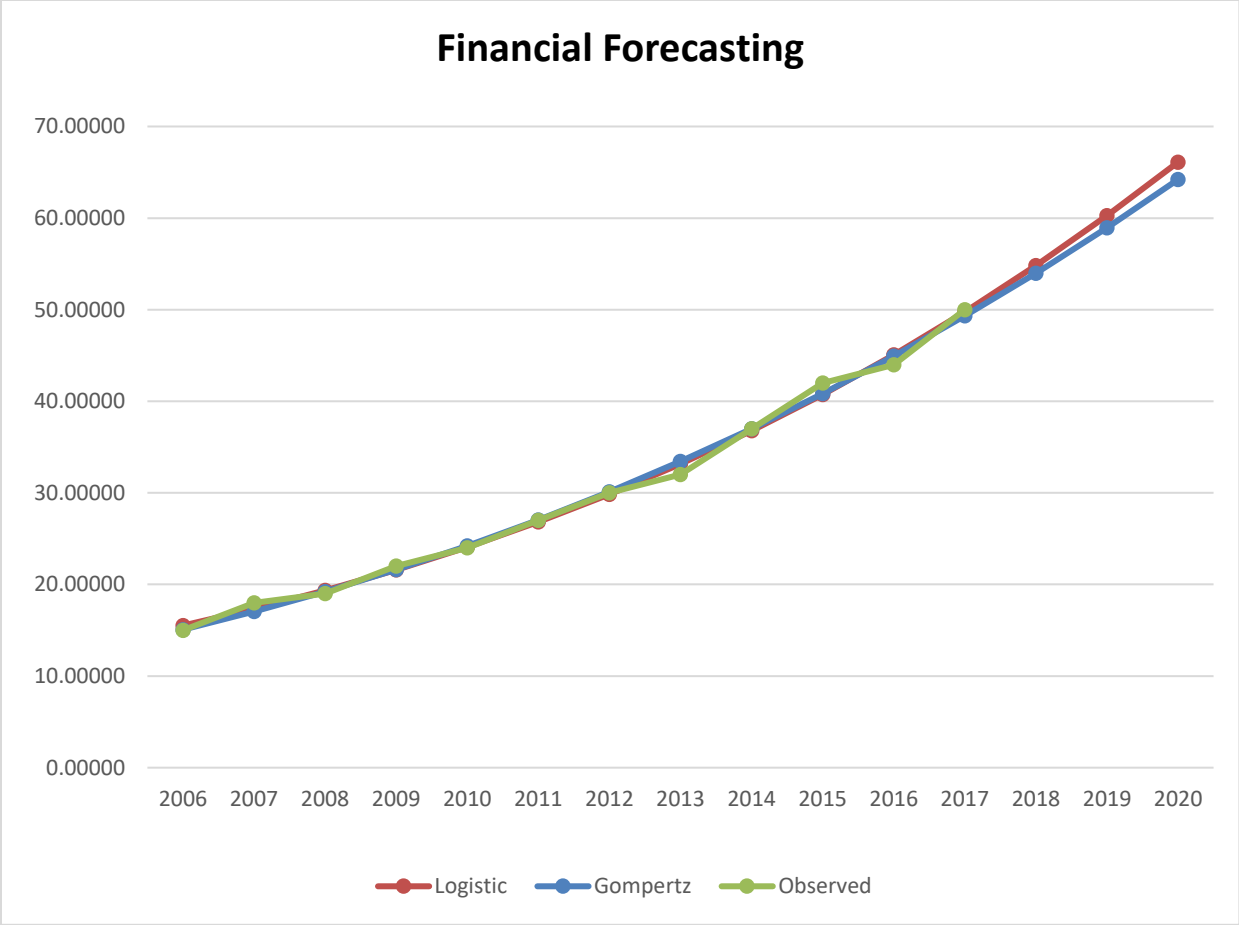


Figure 21 Financial Forecasting

Except the two above mentioned forecasting models, there are also other tools that can present future trends. As shown below at the Excel file there have been made a data analyzation for real-time demand values of the previous years based on moving average and exponential smoothing.

Note that the optimal solution occurs when a prediction with a moving average of step 2 and an exponential smoothing with a smoothing constant  $\alpha = 0,7$  is made. The graphical representations of the results from these two tools are presented in the figures 22 and 23.

