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1. <u>INTRODUCTION: OBJECTIVES, METHODOLOGY AND STRUCTURE</u>

The commercial distribution sector has experienced in recent decades a strong transformation, especially because of two factors. On the one hand, large companies have developed dynamic growth strategies that have led to major changes within the sector, and on the other hand, the change in social demands provoked, to a greater extent, by the economic crisis in Spain and also worldwide.

For all of this, the retail trade is looking for new ways of developing competitive advantages, for which the incorporation of innovations can contribute in a very positive way. At present it is very important that businesses innovate for their continuity and for the success of their business.

Therefore, the objective of this work is to analyze the innovation that is taking place in the retail sector, illustrating this innovation with examples of real companies. An attempt will be made to assess whether such innovations have contributed to improved corporate performance and whether this has been a key element in addressing the crisis and reviving consumption.

Another key objective is to know in depth the ICTs, their rapid evolution, their characteristics, functions and applications by the retailers. Learning how these retailers have adapted to these new technologies and how they have affected consumer demand.

In terms of methodology, this final work is based on both academic and non-academic sources. Journalistic reports, reports from companies dedicated to monitoring progress in this field, reports from government institutions and final papers from Spanish universities have been used in the academic sources. On the other hand, it emphasizes the respect to the information obtained from non-academic sources, specialized web pages, expert blogs and reports related to the research topic.

This work has been structured into three main sections:

In the first place the trade will be analyzed, how it is defined and what has been its evolution from its appearance. It will distinguish between a more general evolution

based on data from Europe and between a more specific evolution with data from Spain. We will also see how different commercial formats have appeared.

Secondly we will see, in a less extensive form than in the first section, the different definitions that are given to new technologies and various data of the evolution of the same.

In the third section we will link the two analyzed terms: trade and new technologies. We will see what technologies have been appearing over the years and the applications that retailers give them for their business. Business cases and real statistics will be discussed.

Finally, as a complement to the three previous sections, we will collect the most relevant conclusions that emerge from the work done.

2. <u>THEORETICAL FRAMEWORK</u>

2.1. <u>Retail trade</u>

In this first big section we will see what is the retail trade and its evolution from the beginning of the first transactions to the present. In addition, we will distinguish between generalized data for Europe and exclusive data for Spain, based on examples and research.

2.1.1. Definitions

Commerce: transfer of goods and services for a lucrative purpose (Ortiz de Zárate, 1986). In other words, it is about transmitting a good or a service, not producing it; It is the task of acting as an intermediary in the channel of the distributor, at the same time as it is intended to make a profit for it.

Traditional commerce: it is a sales system in which the buyer has to go to the seller to show him, advise him, offer him and deliver the products he asks for, since they are separated from the customer by a counter (Lopera, 2014).

Free trade: it is one where customers can choose the items or products directly, as they are located on shelves, corridors and linear commercial surfaces. The free service includes department stores, hypermarkets, supermarkets and self-services. In these establishments we try to encourage consumption through offers, discounts, advertising campaigns and the strategic situation of products within the establishment (González Alfonso, 2012).

Retail is a concept that is complicated to define, so new definitions have emerged over time, trying to adapt to the new uses of this type of trade.

TABLE 1: Definitions of Retail

Author / Institution	Definition of Retail
Lewison (1982)	It is the business activity that consists in selling products and services to the final consumer.
Basque Institude of Statistics (EUSTAT, 2004)	Any trading company that purchases goods in its own name and for its own account and resells them directly to the final consumer.
Levy & Weitz (2004)	A set of business activities that add value to products and services that are sold to end consumers for personal or family use.
Leyton Johns (2008)	A set of resources, processes and activities that meet the needs of end consumers by facilitating the transfer of ownership in the flow of products and services (Retail, Crisis Económica y el "Síndrome de los remeros", n.d.).
Noticias Jurídicas (2014)	It is a professional activity, developed for profit, which consists of offering the sale of any kind of articles to the final recipients, using or not an establishment. They are companies that buy in bulk either directly from the manufacturers, or through an intermediary (wholesaler), and then sell in individual units or small quantities to the general public.

Source: Own elaboration

But Retail is not only this, since it includes a series of intangible benefits (services) and that these are not necessarily delivered in stores. For example, medical care is targeted at end-users, as are education, banking, public services, entertainment, and other various services that people use every day (Retail, Crisis Económica y el "Síndrome de los remeros", n.d.).

Retail companies, also called retailers, are those that sell goods and services for final consumption. With this type of companies, the commercial distribution process is completed, since the merchandise or service is acquired by the final consumer (Barandaráin, 2015).

Electronic commerce (**e-commerce**) consists of the distribution, sale, purchase, marketing and supply of information of products or services through the Internet. Originally the term was applied to the conduct of transactions by electronic means, such as electronic data interchange. However, with the advent of the Internet in the mid-1990s, the concept of selling services through the network began, using as electronic payment methods such as credit cards. Since then, companies have been preoccupied with staying at the forefront and being able to offer what their customers are demanding today (Rodríguez, 2015).

Mobile commerce (**m-commerce**) is about e-commerce using the mobile phone, either through a browser or an application as a means of purchase. Within m-commerce can be grouped the sale of products and services using tablets, not just mobile phones (Interselect, 2016).

2.1.2. Evolution

2.1.2.1. Appearance of trade

There is no clear and specific date of when trade first appeared, but we can distinguish how it has changed over the years, becoming more complex, elaborate and premeditated each time. Peter Watson (historical intellectual and journalist) dates the history of long-distance trade, about 150,000 years ago.

How has trade changed? We distinguish the following stages (Gaitz, 2011):

1st- Barter or Exchange

The first time it was traded we are known as "barter" or "exchange". We talked about when human beings lived in prehistory, when they were still engaged in hunting and gathering fruits. The exchange of goods arose because of the ability to produce surpluses, as men tended to specialize and divide activities in order to be more efficient and to obtain more food. Men used to hunt and women and children dedicated themselves to the harvesting of fruits, seeds, leaves, herbs, etc.

They then began to exchange the goods they did not need to consume for some that others in the community could offer them. This small change in the customs of that time gave them a great advantage: to consume foods that they could not otherwise consume. Why? Because food could not be stored. If, for example, a prey that was hunted had meat to feed them for a week but by the third day could no longer be consumed, they would be starving until they could hunt another prey. This could be avoided by swapping over meat for fresh fruits that fed longer to get new food.

Later, other goods, besides food, began to be exchanged, such as hunting tools or utensils for everyday use. For example, coat skins in exchange for a spear. Bartering remained for a long time in this way, even in sedentary societies.

2nd-   Ranchers, farmers, artisans and first fairs.

A little later, as a further step of the human race, man began to raise cattle and cultivate his own lands. Farmers exchanged daily, then came the artisans and fairs. In the fairs they all met and presented their products outdoors, after the exchange of goods.

Over time, they realized that the system did not always work and much of the population stopped trading.

Why did they give up barter?

The growth of the commercial activity by the development of new products indicated that the system was impractical. On the one hand, it was very difficult to determine the exact value of the products in the exchanger: Is a loaf of bread worth the same as a jug of wine? Is a chicken worth the same as five tomatoes?

On the other hand, he did not always have what another needed, that is, if a shoemaker needed fruit and vegetables, he should always find a farmer who needed shoes or even find out what the farmer needed to get him with his shoe production (an exchange with a third to get the desired exchange).

To solve these problems they looked for a product of reference: the currency. The values of all the products were established on the basis of it, so that a determined value was established for all the products and any person could exchange the currencies for the products that needed.

(Claudio, 2015)

3rd-   Warehouse appearance and Merchant appearance

According to the Royal Spanish Academy (RAE, 2017), the warehouse is a building or place where goods of any kind are deposited, usually goods. Although the activity of manipulation and storage is very old, it arises since man needs to keep the grains until his next harvest. The first data is from the Neolithic period in Egypt 7000

years ago, where archaeological remains were found in the Nile Bank, one of the first places where agriculture began (Hernández M., n.d.).

However, the existence of warehouses or small warehouses was even greater some time later, when the first fairs we named in the previous section appeared. The warehouses arose to cover the needs of the people who were deprived of merchandise between fairs, either because they could not go to them or they were not comfortable doing it.

It is in the stores where the merchant's role first arises. This was who sold the basic items to the people who needed them. Thus arises the retail trade (Ortiz de Zárate, 1986).

4th-   Retail trade

Retail trade is the activity of selling goods and services in small quantities, mainly to the final consumer (Iresco, 1982, pág. 49). It is classified in (Barandaráin, 2015):

TABLE 2: Classification of sale of products with establishment

	Definition	**Types**
Traditional	It is a sales system in which the buyer has to go to the seller to show him, advise him, offer him and deliver the products he asks for, since they are separated from the customer by a counter (Lopera, 2014).	- Traditional shop - Specialized shop
Free service	It is one where customers can choose the articles or products directly, as they are located on shelves, corridors and linear commercial surfaces. The free service includes department stores, hypermarkets, supermarkets and self-services. In these establishments we try to encourage consumption through offers, discounts, advertising campaigns and the strategic	- Self-service - Supermarket - Hypermarket - Discount Store - Shops 'all at 1 €' - Factory Outlets - Second Hand Stores - Fair trade stores - Convenience stores

	situation of products within the establishment (González Alfonso, 2012).	- Category Killers
Preselection	They are establishments where a preselection of the products is made.	- Big warehouse - Popular store

Source: Own elaboration, based on Barandaráin, 2015

TABLE 3: Classification of the sale of products without establishment

	Definition	**Types**
Street trading	Is where the sale is made by traders, outside a permanent commercial establishment, on a regular, occasional, periodic or continuous basis, in the perimeters or places duly authorized in commercial installations that can be dismantled or transported (El portal del comerç sostenible, 2017).	
Home delivery	Home sales are those sales in which the offer occurs in private homes, places of leisure or meeting, work centers and the like other than the establishment of the seller, with physical presence of both sides (Consumoteca, Venta a domicilio, 2010).	
Automatic sale	In the field of commerce, the automatic sale is the form of retail distribution, in which the product or service is made available to the consumer for purchase by means of the activation of any type of mechanism and after payment of its amount, through vending machines (Consumoteca, Ventas automáticas, 2009).	
Direct marketing channels	Direct marketing is a set of techniques that facilitate immediate and direct contact with the prospective buyer, especially segmented, in order to promote a product, service or idea, using direct contact means or systems, new technologies that offer us " Virtual markets ", multimedia systems and all the new means that facilitate the technological advances on line (Hernandez Diaz, 2012).	- Sales by catalog - By correspondence - By telephone - By television - By computer - By Smartphone - By Tablet

Source: Own elaboration, based on Barandaráin, 2015

TABLE 4: Classification according to the organizational link of the distribution channel:

	Definition	Types
Independent trade	It is an establishment whose owner has not joined any group. The independent can remain alone, without being bound by any supplier or commercial support organization, or can ally or integrate themselves into a voluntary chain or franchise (DicLib, 2017).	
Associated trade	Is a set of different trading systems that share the criterion of trying to take advantage of the pooling of the interests of the units that integrate them, strengthening their relative position within the free market and to the benefit of participating organizations and the final consumer (Diccionario empresarial, n.d.).	- Franchise - Retail cooperative - Malls - Municipal markets
Integrated stores	It is the one that performs within itself the different functions wholesale and retail. They have a large number of employees, a high volume of sales and commercial activities exclusivity (Buenas tareas, 2011).	- Consumer cooperative - Popular warehouse

Source: Own elaboration, based on Barandaráin, 2015

As an example of retail we are going to see the department stores

The first big warehouse was "Bon Marché" in 1853, owned by Aristide Bocicaut who had the idea of accumulating goods in an attractive way, and transforming the whole store into a great showcase, allowing visitors to walk through the aisle structure without having no obligation to buy anything, presenting prices before their eyes and promoting products on offer cheaper than the competition (Marmol D., 2015).

Source: Google Images

2.1.2.2. Evolution of retail in Europe

Based on the report 'Evolución del Comercio Minorista en Europa' published by Distribución y Consumo and written by Dawson & Burt (1998), we are going to analyze several factors that have been changing over the decades. These factors will help us understand how the retail currently works in Europe.

2.1.2.2.1. Changes in the chain of distribution

o Consumers want different goods and services, not more of them (Arango, 2015). This implies that retailers respond, generating new structures, activities and values for the company.

Previously, as Theodore Levitt explains with his Myopia theory of marketing, most companies focused only on products and improving them, there was no known need to take into account the needs of customers (Levitt, 2017). There was more in mind the present and less the future, which was normally unpredictable. For example, the Apple Company concentrated a lot on improving its products, but in fact

only managed to change the appearance, being inside the same product. For the same article, he designed another in an exclusive version for a much higher price, simply thinking for his own benefit and not what the customer really wants, which is to satisfy his need. However, now companies have to strive to make customers happy, often personalizing products to each type of client and not fall into the myopia of marketing.

o Some retailers choose to apply Corporate Social Responsibility (CSR), basing their way of managing according to the impact that their activity generates to communities, the environment, employees, customers, etc.

What it is for?

- It increases the value added of the company compared to the competition. This is achieved by enhancing the image and recognition of the activity carried out by the company.

- Increase the involvement, commitment and productivity of all employees. This was demonstrated by a study that stated that transparent, open, flexible and with good communication companies have productivity rates 10-12% higher than the rest.

(Emprendedores, 2016)

o Before the distribution channel was a conduit through which the manufacturers directed their goods to the consumers, it is now the consumers that through that channel absorb goods from the producers.

o Before the agents participating in the chain fulfilled a differentiated function, now they acquire diverse functions. Today wholesalers assume responsibility for part of the wholesale activity, such as the physical distribution of products.

o Now both retailer and producer usually design a product and assign a brand, regardless of the position of each in the distribution chain.

2.1.2.2.2. Changes in the environment

o Modification of structures, activities and location of the retail trade in the environment in which the retailers move. This environment includes social, economic, technological and political elements that generate a culture to which retailers respond with their business decisions, either adapting the structure, activities, strategy approach, etc. (Dawson & Burt, 1998).

o The pattern of change is increasingly complex and accelerated, making the trading environment increasingly turbulent and unpredictable.

o The demographic trend in Europe is that there are more and more households, but with fewer members (the number of people living alone or with a partner but without children has risen). There is also more aging of the population, late marriages and lower fertility. Also the increase of divorces entails that there is more population living in a grandparent-grandchild relationship. These variations make it necessary to change the supply of products and services, since the demand is different from years ago. For example, there are now more senior citizens and it is not surprising that there is more offer of traveling companies for retirees.

o Increased awareness of the environment. From the 1970s onwards it became a very important issue, due to the risk involved in the decay of the natural environment. More and more companies are being added to sustainable development and alternatives are being developed to products so that they are less harmful.

o Technological trends change. Now there is more technology in the home due to the lowering of its cost, information technology and communication and biotechnology boom. We will see this point in more detail later.

o   More communication channels. The number of pan-European television channels has increased and it has announced the integration of road networks.
o   They have changed the strategic and management aspects of the different levels of alteration of the environment.

In Table 5 it can be seen that many of the change processes are occurring much faster than before. And in addition to discontinuous and unpredictable changes, we find that the retail environment becomes increasingly turbulent, with higher levels of alteration.

Table 5 : Strategic and managerial aspects of the different levels of alteration of the environment

	Environment alteration level				
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Environment alteration	Repetitive	In expansion Slow Growing	Changing Fast Growing	Discontinuous Predictable	Surprising Discontinuous Unpredictable
Strategic aggressiveness	Stable Based on precedent	Reactive Based on experience Growing	Anticipatory Based on extrapolation Growing	Enterprising Based on visible opportunities	Creative Based on creativity Innovative
Capacity to respond of the organization	Search for stability Rejection of change	Orientation to efficiency Adaptation to change	Orientation to demand Search for smaller changes	Orientation to the environment Search nearby changes	Creator of environment Search for innovative changes
Type of manager	Guardian	supervisor	Growth promotion	Entrepreneur	Creator
Management style	Political	Rational	Intuitive	Charismatic	Dreamer
Essential knowledge	Internal relations	Internal activities	Historical markets	Global environment	Opportunities that may arise
Typical response marketing retailer	Assortment and normal establishment Provisioning by wholesale Assorted according to season	Appropriate stores Periodic review of the assortment Starting a franchise	Bigger stores Largest assortments Low cost strategy or specialization	Innovative formats Frequent changes of assortments Further development of new products Foreign providers Promotions at the point of sale	Clearly differentiated establishments Development of new products by the retailer Strategy of low cost and high degree of service Direct promotions The time is considered as another element of the marketing mix

Source: Own elaboration, based on Ansoff, H.I., 1991

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2.1.2.2.3.   Changes in the consumer

o The individuals that make up the population have different tastes which
   are also different from those had in the past. It has changed the taste of
   the foods that are consumed, the colors, the way of dressing, the music,
   the religion, the politics, the language, etc. (Dawson & Burt, 1998).

o As already mentioned in the previous section of changes in the
   environment, demographic changes are the cause of some of the
   transformations of the consumer. The older population is growing faster
   than the younger population (rate of renewal of the negative population). It
   changes the type of establishment that old people demand, characterized
   by being consumers more faithful to a mark and an establishment. Adults
   and young people tend to consume several substitute brands, so there is
   not so much fidelity in their buying acts.

o There are more women who work than before and longer periods of time
   to get to the workplace. This makes buying behavior change and
   consumer-saving options such as online shopping are preferred.

o The trend towards work from home emerges, at least in Western Europe.
   Working and leisure time overlap and retailers must adapt to new
   demands. Now consumers value and use their time differently.

o Retailing is forced to redefine the concepts of well-being, ease of
   purchase, as well as the traditional choice processes exercised by
   consumers to distinguish between products (quality, time and price). It
   becomes more complicated to emphasize by some of these
   characteristics.

o In order to respond to different consumer behaviors, different types of
   establishments have been studied, so it is not surprising that a single
   company manages several establishments with very different
   characteristics (Burt & Sparks, 1995, págs. 110-119). In the following
   table we see in more detail the link between the models of behavior
   between the types of businesses. Depending on the characteristics of the

products to be purchased, consumers have several types of establishments at their disposal. Here is a summary table.

Table 6: Moments purchase and types of establishments in Europe

Moment purchase of food	Appropriate commercial format
Main purchase for provision of domestic stocks	Hypermarkets Big supply superstores
Basic shopping (weekly) to restock	Hypermarkets Big supply superstores Discount stores
Secondary purchase of fresh products and fast food	Supermarkets in the center of cities Discount stores Neighborhood supermarkets 24h Stores Small supermarkets
Sudden purchases to replace a depleted product	24h Stores Petrol station shops Supermarkets in the center of cities Small supermarkets Traditional shops
Acquisition of specialties and to test products	Specialized stores Feeding departments in department stores Internet and mail order

Source: Own elaboration, based on Burt & Sparks, 1995

o There is a more active search for autonomy in the lifestyle and, as a consequence, the goods and services that are demanded. Consumers want differentiated and even unique products and services.

o The distance is considered a barrier less than what was considered before, due to the advance of the technology and the possibilities of displacement at economic prices

o The demand for quality is increasing. There is an increasing competition among companies, therefore, companies try to always offer the best to their customers (higher quality, lower price). But now consumers are getting used to it and quality is now an indispensable requirement, it is no longer a distinguishing feature for companies.

- The ability to respond to promotions that are not based on the price of the product is growing. The consumer's attention and awareness of advertising and other promotional methods is increasing. Now the consumer gets information from many technology platforms, not just the advertising they receive.

- The price of products is becoming less known due to the increase in the range of products and the fact that white marks prevent direct comparison of prices. Consequently, there are other different causes of choosing a particular establishment.

- The consumer is hyper-informed, which means that when a potential customer arrives in a facility, it is very likely that he spent hours researching the products he would like to purchase. You will not want to waste any more time listening to the seller things you already know, want to be encouraged to buy or made to feel that it is the right decision, the best (Díaz, 2015).

- The consumer is hyper-connected, arrives at the establishment with some device, usually a smartphone in the hands and is in charge of corroborating in real time the data or information provided in the establishment. In many occasions the costumers tries to look for better offers in the competition and compare the benefits (Díaz, 2015).