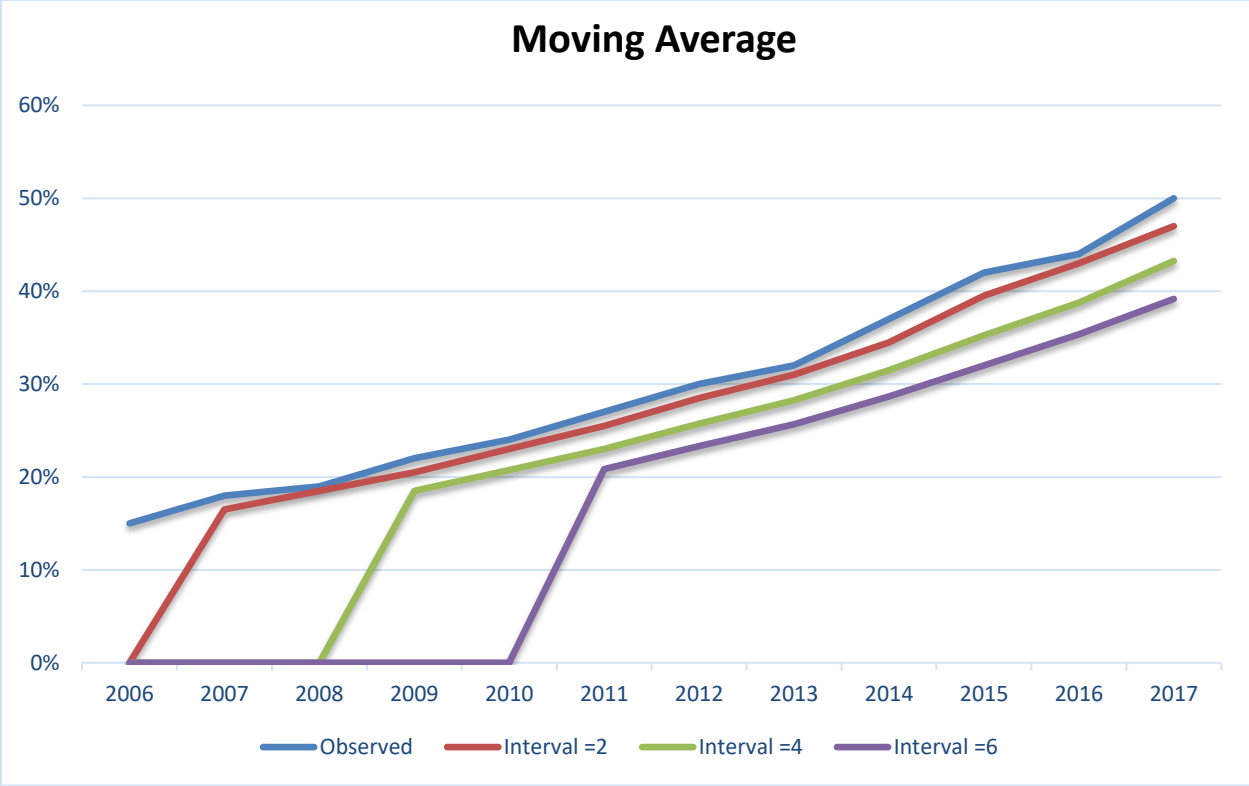


Figure 22 Moving Average

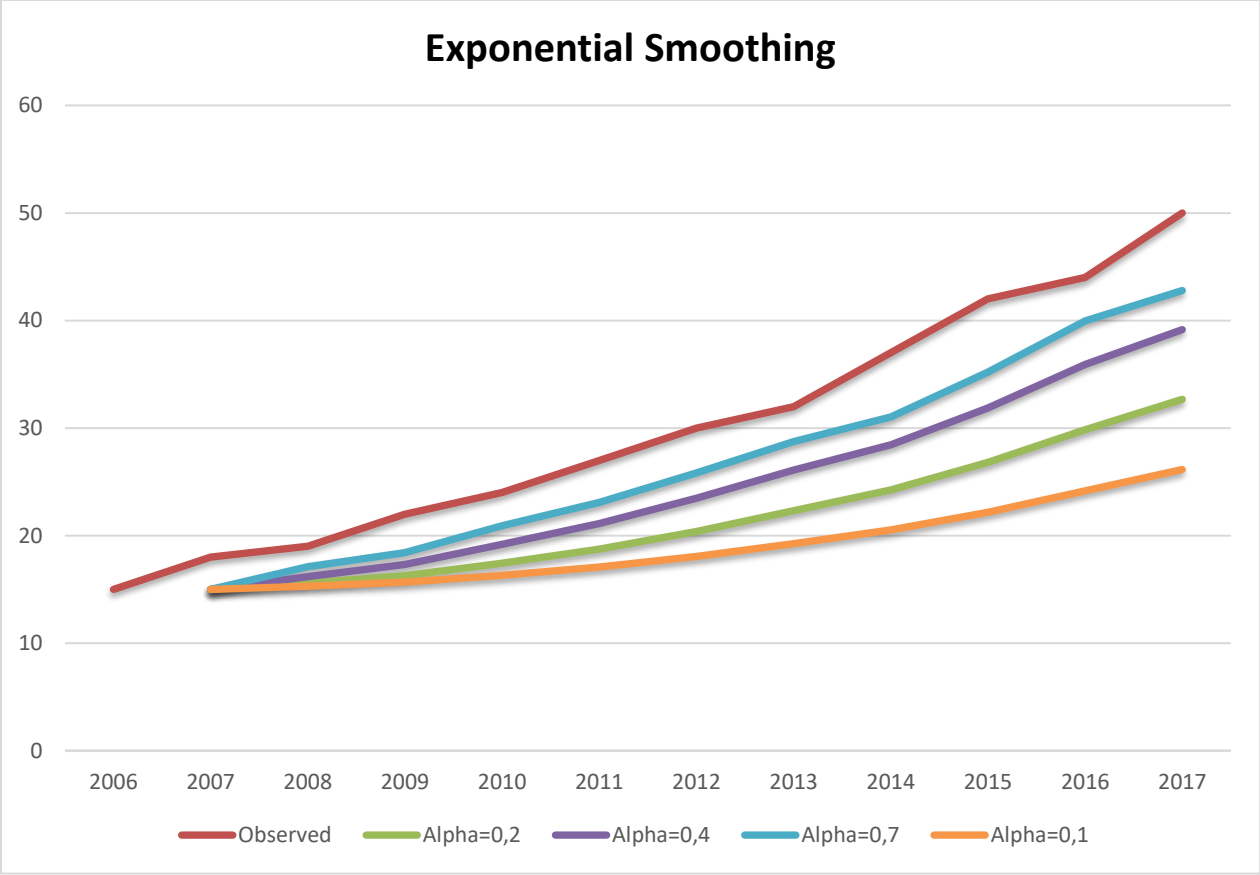


Figure 23 Exponential Smoothing

						Gompertz			Logistic		
						S	1247.0078		S	296.223999	
						a	-1.5137		a	-3.013442378	
						b	0.0284		b	0.117742192	
Years	t	Observed	Estimated	Squared Error	Absolute Percentage Error	Estimated	Squared Error	Absolute Percentage Error			
2006	1	15	15.066	0.004332269	0.004368828	15.51222	0.262371723	0.033020564			
2007	2	18	17.051	0.901408251	0.055682887	17.33709	0.439444814	0.038236301			
2008	3	19	19.230	0.052896204	0.011960054	19.36184	0.130926099	0.01868816			
2009	4	22	21.615	0.148226345	0.017811787	21.60473	0.156241861	0.018295739			
2010	5	24	24.216	0.046799738	0.008933329	24.08483	0.007196078	0.003522122			
2011	6	27	27.044	0.001977561	0.001644321	26.82183	0.031744716	0.006642741			
2012	7	30	30.110	0.012001218	0.003638383	29.83576	0.026974059	0.00550473			
2013	8	32	33.421	2.020112967	0.042526966	33.14670	1.314913811	0.034594606			
2014	9	37	36.989	0.000121036	0.000297429	36.77433	0.050926479	0.006136589			
2015	10	42	40.821	1.389232082	0.028873545	40.73750	1.593900546	0.030991044			
2016	11	44	44.926	0.858323554	0.020621647	45.05362	1.110107645	0.023385835			
2017	12	50	49.312	0.473619674	0.013956098	49.73800	0.068646389	0.005267694			
2018	13	#Δ/Y	53.984			54.80316					
2019	14	#Δ/Y	58.949			60.25803					
2020	15	#Δ/Y	64.213			66.10719					
				MSE	0.49					MSE	0.43
				MAPE	0.02					MAPE	0.02

Figure 24 Forecasting Calculations

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Observed	15%	18%	19%	22%	24%	27%	30%	32%	37%	42%	44%	50%
Interval =2	#N/A	16.5%	18.5%	20.5%	23.0%	25.5%	28.5%	31.0%	34.5%	39.5%	43.0%	47.0%
Interval =4	#N/A	#N/A	#N/A	18.5%	20.8%	23.0%	25.8%	28.3%	31.5%	35.3%	38.8%	43.3%
Interval =6	#N/A	#N/A	#N/A	#N/A	#N/A	20.8%	23.3%	25.7%	28.7%	32.0%	35.3%	39.2%

Figure 25 Forecasting Moving Average Calculations for Intervals 2,4,6

Years	t	Observed (Y)	Forecast (Y')	Forecast Error (Y-Y')
2006	1	15		
2007	2	18	15	3.00
2008	3	19	15.60	3.40
2009	4	22	16.28	5.72
2010	5	24	17.42	6.58
2011	6	27	18.74	8.26
2012	7	30	20.39	9.61
2013	8	32	22.31	9.69
2014	9	37	24.25	12.75
2015	10	42	26.80	15.20
2016	11	44	29.84	14.16
2017	12	50	32.67	17.33
			Total	105.69
<b>a</b>	<b>0.2</b>		Mean forecast error	9.61

Figure 26 Mean Forecast Error for a=0.2

Years	Observed (Y)	Forecast (Y')	Forecast Error (Y-Y')
2006	15		
2007	18	15	3.00
2008	19	16.20	2.80
2009	22	17.32	4.68
2010	24	19.19	4.81
2011	27	21.12	5.88
2012	30	23.47	6.53
2013	32	26.08	5.92
2014	37	28.45	8.55
2015	42	31.87	10.13
2016	44	35.92	8.08
2017	50	39.15	10.85
		<b>Total</b>	<b>71.23</b>
<b>a</b>	<b>0.4</b>	<b>Mean forecast error</b>	<b>6.48</b>

Figure 27 Mean Forecast Error for a=0.4

Years	Observed (Y)	Forecast (Y')	Forecast Error (Y-Y')
2006	15		
2007	18	15	3.00
2008	19	17.10	1.90
2009	22	18.43	3.57
2010	24	20.93	3.07
2011	27	23.08	3.92
2012	30	25.82	4.18
2013	32	28.75	3.25
2014	37	31.02	5.98
2015	42	35.21	6.79
2016	44	39.96	4.04
2017	50	42.79	7.21
		<b>Total</b>	<b>46.91</b>
<b>a</b>	<b>0.7</b>	<b>Mean forecast error</b>	<b>4.26</b>

Figure 28 Mean Forecast Error for a=0.7



Years	Observed (Y)	Forecast (Y')	Forecast Error (Y-Y')
2006	15		
2007	18	15	3.00
2008	19	15.30	3.70
2009	22	15.67	6.33
2010	24	16.30	7.70
2011	27	17.07	9.93
2012	30	18.07	11.93
2013	32	19.26	12.74
2014	37	20.53	16.47
2015	42	22.18	19.82
2016	44	24.16	19.84
2017	50	26.15	23.85
		<b>Total</b>	<b>135.31</b>
<b>a</b>	<b>0.1</b>	<b>Mean forecast error</b>	<b>12.30</b>

Figure 29 Mean Forecast Error for a=0.1

Years	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Observed	15	18	19	22	24	27	30	32	37	42	44	50
Alpha=0,2		15	15.6	16.3	17.4	18.7	20.4	22.3	24.3	26.8	29.8	32.7
Alpha=0,4		15	16.2	17.3	19.2	21.1	23.5	26.1	28.4	31.9	35.9	39.2
Alpha=0,7		15	17.1	18.4	20.9	23.1	25.8	28.7	31.0	35.2	40.0	42.8
Alpha=0,1		15	15.3	15.7	16.3	17.1	18.1	19.3	20.5	22.2	24.2	26.1

Figure 30 Exponential Smoothing Calculations

### iii. Cash Flow Calculations (risk / sensitivity analysis)

In this chapter will be presented the cash flow calculations for the e-shop for the next three years 2019-2021. Note that the Initial capital  $K_0$  is 70,000.00 €.