- Consumers love the experiences. Traditionally we were looking for a quality product, now we look for buying experiences before, during and after the purchase of a product or service.

> *"It's not about the products you sell, it's about the emotions that you generate and the experiences you create"*
>
> (Living, 2016)

Clear examples of companies trying to sell an experience through their products are: Trident, Donuts, Coca-cola, Redbull, etc.

o There are communities and forums about brands and products where people talk about their experiences with them. Never forget that if a customer lived a positive experience by buying your product / service he will not hesitate to share it with his friends, family and contacts; But if the experience was negative, the costumers will spread the word even faster than with a good experience (Díaz, 2015).

> *"A satisfied customer attracts 2 more customers,*
> *but an unsatisfied customer takes away 8"*

o He likes to buy, but he does not like being sold. The consumer wants to be in control of the purchases at all times, and suspects everything that the seller says with eagerness that he buys. A consumer who feels obligated, will block any intention of purchase and will look for the way to escape of that situation and even the place of sale (Díaz, 2015).

o He gets bored easily. Try not to bore the customer when you advise him, you have to ask about their tastes, their needs, and provide him with effective solutions that will permanently satisfy him. You have to try that the costumer does not get easily bored with the product or unsatisfied by the purchase as soon as he buys it (Díaz, 2015).

2.1.2.2.4. Changes in the government policy

o Trade controls differ widely between countries in Europe. There has been a relaxation of the timetable policy in many countries, as has competition policy, but there has not been a relaxation of the control of the right of trade opening and controls of construction. For example, in England and Wales in the 1990s it became more difficult to obtain authorization for large-scale sites and shopping centers that were not located in the center of the cities (Dawson & Burt, 1998).

In Spain, organizations such as PATECO, affirm that the release of schedules according to Real Decreto-Ley 20/2012, has affected the evolution or disappearance of the format of convenience stores. This has been one of

the formats most punished by the crisis, not counting the stores located in service stations, and have had to close premises or to replace them by small traditional supermarkets (Real Decreto-Ley 20/2012, 2013).

o Similarly, in 1995 in Spain the intervention of the central government has limited the regional powers to authorize new large areas because new establishments were being authorized to the outskirts of the cities. It is not easy to balance local politics with central government policy, since, for example, local politics tends to regulate access to consumer shops with scarce resources and to environmental protection and central government policy is concerned Control of monopolies and taxation of business activity.

2.1.2.2.5.   Changes in organizational structures

o Reducing the number of small independent businesses and reducing their bargaining power, due to the privatization of the old state trade, which is not enough to compensate for the decrease that occurs throughout the rest of the continent. This decline occurred in the 1960s in the United Kingdom, Benelux and Scandinavia; In the 70s in France and Germany and more recently in Spain and Italy (Dawson & Burt, 1998).

The reasons for the competitive failure of retailers are complex. One of them is the change in consumer demand and its pursuit of a greater variety of products. Other reasons are the diseconomies of scale that small firms support, especially those associated with procurement costs; The difficulty of keeping up to date and applying marketing techniques; The cost of capital; The succession of the business, etc.

o Reduction in the number of large companies and increase in their bargaining power.

The increase in power of a few companies is considerable. The concentration of sales at national level of the five or ten largest companies is increasing, in

fact, the sales figure is so high that it is difficult to increase. For example, in Finland the CR5 Company dedicated to the food sector accounts for 90% of sales. And generally, companies that reach a considerable market share in their country, are reaching similar quotas in other countries, for example, a few years ago the most notable food chains in Spain were Pryca, Continente and Alcampo, all originating from others Countries.

o Increased participation of financial institutions in the control of retail trade.
o Implementation of new business strategic plans.
o Increase in international projection, both in relation to the supply of goods and in relation to the commercial activity of distribution.
o Relative reduction of the relations between companies purely of transactions in favor of the strategic and collaboration relations.
o As a consequence, retailers are forced to implement short-term strategies that allow them to maintain the constant growth of the capital's profitability and thus be able to satisfy the demands of other financial entities.

2.1.2.2.6.   Reduction of operating costs

o Economies of scale are sought at the organizational level. But to do this, purchases must be increased to such an extent that discounts can be obtained from suppliers linked to volume and bargaining power (Dawson & Burt, 1998).

o The reduced cost of procurement is reflected in reduced prices for consumers. This entails a series of consecutive positive developments for the company: sales increase, inventory turnover increases, there is more funding to open more establishments, economies of scale can be better exploited, costs reduced and the supply chain continues growing.

2.1.2.2.7.   Expansion of offer

o The objective is to attract customers through the widest range of assortments possible, with the aim of being able to take advantage of

what can be termed "economies of scope", linked to a wide or deep range of goods or services, which leads to attracting more types of consumers (Dawson & Burt, 1998).

o The combination of products attracts potential customers. And it is more possible that they make purchases that they had not thought about before going to the establishment. A technique widely used to make the consumer buy things that have not gone to look for the establishment is placing certain products next to the cash registers or in the gondolas of the corridors.

2.1.2.2.8. Differentiation to adapt to local demand

o The objective is to seek a competitive advantage based on market knowledge specific to the area in question. Variables such as the assortment, price policy, promotions and others are adjusted the demand and consumer behavior that lives in the immediate vicinity of the establishment (Dawson & Burt, 1998).

o Purchases are made in small quantities that are adapted to local needs, therefore economies of scale are minimal in these establishments. However, the margins are relatively high.

o Decreased business relationships between companies, while increasing strategic relationships and partnerships (Dawson & Shaw, 1990; Crewe & Davenport, 1992; GEA, 1994).

2.1.2.2.9. Changes in retail business

o Decrease in number of establishments. The reason for the decline lies in the long-term economic viability of small stores, which are only profitable if they have a clear marketing approach to their products, efficient warehouse management systems, financial control and human resources management and are specialized in some product / service. In other

cases, the reason for success derives from belonging to a franchise, such as Benetton, or by focusing on the target segment of consumers, such as the Shell Shop drugstore and food chain Dia (Dawson & Burt, 1998).

- o Preference for predefined and controlled commercial environments for the location of establishments.

- o Provide good service.

- o Search for efficiency.

2.1.2.2.10. Barriers to innovation

Due to the great competitiveness that businesses suffer, it is important to innovate to cope with this variable economic environment. But trades do not always succeed in innovating for many reasons.

Among the obstacles to innovation, the study by Corchuelo and Carvalho (2013) highlights the following barriers to trade:

Table 7: Obstacles to trade

Cost factors	Lack of internal and external funds High costs
Knowledge factors	Lack of qualified staff Lack of information on technology Lack of market information Difficulty finding partners
Market factors	Domain of established companies Uncertainty of demand
Internal factors of the company	Problems of the organization of the company High economic risk perception

Factors of public actions	Lack of support from public administrations
	Insufficient flexibility of rules and regulations
	Absence of innovation mediators
Factors of appropriability	Difficulty in protecting own innovations
	High imitation risk
Other motives	Lack of demand for innovations
	Lack of the need for innovation in markets

Source: Own elaboration, based on the study of (Corchuelo & Carvalho, 2013)

Another classification is the one carried out by Piater (1984) in his study of companies in industrialized countries, in which he distinguishes, on the one hand, the external barriers that refer to the difficulties of supplies, raw materials, financing, etc., that are mainly related to government regulations or political actions (Hadjimanolis, 1999), and on the other hand, internal barriers that refer to the lack of time or lack of experience in management, culture and systems related to innovation (Rush & Bessant, 1992). In addition, this second group includes human resources, such as the negative attitude of managers to the risk or resistance of employees to innovation (Hadjimanolis, 1999).

2.1.2.3.   Situation of the retail trade in Spain

Today, we can assure that the sector will undergo a profound transformation in the next decade, the biggest experienced in the last 50 years, which will be driven mainly by aspects such as hyper-channeling, the reappearance of stores at 'bargain' prices or Cooperation between retailers. These are some of the macro trends that the consultancy Coto Consulting has observed and reflected in the report Retail Revolution vision 2015. Below you will see a summary of the report accompanied by statistical data.

2.1.2.3.1.   Employment

Employment has declined markedly since the economic crisis began in Spain in 2009. However, the figures indicate that every year is creating employment.

GRAPHIC 1: Unemployment registered in millions of unemployed

Junio 2016
3.767.054
parados
−124.439
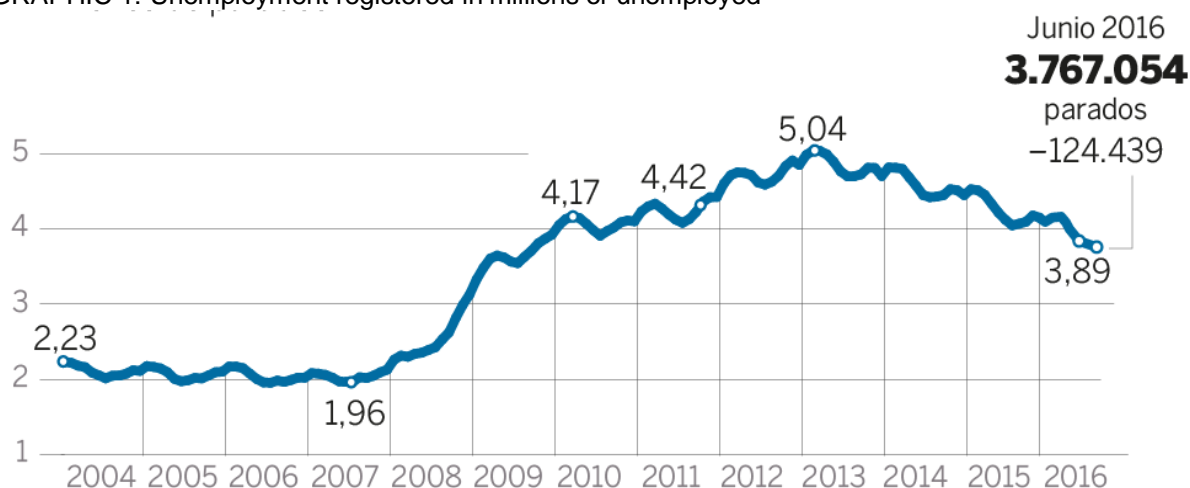
Employment is one of the most closely related indicators of trade. But this has nothing to do with the increase of business hours since a curious case is the one in Madrid that being one of the communities with greater weight in the retail trade and leading in policies of commercial liberalization, has a zero rate (0.00%) of employment growth in the sector. There are still many places closed.