The revenue calculation results from the multiplication:

- of the population of the country concerned, in this case of Spain
- of the percentage market demand based on the forecasts made with the Gompertz and Logistic growth models (divided by 1000 for reasons of rationalization of the results)
- and finally, the retail price of the offered beauty package

The calculation of the expenses is derived from the sum of the following:

- Fixed Costs

- Operating Costs
- Depreciation (using a linear depreciation method)

Cash Flow = Income - Expenses

Cash flows show proceeds, payments and available cash arising from the business's operations.

G O M P E R T Z	Years	2018	2019	2020
	country percentage demand/1000	0,054	0,054	0,054
	country population	46000000	46000000	46000000
	demand	2483289	2483289	2483289
	price/unit	17,00 €	18,50 €	19,00 €
	<b>Income</b>	<b>42.215.579,58 €</b>	<b>45.940.483,66 €</b>	<b>47.182.118,35 €</b>
	<b>Expenses (FC+VC+Depreciations)</b>	<b>44.886.993,87 €</b>	<b>44.931.043,87 €</b>	<b>44.947.278,87 €</b>
	<b>Cash Flows</b>	<b>- 2.671.414,29 €</b>	<b>1.009.439,79 €</b>	<b>2.234.839,48 €</b>

Figure 31 Gompertz

L O G I S T I C	Years	2018	2019	2020
	country percentage demand/1000	0.055	0.060	0.066
	country population	46000000	46000000	46000000
	demand	2520945	2771870	3040931
	price/unit	15.00 €	16.50 €	17.50 €
	<b>Income</b>	<b>37,814,177.06 €</b>	<b>45,735,847.08 €</b>	<b>53,216,289.24 €</b>
	<b>Expenses (FC+VC+Depreciations)</b>	<b>44,886,993.87 €</b>	<b>44,931,043.87 €</b>	<b>44,947,278.87 €</b>
	<b>Cash Flows</b>	<b>- 7,072,816.81 €</b>	<b>804,803.22 €</b>	<b>8,269,010.37 €</b>

Figure 32 Logistic

The cash flow results are used to calculate Net Present Value (NPV). Net Present Value is the sum of present values of incoming and outgoing cash flows over a period of time.

Net Present Value = Present Value - Cost of investment

- zero net present value (NPV = 0) means that the proceeds from the project repay the initial investment without benefit or damage to the investor
- positive net present value (NPV > 0) means that the investment is profitable
- negative net present value (NPV < 0) means that the investment results in a loss

The figures below in this chapter show the relevant operations performed to calculate the appropriate interest rate (i) that zeroes the NPV. This result is also known as Internal Rate of Return (IRR). Internal Rate of Return is an indicator that measures the return on an investment by equalizing the present value of the future cash flows plus the final market value at the current market value of the investment.

Companies use the IRR in the budget of funds in order to compare the profitability of the investment plans based on the rate of return. The project with the highest IRR will be considered the best.

The calculation of the internal interest rate for the Gompertz model showed it to be at 10%.

Internal Rate of Return	Net Present Value
1%	443,698.37 €
7%	122,285.78 €
10%	- 0.00 €
15%	- 145,247.99 €
20%	- 301,868.84 €
75%	- 849,913.17 €
100%	- 873,992.26 €
200%	- 765,539.62 €
300%	- 639,844.22 €

Figure 33 Interest Rate-NPV for Gompertz

IRR	10%
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Figure 34 IRR for Gompertz

The calculation of the internal rate for the Logistic model showed that it is at 13%.

Internal Rate of Return	Net Present Value
1%	1,741,976.49 €
7%	718,717.65 €
11%	305,173.42 €
13%	0.00 €
20%	- 619,815.96 €
75%	- 2,305,910.99 €
100%	- 2,371,581.30 €
200%	- 2,031,923.38 €
300%	- 1,658,700.71 €

Figure 35 Interest Rate-NPV for Logistic

IRR	13%
-----	-----

Figure 36 IRR for Logistic

It was also chosen to calculate the Payback Period of the initial investment for the e-shop. Payback Period sets the time it takes for an investment to return all the initial capital. Therefore, the smaller the Payback Period, the higher rate of return has the investment. According to the following, for the specific investment between the 2nd and 3rd year it is noticed that the Cumulative Cash Flows start to be positive. That indicates that the revenue has now reached a level that the initial cost of the investment has been covered and now the way for profitability is ahead. Around 2 years is not a very long repayment period, which means that the investment is quite attractive.