TABLE 8: Annual variation rate of December 2014 of retail employment

Cantabria	2,30%
Extremadura	2,00%
Cataluña	1,70%
Baleares	1,60%
Murcia	1,50%
Andalucía	1,00%
C. La Mancha	1,00%
C. Valenciana	0,90%
NACIONAL	0,80%
País Vasco	0,60%
Castilla y León	0,50%
Canarias	0,40%
Galicia	0,20%
Madrid	0,00%
Asturias	-0,20%
Aragón	-0,30%
La Rioja	-0,90%

As we see in the previous image, there is an unequal behavior among autonomies: 9 autonomous communities are above the national employment rate of the retail trade and only 3 communities present a negative rate.

Entrepreneurs' confidence has been declining progressively since the first quarter, which means that managers' expectations about the pace of their business show a clear downward trend. In addition, financing to households and companies continues to be negative. There are no symptoms of trust when granting credits.

2.1.2.3.2. Consumer financing and CPI

Although the reliance on business and households for lending is negative, it is interesting to relate funding to the CPI and its subgroups.

TABLE 9: Cumulative annual variation

2,00%	Equipamiento hogar
-6,00%	IPC GENERAL
-1,25%	Alimentación
-2,00%	Equipamiento personal

Source: Own elaboration, based on Índices de Comercio al por Menor, INE

It can be seen that the cumulative annual variation of the general CPI is negative, so it can be said that prices have fallen, mainly due to the influence of food and personal equipment.

> *'In 2014 there has been a decrease in the prices of food and personal equipment'*

Sales in the retail sector in 2014 have increased during the year 2014. In particular, sales of personal equipment goods have contributed to the increase in the total turnover of retail consumption.

TABLE 10: Cumulative change rate in 2014 of turnover per product

Equipamiento personal	23,00%
Cifra de negocios total	4,13%
Equipamiento del hogar	0,93%
Alimentación	0,42%
Otros bienes	-2,39%

Source: Own elaboration, based on Índices de Comercio al por Menor, INE

Regarding the mode of distribution, the growth of turnover in the individual retail store during 2014 is remarkable. Large chains also show a positive but smaller growth.

TABLE 11: Cumulative change rate in 2014 of turnover by Distribution Mode

Tienda minorista individual	9,25%
Grandes cadenas	4,33%
Cifra de negocios total	4,13%
Grandes superfícies	1,20%
Pequeñas cadenas	-3,63%

Source: Own elaboration, based on Índices de Comercio al por Menor, INE

> *'The growth of the businesses in the individual retail stores surpasses the one of the big surfaces and chains'*

2.1.2.3.3.   Indicators of consumer confidence, the current situation and expectations of the consumers

As shown in the following graphic, the growth of the three indicators is positive, albeit at very small rates.

GRAPHIC 2: Indicators
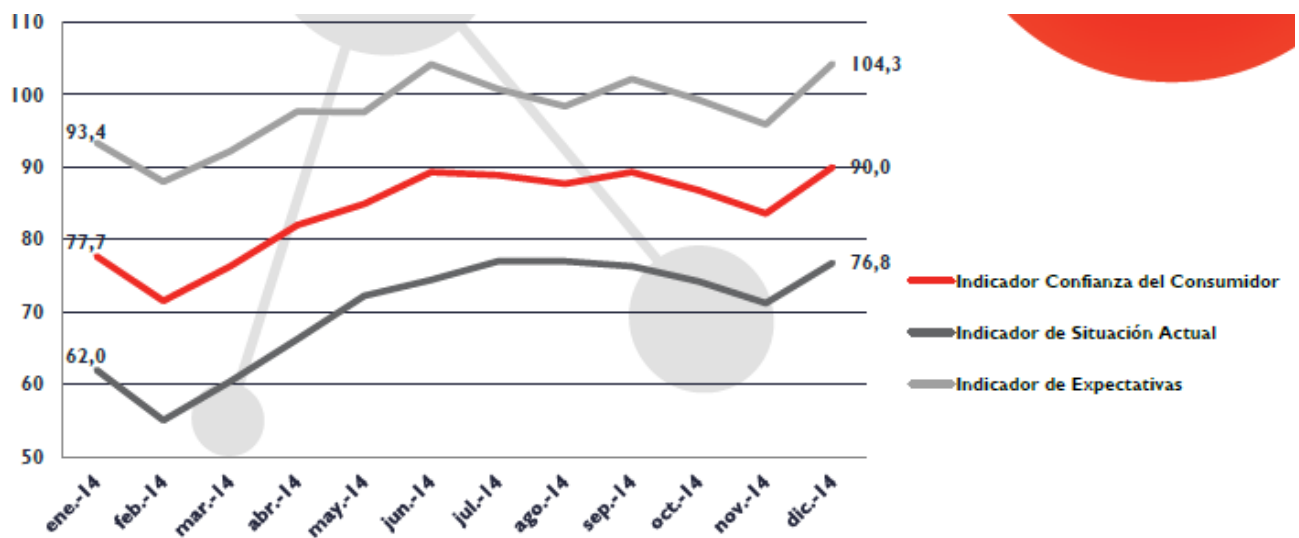
Source: CIS

> *'In 2014 there has been a progressive improvement of consumer*
> *confidence and expectations'*

2.1.2.3.4.   Adaptation of the commercial format

When we talk about innovation we can not only apply it to the product, we can also innovate in the different forms of distribution of these products. At the moment these are the forms of distribution that more possibility of success have (Barandaráin, 2015):

2.1.2.3.4.1.   Pop-up

According to digital magazine Puro Marketing, Pop up stores are spaces that pop up from nowhere, in the most unexpected places, and feature a brand that for a short time provides a unique experience to customers, full of creativity And with a certain exclusivity character (Puro Marketing, 2014).

The main characteristic is that they do not aim to sell products but that customers can live experiences around a brand. This type of establishment has very important advantages such as branding (reporting great brand awareness), virality (this notoriety drives users to share their experience and feel protagonists), great impact at low cost (no large infrastructure is necessary), sales (of that brand) and

engagement with customers (connect with customers and transmit special values of the bran) (Puro Marketing, 2014).

For example, Adidas clothing and accessories company created a Pop-up in a huge box of his sneakers to promote his Stan Smith collection.

Source: Web Page "Tiempo de Publicidad"

2.1.2.3.4.2.   Flagship Store

They are spaces designed for the creation and management of a unique and exclusive experience. These types of stores are spaces where selling happens in the background, what is sought is to create entertainment and educational experiences, are usually bet as experiential marketing strategies (based on offering customer experiences).

For example, the company Primark occupies the best places and impresses with its design:
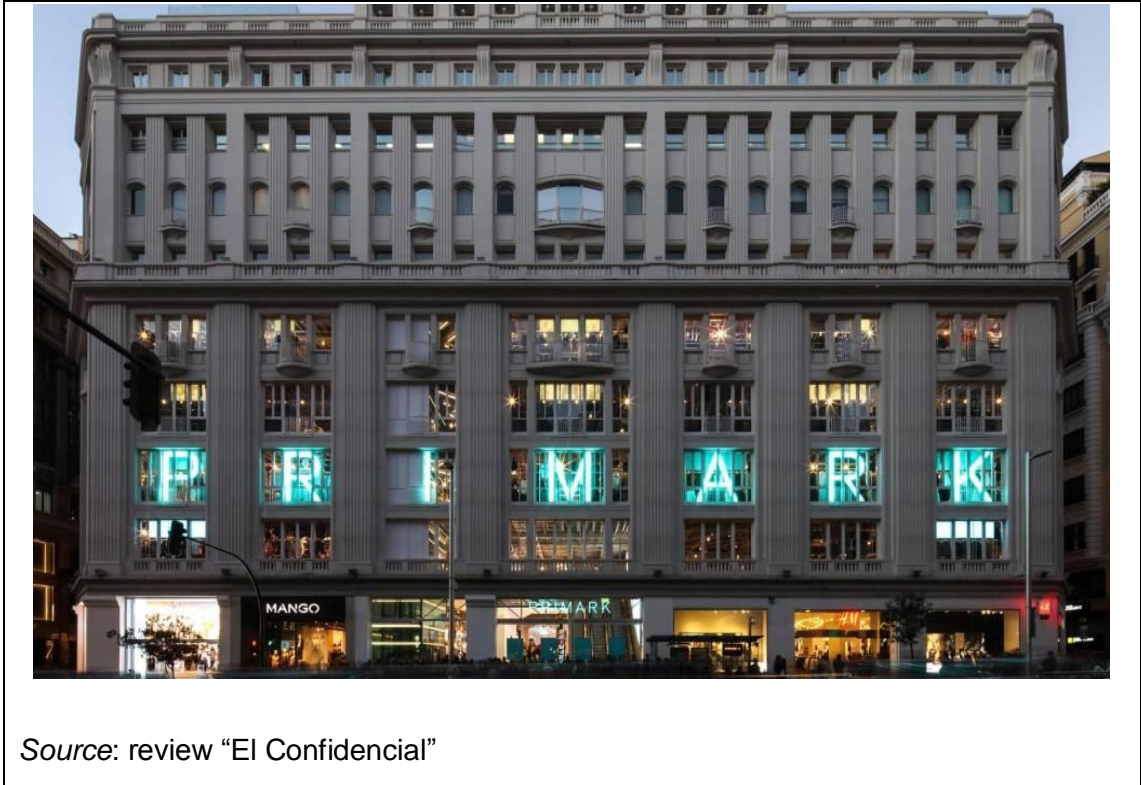
Source: review "El Confidencial"

2.1.2.3.4.3.   Co-working

It is a way of working that allows independent professionals, entrepreneurs and SMEs from different sectors, to share the same work space, both physical and virtual to develop their professional projects independently, while promoting joint projects.