The calculation of the Payback Period for Gompertz forecast results.

Years	Cash Flows	Cumulative Cash Flows
0	- 70,000.00 €	- 70,000.00 €
1	- 2,671,414.29 €	- 2,741,414.29 €
2	- 1,009,439.79 €	- 1,731,974.50 €
3	- 2,234,839.48 €	- 502,864.98 €

Figure 37 Payback Period for Gompertz

The calculation of the Payback Period for Logistic forecast results.

Years	Cash Flows	Cumulative Cash Flows
0	- 70,000.00 €	- 70,000.00 €
1	- 7,072,816.81 €	- 7,142,816.81 €
2	- 804,803.22 €	- 6,338,013.59 €
3	- 8,269,010.37 €	- 1,930,996.78 €

Figure 38 Payback Period for Logistic

Finally, I chose to analyze the break-even point. A break-even point is the exact amount of the sales (annual turnover) that an enterprise covers its entire costs, stable and variable, making no profit or loss. Therefore, based on the fact that the best growth model for the specific case is Logistic, for that reason the break-even point is calculated based on the results of this model. The table below shows the break-even point calculated as the amount of sales (showing how many pieces of the product the company has to sell in order to have neither a profit nor a loss) as well as a sales value (it shows how much the company's monetary value of sales must be so that it has neither profit nor damage). Note that the numerical result of the break-even point in quantities and in Euro has been calculated based on the mean value of the data.

<b>Break-even point in quantities</b>	2716190
---------------------------------------	---------

<b>Break-even point in €</b>	44.364.437,21 €
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Table 4 Break even point in quantities and €

In addition, in the chart below, is seen the break-even point expressed as time (how much time it is expected that the business will need to sell the necessary number of products units so that it does not have any profit or loss). As we see this point will be reached somewhere at the end of the second year of operation. All the calculation procedures appear more clearly on the last figures of this chapter and on the Excel file.