Spain has many Co-working centers, although most are in the provinces of Madrid and Barcelona, where the demand is greater and the concept is becoming better known among professionals. Here are some of them:

CENTRO	CIUDAD	TELEFONO	WEB
Working Space	Alcobendas	916 529 277	www.workingspace.es
CINC	Barcelona	933 030 060	www.cinc.com
Gracia Work Center	Barcelona	932 132 496	www.graciaworkcenter.com
Garage30	Madrid	915 011 090	www.garage30.com
Loft to Work	Madrid	915 289 909	www.loft-to-work.com
Coworking Point	Mataró	937 574 247	www.coworkingpoint.com
La Guarida Creativa	Móstoles	916 463 163	www.coworkingmadridsur.es
Coworking Via Plata	Sevilla	954 538 342	coworking-viaplata-sevilla.blogspot.com
Coworking Valencia	Valencia	963 744 790	www.coworkingvalencia.co
Cloud Incubator Hub	Murcia	968 33.89.40	cincubator.com

Source: digital magazine 'Emprendedores' (Prieto, 2011)

2.1.2.3.4.4. Click & Collect (picked up at the store)

The collection in store is a service that gives the customer the possibility to see from the online store the availability of the products in real time and go to collect the order to the selected store. The service is oriented to facilitate the process of buying to the customers. This type of store collection is an added value for businesses and brand strategy, but it is not a substitute for the original service.

Some examples are Eroski, Carrefour and El Corte Inglés, all of them perform the Click & Collect service.

2.1.2.3.4.5. Brick & Clicks

It is a business model that integrates online and offline sales in the physical space of the store and allows the customer to buy simultaneously through different channels.

These stores have a number of very important advantages such as the elimination of entry barriers such as distance, major infrastructures and agility. But there are also some disadvantages such as the denial of the population to access through this channel as the only alternative.

One of the most famous companies in Spain that bet on Brick & Click is ZARA

ZARA

Source: Google Images

2.1.2.3.4.6.   Fusion stores or hybridizations

They are businesses that offer several categories of products or services that in principle have little to do with each other, but which, from the point of view of the client, constitute a comprehensive and attractive offer. This creates a new product or a new service that will have a greater appeal than the sum of its parts.

For example, the Muez library in Valencia. It is a bookstore specialized in gastronomy, where you can check and buy books and magazines while enjoying some dishes and drinks available on the cafeteria menu.

Source: Official web of 'Librería Muez'

2.2. New technologies

In this second big section we will take a look at what we call New Technologies and we will briefly follow what has been its evolution in data.

2.2.1. Definitions

There are many definitions that try to interpret what the new technologies really are, as their concept changes with the passage of time. At present, it can be said that the new technologies are based on the communication sector: computing, video and telecommunication. To try to define it we will focus on what innovation is, these are some of the most outstanding definitions:

TABLE 12: Definitions of innovation

Author / Source	Definition of innovation
Universidad de Castilla La Mancha	They are the result of the discovery of new processes, knowledge or skills and applications that allow to create inventions in less time
Medina Salgado & Espinosa Espíndola, 1994	It is a term that comes from the Latin 'innovare', that means to change or to alter things introducing innovations
Diccionario de la Real Academia Española, 2001	Action and effect of innovation, considering innovating how to move or alter something, introducing novelties
Ken Morse	The whole innovate in creating more marketing. It is argued as follows: "There are a number of creators of research and technology who invent new ideas, but then you have to unite these with the entrepreneurs who know how to market the new technologies" (Ramírez, 2012)

Source: Own elaboration

In short, what all these definitions have in common is that two factors intervene: the creation of something new, which has not been invented before, and a successful marketing, because acceptance within the customer segment is important.

A more complete definition of Innovation is the Oslo Manual (OCDE & Eurostat, 2005) which defines:

> *"An innovation is the introduction of a new, or significant, improved product (good or service), a process, a new marketing method or a new organizational method, in the internal practices of the company, organization of the place Work or external relations"*

2.2.2. Technological evolution

- In the 19th century, the first department stores in Paris (Bon Marché) based their construction on the new technologies of the time, but also began to depend on the new means of collective transport that brought the consumer closer to the city center.

- Similarly, modern hypermarkets exist thanks to various technologies, such as transport and handling of goods on which they depend for the supply of products (security, temperature facilities...).

- There is a close relationship between technology and retail trade. Any technological breakthrough has its impact on trade across Europe, since technology can be applied equally independently of cultural aspects, so that it is a factor of European convergence.

- Helped to change the cost structure and to meet new consumer demands (Dawson J. A., Applications of information management in European retailing, 1994) (Dawson J. A., 1994 B). For example: the use of bar code readers at the point of sale allows to collect information on sales; This information is transmitted electronically to the central offices, the distribution center and the supplier, which allows planning the replenishment from the distribution center.

- EDI (Electronic Data Interchange) transmits information about orders, invoices and payments. It has made it possible to reduce the costs associated with the spatial dispersion of the different activities, lower transport costs (due to the greater logistics efficiency), transaction costs from one place to another, the number of stores and the necessary hand labor, capital Invested and the cost of corresponding land.

- Over the last decade food retailers have reduced their logistics costs from 50% to only 3% of sales (Dawson & Burt, 1998).

- Appearance of applications of technology in domestic use, such as the availability of private cars, has greatly influenced consumer demand and behavior (Dawson & Burt, 1998).

- Increase purchase from home. Internet sales continue to grow at a frantic pace this early in the year. Something that does not surprise anyone, because technological advances and improvements in logistics systems make it increasingly easier to make our purchases online (Ferry, 2017).

- Advances in product-handling technology imply changes in the location, number, size, and configuration of the stores required by retailers. The increase in the speed of manipulation has meant being able to work with smaller inventories and, therefore, with smaller spaces for storage.

- Advances in biotechnology affect the variety of products available while the development of new foodstuffs and new high performance textile fibers have in turn enabled the appearance of many innovative products.

2.3. <u>Commerce with new technologies</u>

2.3.1. Introduction

Having analyzed the trajectory that has followed the trade and, on the other hand, the trajectory that has led the technology, we will see how they work together and what benefits we obtain in the trade when implementing certain technologies.

As a subsection, it should be noted that with the passage of time have sprung up software that have greatly helped stores in their daily tasks. For example, as shown in the following table (Allen L., 2000), the emergence of accounting programs has facilitated audits, document review and verification, company document accuracy, and so on.

TABLE 13: Use of the information system to the management by the retailer

Departments	Information	Results
Accounting	- Sales - Accounts receivable - Sales audit - Diary book	- Fewer staff in the department - Review and verification of source documents - Increase cash yield through debtor control - Facilitates audit - Improves the accuracy of financial information
Credit	- Credit cards	- Speed up payment - Improve customer service - Increase sales - Determine the commercial area - Know the consumer habits of the customer - Know the location of the customer
Goods and inventory control	- Variety of products - Multistore operations - Stocks, missing and	- Balancing inventory according to consumer preferences - Detect demand trends

	returns of the supplier - Consumer preferences	- Reduction of the cost of discounts - Computerized orders to the supplier - Allocation of investment in inventory - Analyze trade resources - Evaluate the performance of the merchandise - Improve customer service - Increase profitability

Source: Own elaboration, based on Allen, 2000

Similarly, the emergence of credit card payment systems has made it possible to streamline and improve customer service and to know the consumer habits of customers, among others.

Or even there are specific programs for the management of stocks, programs for the management of space in the warehouses, new technologies applied to merchandising, etc. These are some of the things that we are going to see below.

2.3.2. Evolution of technology in shops

Below we will point out the main technological events that have given rise to improvements in the commercial field. But let us first clarify that the dates of the events are only indicative, because the Boom of each one has been given importance, that is, when they have really been implemented for the widespread use of trade, not the date of their invention Except the Internet, which will take reference to its beginnings).

GRAPHIC 3: Evolution of New Technologies applied to trade

1,990 BCE, E-commerce

1,994 BCE, QR Code

1,990 BCE, Anti-theft alarm

1,992 BCE, Augmented reality

2,015 BCE, Mobile Payment

1,990 BCE, Big Data

2,012 BCE, Street Control

1,990 BCE, Television ADS

1,961 BCE, POS/TPV & Dataphone

2,015 BCE, ESL & Security

2,000 BCE, Omnichannel

1,980 BCE, Personal Computers

1,960 BCE, Credit cards

2,013 BCE, Beacons

1,996 BCE, Web Page / APP

1,980 BCE, Barcode

1,958 BCE, Internet

1,931 BCE, Refrigerators and air conditioners

| 2,010 BCE | 2,000 BCE | 1,990 BCE | 1,980 BCE | 1,970 BCE | 1,960 BCE | 1,950 BCE | 1,940 BCE | 1,930 BCE | 1,920 BCE |

PRESENT

1960

Source: own elaboration

42

2.3.2.1. Refrigerators and Air Conditioners (1931)

The oldest data on the beginnings of the refrigerated is the year 1550, the Spanish physician Blas de Villafranca, who claimed to have discovered a way to conserve the ice longer than normal. Centuries later, other prototypes were developed, based on ice inside metal cabinets that kept the cold, and even combinations of components such as ammonia and sulfuric acid to make electric fridges. The latter were not very successful due to the very negative effects of toxic gases, but in 1931 Thomas Midgley discovered how to combat these effects by discovering chlorofluorocarbon, which was first used in refrigerators and air conditioning equipment, both at domestic as industrial scale (Profesor en línea, 2015)

What change did he suppose for the commerce?

Being able to keep fresh food was a pretty important advance, especially for traders. In addition, along with the advancement of means of transport, it served to market products in places where it could not be produced. For example, fresh fish from the sea can be transported into the interior of the country today. For both people and establishments was a considerable saving of money and time, because they did not discard so much food and it was not necessary to go out and buy fresh food every day.

2.3.2.2. Ads on TV (1990)

The first television ad in history was broadcast in the US. On July 1, 1941. It was a 10-second spot in which an image of a clock on a map of the United States was displayed and a voice-over saying "America runs in the time of Bulova". The cost of the spot for the company is said to have been $ 4, a price almost insignificant compared to the impact it had, because it was broadcast on the WNBC television station before a Baseball game between the Brooklyn Dodgers and the Philadelphia Phillies (Wikipedia, 2017).