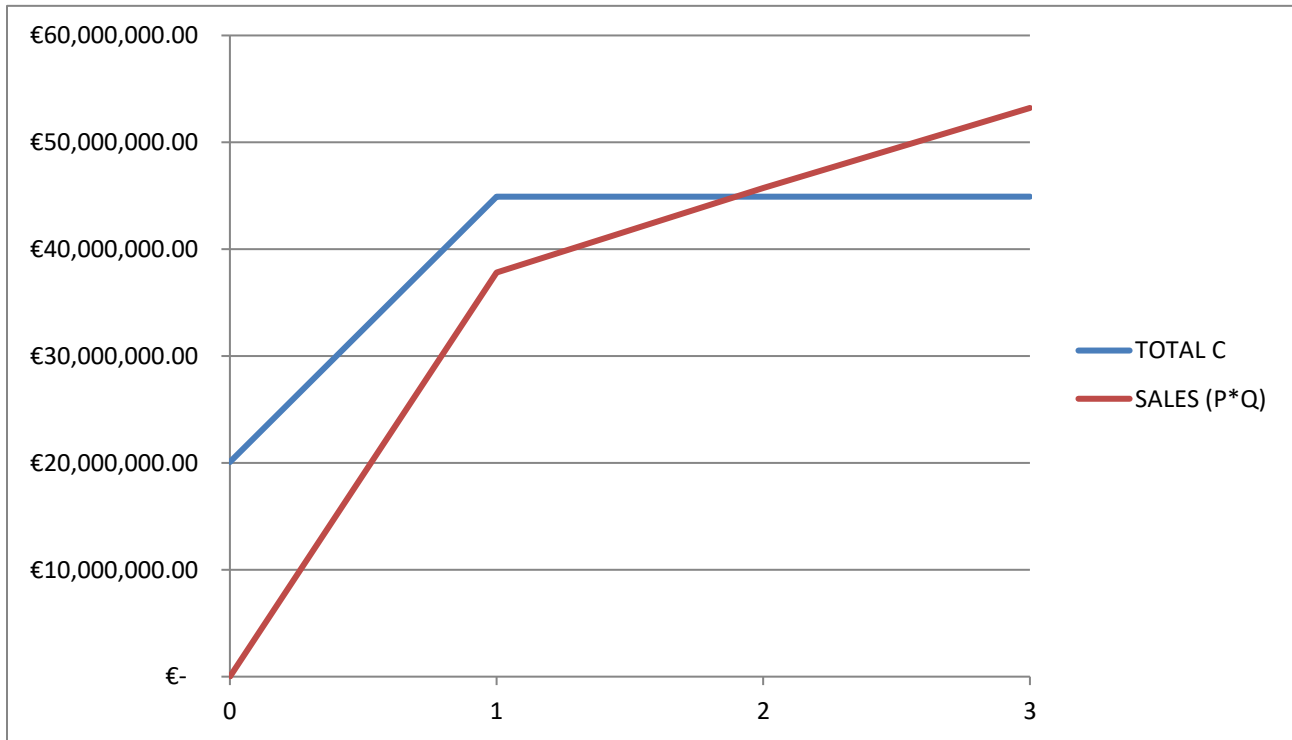


Figure 39 Break Even Point in time

<b>INITIAL INVESTMENT COST and Assets Purchases</b>	<b>2018</b>
Facilities Rental (3 rentals=2 warranty + current month)	3,000.00 €
Fire Safety (nest & lights)	4,000.00 €
Painting & Corrections	15,000.00 €
Furnishing	25,000.00 €
P/Cs & Technical Equipment (5 PCs, 2 servers)	20,000.00 €
Graphic Designers	3,000.00 €
<b>TOTAL</b>	<b>70,000.00 €</b>

Figure 40 Initial Investment Cost and Assets Purchases

<b>OPERATING COSTS per Year</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Energy Bills (current, water, heating, telephone)	1,800.00 €	1,900.00 €	2,000.00 €
Raw Materials Purchases (10€/unit)	24,832,693.87 €	24,832,693.87 €	24,832,693.87 €
Transportation Costs (0,5€/raw material unit)	1,241,634.69 €	1,241,634.69 €	1,241,634.69 €
<b>TOTAL</b>	<b>24,834,493.87 €</b>	<b>24,834,593.87 €</b>	<b>24,834,693.87 €</b>
<b>FIXED COSTS per Year</b>			
Rentals	24,000.00 €	24,000.00 €	24,000.00 €
Permanent Employees' Salaries (1000€/8hours)	12,000.00 €	17,000.00 €	24,000.00 €
National Taxes	20,000,000.00 €	20,000,000.00 €	20,000,000.00 €
Advertising	10,000.00 €	50,000.00 €	60,000.00 €
<b>TOTAL</b>	<b>20,046,000.00 €</b>	<b>20,091,000.00 €</b>	<b>20,108,000.00 €</b>
<b>DEPRECIATIONS per Year</b>			
Furnishing	2,500.00 €	2,250.00 €	2,025.00 €
P/Cs & Technical Equipment	4,000.00 €	3,200.00 €	2,560.00 €
<b>TOTAL</b>	<b>6,500.00 €</b>	<b>5,450.00 €</b>	<b>4,585.00 €</b>
<b>EXPENSES</b>			
OPERATING COSTS per Year	24,834,493.87 €	24,834,593.87 €	24,834,693.87 €
FIXED COSTS per Year	20,046,000.00 €	20,091,000.00 €	20,108,000.00 €
DEPRECIATIONS per Year	6,500.00 €	5,450.00 €	4,585.00 €
<b>TOTAL</b>	<b>44,886,993.87 €</b>	<b>44,931,043.87 €</b>	<b>44,947,278.87 €</b>

Figure 41 Operating Costs, Fixed Costs, Depreciations, Expenses

YEARS	SALES (P*Q)	VC	FC	TOTAL C
0	- €	- €	20.081.666,67 €	20.081.666,67 €
1	37.814.177,06 €	24.834.493,87 €	20.081.666,67 €	44.916.160,54 €
2	45.735.847,08 €	24.834.593,87 €	20.081.666,67 €	44.916.260,54 €
3	53.216.289,24 €	24.834.693,87 €	20.081.666,67 €	44.916.360,54 €

Figure 42 Total C

	Q	PRICES/YEARS	VC/YEAR	FC/YEAR	VC / UNIT
	2520945.137	15.00 €	24834493.87	20046000	<b>8.94 €</b>
	2771869.52	16.50 €	24834593.87	20091000	
	3040930.814	17.50 €	24834693.87	20108000	
<b>AVERAGE</b>	<b>2777915</b>	<b>16.33 €</b>	<b>24,834,593.87 €</b>	<b>20,081,666.67 €</b>	

Figure 43 Average



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