Later, in the early 1990s the emergence of new technology unleashed a creative wave, for now what could be done in past decades could not be done. And later, in the twenty-first century, the use of technological innovations and new ways of expressing creativity as we know it today are completely unleashed. In fact, today's ads are critical to the smooth running and financing of television (Wikipedia, 2017).

What change did he suppose for the commerce?

Television is the most widespread and highest level of memory, because it is moving images, flashy and often with fun tunes. Advertisements have always served to introduce products, services and brands to consumers, but in reality it involves much more than that. An advertisement on television can worsen or improve the image that the consumer has on the brand of the company, or reposition or maintain it on the basis of remembering that it is still on the market. It is very important to ask yourself what kind of message you want to convey, how and to whom, before carrying out an advertising campaign.

On the other hand, it is also worth mentioning the use of radio for the same purpose, advertising posters, magazines, newspapers, etc., although they have had and have less impact on consumer behavior.

2.3.2.3. Internet (1958)

In 1958 the company Bell created the first modem that allowed to transmit binary data on a simple telephone line. As a result of this project were born others as ARPANET and InterNetworking Working Group, until publicly announced the World Wide Web (WWW) in 1991 and the first search engine of history. A few years later there were ten million computers connected to each other (Wikipedia, Internet, 2017).

What change did he suppose for the commerce?

Internet was the beginning of many advances: sending e-mail, sending content to the cloud, transmission of files of any kind (images, video, sound, text ...) online conversations, etc. Currently the low cost for developed countries and the almost immediate exchange of information have made the work easier. In the case of the stores you can order instantly to suppliers, send invoices to customers, do paperwork, report on offers and a multitude of other things. On the other hand, the number of new jobs that have been created around the Internet is enormous.

2.3.2.4. Personal computers (1980)

The first known registry of personal computers is the one that appeared in 1964 in the magazine New Scientist, in a series of articles called "The world in 1984". An article (Arthur L., 1983) of the IBM Watson Research Center was written:

> *"Although it will be entirely possible to obtain an education at home, through the personal computer itself, human nature will not have changed, and there will still be need for schools with laboratories, classrooms and teachers to motivate students"*

However, the use of computers in the domestic and professional spheres did not arrive until 1980, when they were considered to have sufficient potential for people to invest in them. At that time, a computer was already of manageable size, it incorporated different computer programs and was economically viable for the majority of people. Years later the first commercial deals appeared using computers to transmit data via Internet (Wikipedia, 2017).

What change did he suppose for the commerce?

Nowadays we can hardly imagine how it would be to run a business without a computer. The personal computer made a big difference, especially when accounting, management and taxation programs began, word processors, Internet apparatuses, and so on. The saving of time, material and labor entailed a real saving of money.

> *"The reason that will convince most people to buy a home computer will be linking it to a national network of communications (Internet)" - Steve Jobs*

2.3.2.5. POS & Datephone (1961)

A Point of Sale Terminal (POS) is a device that, in a commercial establishment, allows the management of sales related tasks, such as charging by credit or debit card, creating and printing the sales ticket, managing inventory or Generate reports that help in the management of the business, among others (Wikipedia, 2017).

Source: Microvell informática

On the other hand, a Datephone is, in shops and other establishments, a device that by means of a telephone or wireless line allows payment with credit or debit cards (RAE, 2017) and smartphones.

Source: Web Page "Código QR"   *Source*: Web Page "Gestión TPV"

What change did he suppose for the commerce?

The POS payment process has evolved in recent years to adapt to the new EMV chip cards (Europay MasterCard Visa), which carry a safety pin, allowing them to be safer payments. Also, increasing the use of cards to buy has led many businesses to use a date in which we insert the card in the terminal and type our pin (Domestica tu economía, 2012).

These tools give traders the following advantages (Domestica tu economía, 2012):

o Simpler payment processes. Streamline the collection process and avoid long queues.
o Safer payments. The customer does not lose sight of the card in no time.
o Trade saves time and money. You do not need to put money into the bank, or have large amounts of change.
o Facilitates the use of cards. The client does not need to carry cash and can use some financing formula offered by the issuer of the card, as well as payment in installments, discounts in stores, etc.
o Commerce wins customers. Many purchases are not made for not having cash.

The future

Mobile payments promise to be the future of how we pay for things in person, although they still have to reach us so we can start using them (Pérez, 2016).

The global trend is to reduce the use of 'physical money'. In the United States, according to BI Intelligence figures, US $ 80 billion less will be moved in 2018 than those moved in 2013, a considerable figure if one takes into account the growth of that country's economy. That means that non-physical media, such as electronic cards or means of payment, will be increasingly used (Enter, 2015).

2.3.2.6.   Credit cards (1960)

The idea came from a director of a bank, Chase Manhattan Bank, around the 1940s, but did not spread internationally until 1950-1960. Since then, year after year credit cards have been increasing. Below we can see a graph that shows its evolution, differentiating debit cards (red), credit cards (blue) and the sum of both (purple) (Wikipedia, 2017).

GRAPHIC 4: Circulation cards issued in Spain
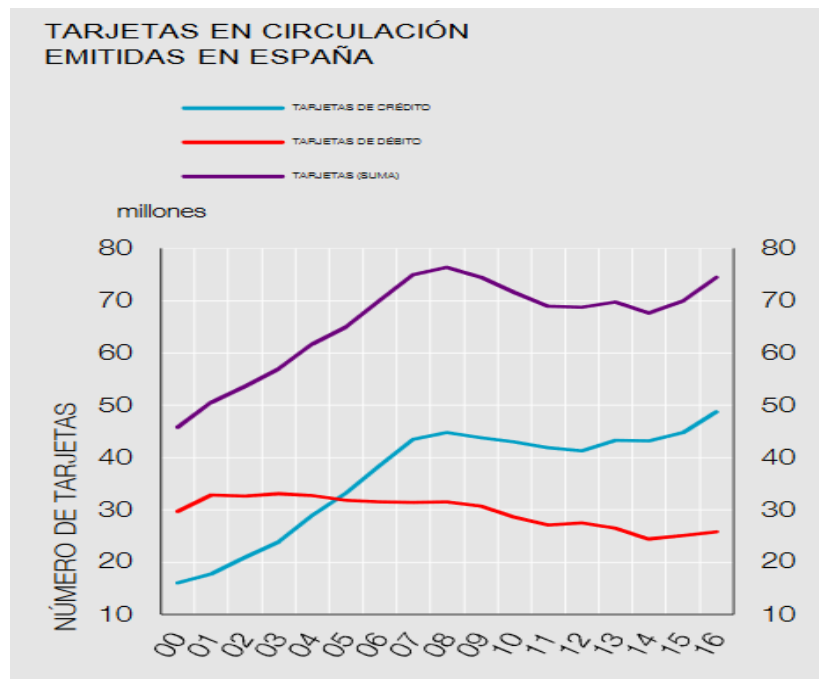
Source: Banco de España

However, bank cards are not the only way to make purchases without using cash. Pay-as-you-go applications like Paypal are gaining more ground. In the following chart we can see that the most demanded and most trusted users to make their purchases is Paypal, followed by credit cards, although they are losing points.

GRAPHIC 5: Percentage of use of different means of online payments of purchases made from tablets or smartphones in Spain in 2014-2015, by way of payment
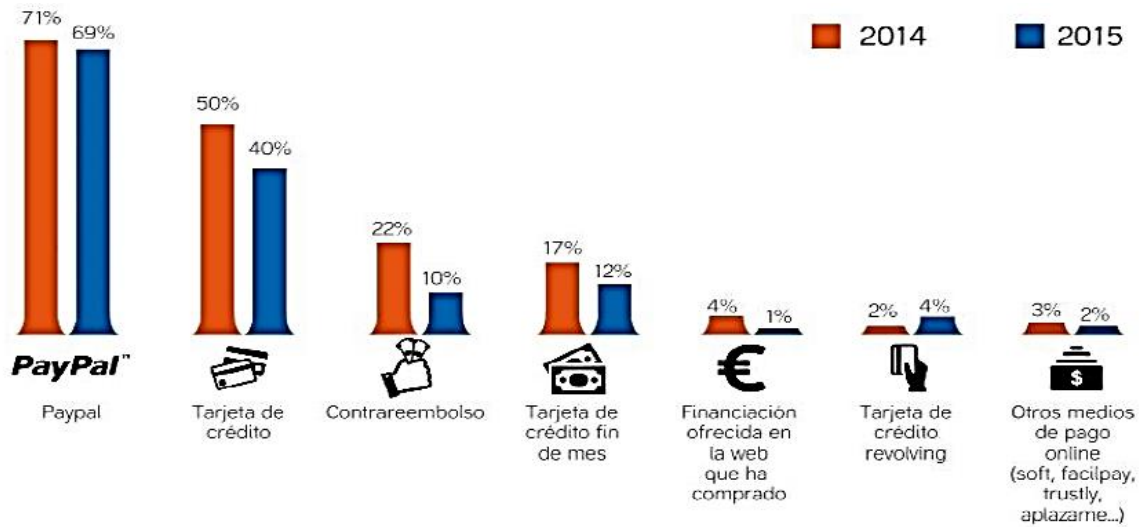
Source: Digital Strategy Consultant 'Ditrendia'

On the other hand, the following graph shows the amount of time spent using desktop computers or laptops (dark blue) and the time spent using mobile services (light blue). We highlight Spain with a use of computers of 3h 36m and a use of smartphones of 1h 53m, in the period of January 2017 (Villanueva, 2017).

GRAPHIC 6: Time spent on the Internet on January of 2017
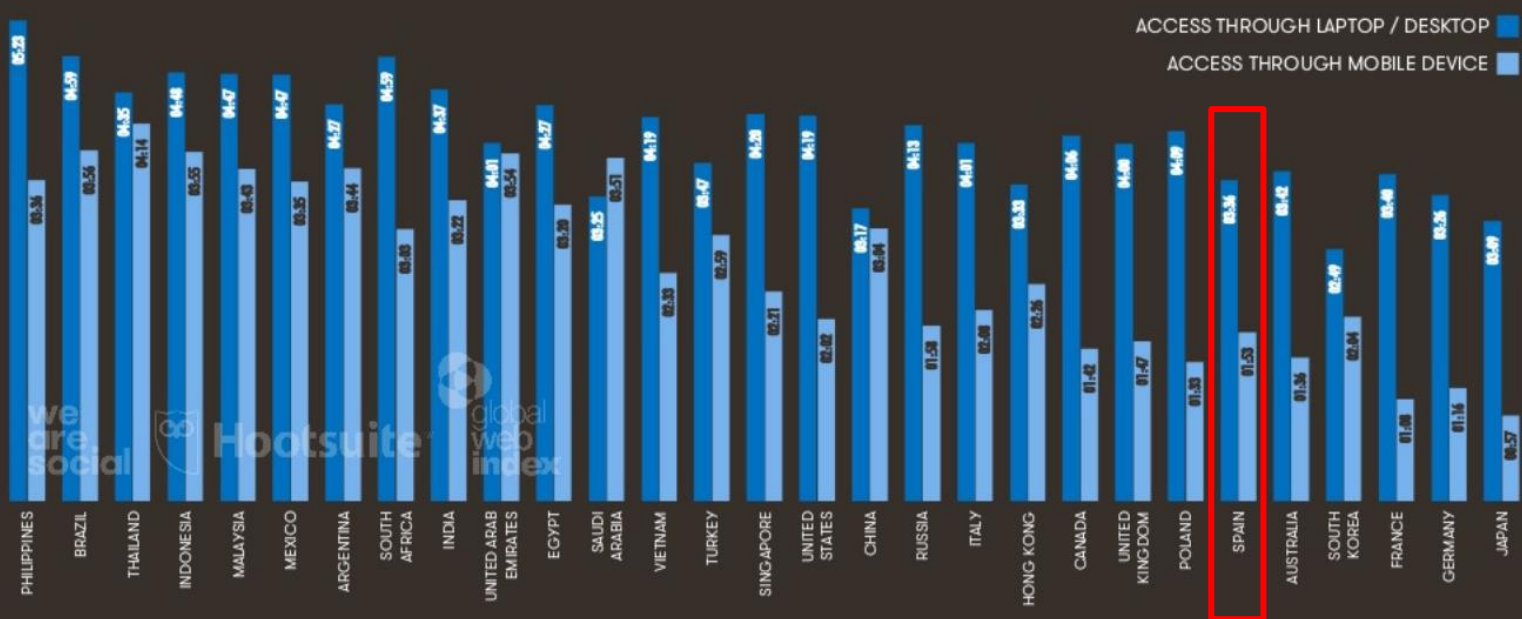
Source: Marketing 4 e-commerce (Villanueva, 2017)

What change did he suppose for the commerce?

It introduced a new way of operating and paying for customers, giving greater comfort. At that time the shops had to adapt to the new demand of the clients, reason why it took the big companies to make very big investments of money and, to the small establishments that could not afford it, to stay behind in front of the advances.

Later, businesses and other companies began to take advantage of the fashion of the cards to make their own. They are loyalty cards, in the form of discounts, accumulation of points to obtain discounts, etc.

2.3.2.7.   Barcodes (1980)

In October 1952, the first barcode patent was filed by inventors J. Woodland, J. Johanson and B.Silver in the United States. That year they got an automatic method to identify railway wagons and, decades later (1980), it began to be used commercially (Wikipedia, 2017).

Barcodes are printed on the packaging, packaging or labels of the products. This progress made it possible to quickly recognize or consult the characteristics of an item at a point in the logistics chain and thus, for example, be able to inventory and place new orders. At the moment it is considered a crucial and indispensable tool when managing the products properly. Below is an image with the typology of codes that exist, in the absence of so-called QR codes that we will see later.
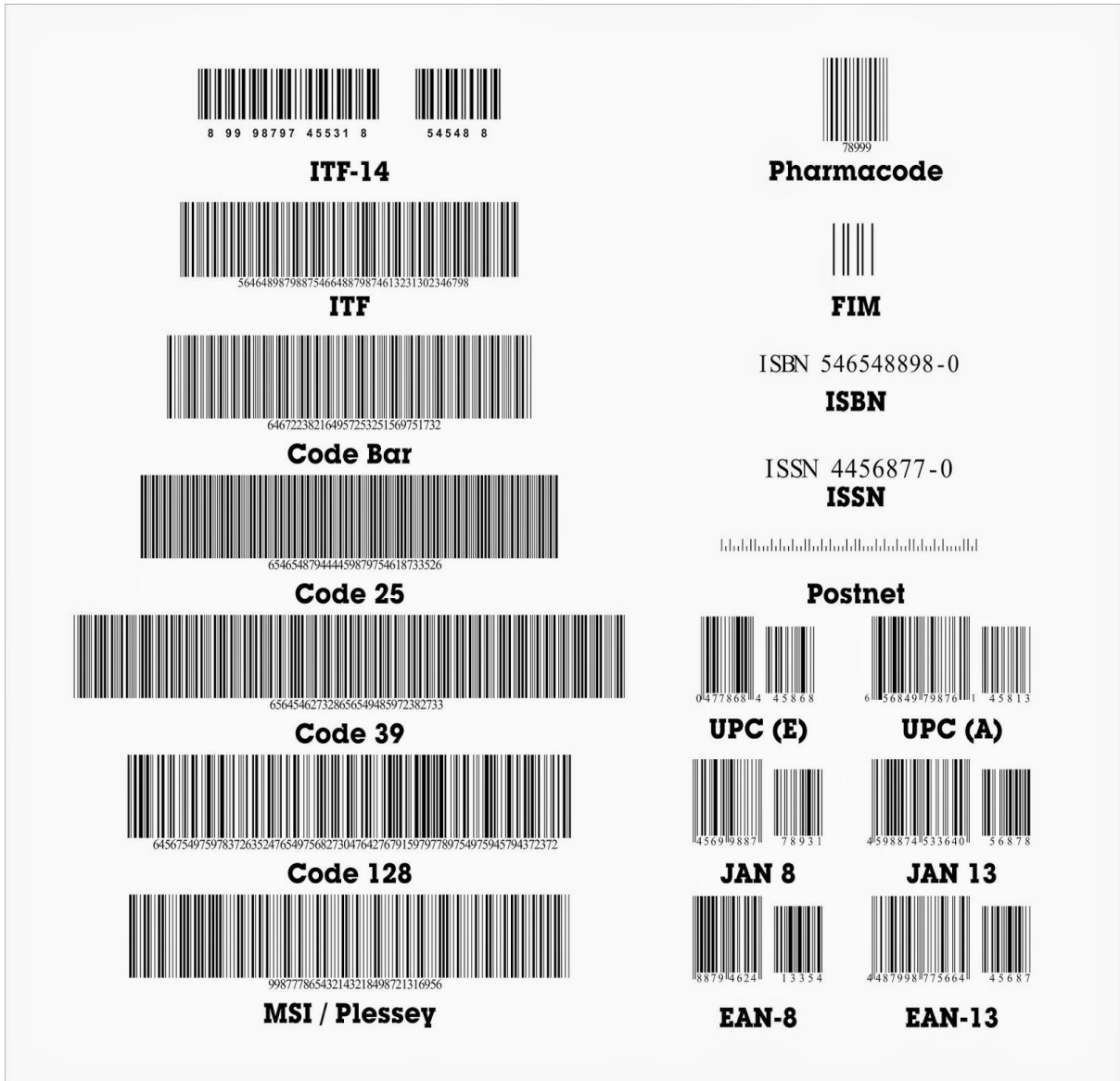
Source: Web Page "Keyword Suggestions"

Evolution of the barcodes

GS1 Spain was born in 1977 to introduce in Spain the system of identification of products by bar code and currently works in the development and promotion of technological standards and management practices that help companies to be more efficient and competitive.

1973 - The beginning of a common language. Industry leaders in the US choose a single standard for product identification - the "Universal Product Code" (UPC) symbol. Still in use today, the UPD was the first GS1 Bar Code.

1974 - The first bar code scanned with a UPC bar code in an Ohio Supermarket in the United States.

1976 - Digit number 13. Based on the original UPC bar code, a 13th digit is added allowing this identification system to become global.

1977 - EAN: a European organization. EAN is created as an international association of non-profit standards with the aim of improving efficiency in the supply chain of the consumer sector. The Spanish Association of Commercial Coding is born, nowadays AECOC and representative of GS1 in Spain.

1980 - Identifying Locations. Standards are introduced to identify locations, now known as GLN (Global Identification Number).

1981 - First products codified in Spain. 3M begins to code its products, being of the first manufacturers to use in Spain the system of identification EAN.

1982 - The first scanners in points of sale. Mercadona installs the first scanners in its stores.

1989 - Expansion of standards. Bar code standards are expanded again to include logistics units with UCC / EAN-128 codes. These bar codes include application identifiers that allow, for the first time, to include additional information such as expiration dates or batch number.

1990 - Global organization. UCC and EAN International sign an agreement to jointly manage global standards. The EDI-EANCOM service is created, the first initiative of electronic commerce between companies in Spain.

1993 - Identifying logistics units. The EAN-128 code is entered for the warehouse scope. A standardized format for logistics labels. Allowing locate and follow logistic units throughout the supply chain.

1995 - Scanners in all points of sale. The whole of the modern distribution in Spain is equipped with scanners.

1999 - Innovation in RFID. The Auto-ID Center is launched at the Massachusetts Institute of Technology, a leader in the standardization of RFID tags with Electronic Product Codes (EPC), a universal identifier that allows unique identification of any type of item.

2004 - GDSN and RFID. The Global Data Synchronization Network (GDSN) is launched, a global online initiative that allows suppliers and customers to uniquely and efficiently exchange master data for their products.

2005 - EAN International becomes GS1: a new name for a global organization.

2007 - Reaching the consumer. GS1 enters the B2C world, aiming to provide consumers with better consumer experiences, serving as a gateway to correct and accurate product information through mobile phones.

2011 - QR Code. GS1 expands its offer with the GS1 QR Code, a two-dimensional barcode with faster reading and greater storage capacity.

(GS1 España, 2017)

What change did he suppose for the commerce?

The incorporation of this tool entails its advantages and disadvantages at the commercial level. The main advantages are (GS1 España, 2017):

- o You have a total and instantaneous control of the stock of the merchandise that is in store and allows to have an automatic registration and monitoring of the products. In addition, consumers' buying routines, such as higher sales schedules, can be known approximately, and sales of equal products between different brands can be compared.
- o Once the investment is made by acquiring the patent and equipping the necessary instruments (scanner, printer, tellers with bar readers, etc.), it is very cheap to print the codes.
- o It is not necessary to put the prices in all the products, simply the price distinguishes itself in the linear one where the product should be placed.
- o The probabilities of making a mistake for every bar code are practically inexistent.
- o With the technological advances that exist, it is relatively simple install the readers and the equipments of impression.

o Statistics can be made and extract conclusions of marketing from the sold references.

o Different branches and distributors allow to interconnect between them. That is to say, there can be identified easily the products of every distributor, essentially for supermarkets and hypermarkets.

On the other hand, one of the principal disadvantages is that prevents the costumer from remembering the price of the product once moved away from the linear where the price has distinguished, unless the establishment has barcode readers for the clients use, although this supposes a major economic investment for the merchant and investment of time for the client. Finally, another disadvantage is that the training of the user is needed for the use of these devices. These disadvantages are relieved normally by the delivery of a ticket of purchase where the cost of every product appears (GS1 España, 2017).

In the following table the principal advantages and disadvantages are summarized in comparison with the manual entry of information:

TABLE 14: Barcode comparison with manual date entry

| Characteristics	Keyboard	Scanner system or Barcode
Speed	6 seconds	3 - 1 seconds
Average replacement of error	1 error per 300 characters captured	1 error per 15 or 36 trillion characters captured
Coding cost	High	Low
Reading cost	Low	Low
Stock control	Low	Total and instant
Internal communication	Low	You can connect branch offices and distributors to each other
Inconveniences	Manual, high cost, high error rate and low speed	Requires user training

Source: Own elaboration, based on A. Garcia González, 1991:39

2.3.2.8. QR Codes (1994)

The QR codes are a two-dimensional type of bar code, where the information is codified inside a square (image), allowing to store great quantity of alphanumeric information (La historia del QR, 2014).

They arose in 1994, but the boom took place in the year 2002 in the whole world. This utilization came to Spain later, but now they offer a great variety of advantages to the trades with his widespread implantation.

Nevertheless, in the small trade still one could not have exploited the use of the same form. The small trades are not in the habit of possessing a department of marketing and communication, but this should not be a limitation, since the QR codes can be generated of free form from web pages (Martínez, 2013). Unlike the BIDI codes, which are of closed code, it is necessary to pay to create them and they are a product of the company of telephones Movistar (García & Arias, 2011).
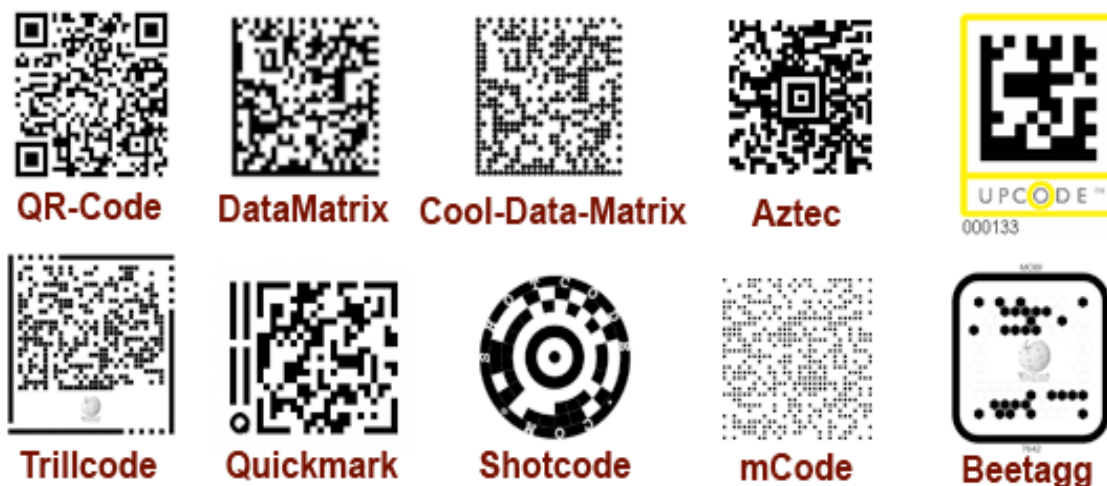
Source: Web Page "Taxi Oviedo"

**What change did he suppose for the commerce?**

His utilization is very wide and diverse, since it is possible to use for campaigns of marketing, advertising, merchandising, etc. Definitively, on having integrated this technology the trades can integrate different options of communication and promotion, this way they can differ from the competitors, can increase their sales and fidelize their clients.

We are going to see some royal cases where his implantation generated big benefits (Barandaráin, 2015):

o   <u>Macanudos & 360 vista</u>: These combined the utilization of QR codes with the possibility of seeing images in 360 degrees, in order to facilitate the tourist promotion and to offer a new usefulness to the users. It was possible to visit virtually the hotels, restaurants and trades.
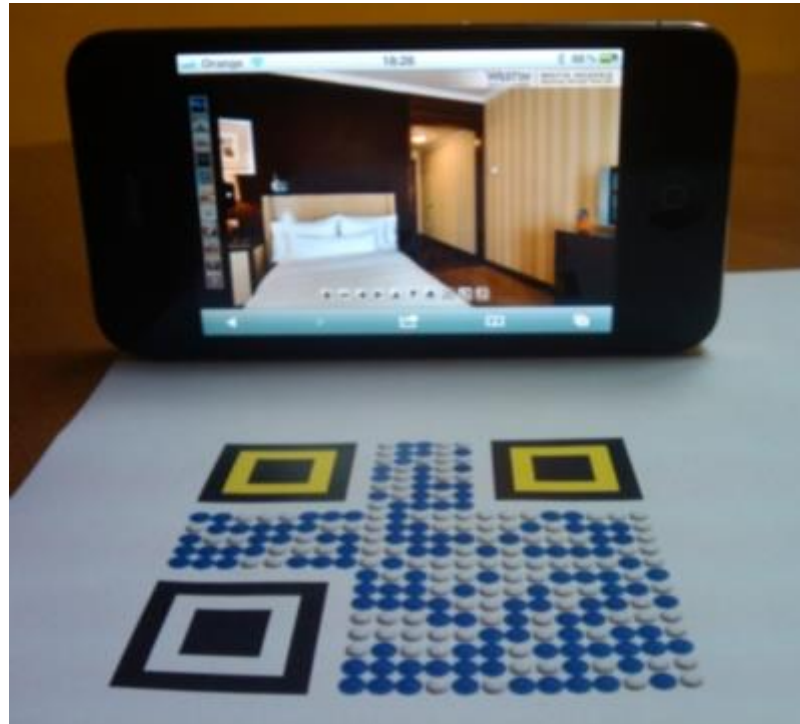
Source: Web Page "Macanudos"

o   <u>QR technology & trade marketing</u>: this original idea is capable of taking the voice up to the paper in order that the client could listen to him while reads it. This is achieved placing in the later part of the advertising a photo of the seller of the products of the company, leaving a space in the mouth to be able to insert the code across the Smartphone. This way the qualities of the products that the company sells are described without needing to post personnel.

o   <u>QR technology & low sales</u>: a Korean chain of supermarkets used the QR code just for the time slot that less was selling, with the intention of increasing the sales in this band. The clients on having scanned the code with their mobiles were acceding to discount coupons.

2.3.2.9. Alarms antitheft (1990)

The systems of alarm to avoid thefts have more than 300 years of antiquity. It was at the beginning of 1700 when the inventor Tildesley designed an alarm that was activated when a door opened, using bells joined the lock of the door, warning the owners that someone tries to enter. This prototype of alarm has been developing with the passage of time to the much more modern one. Nowadays they are wireless, more effective and even they send a message your mobile phone if you are not at home and warn the authorities. The massive implantation in homes and business was in 1990, when the costs of the alarms fell down and the people already could afford it (GVS, 2017).

What change did he suppose for the commerce?

In the establishments they put on detectors (normally joined the bar codes of the products) on the entrances and exits, but also in specific products, as bottles of wine, technological articles and of cosmetics which need extra safety.

For the shops this technology supposed a great change for the safety, so much the one of the business as that the own worker. It helps to protect the articles and to prevent them from being stolen, by doing this loss of money is avoided. It is especially useful in countries with major social problems, such as hunger, poverty, political non-conformity that

makes assault establishments in the shape of protest … These places are those that major numbers of theft present.

2.3.2.10. <u>Big Data (1990)</u>

Big Dates (massive information) is the process of compilation of big quantities of information and his immediate analysis to find secret information, bosses appellants, new correlations, etc. The set of information is so big and complex that the traditional means of processing are ineffective. And we are speaking about challenges as analyzing, to capture, to gather, to search, to share, to store, to transfer, to visualize … enormous quantities of information, to obtain real time knowledge and to put all the means in the protection of personal information. The size to shelter the whole process has been increasing constant to be able to compile and integrate all the information (MiBloguel, 2015).

In the current times, everything that we do is leaving constant a digital track that it can use and analyze; the advances in technology, close to the Internet expansion and the storage in the cloud, have increased the amount of information that we can store.

To summarize, it is possible to use 5 V's as Big Data's definition, which is what it characterizes to the system and at the same time it explains his advantages (MiBloguel, 2015):

1. <u>Volume</u>. The most evident and does honor to the name; to catch and to organize absolutely all the information that comes to us is essential to have complete recods, and that the conclusions that we obtain serve efficiently at the moment of the capture of decisions. It is the Business Intelligence that we all know, but to the big thing; though the difference with the classic intelligence of business comes marked by the rest of V's.
2. <u>Velocity</u>. Always the time is important if we confront so much the need to generate information as to analyze it, but it is more if we need to react immediately; the whole process asks for agility to extract value of business to the information that is studied and that does not get lost the opportunity.
3. <u>Variety</u>. It is necessary to give uniformity to all the information, which will have his origin in information of the most heterogeneous kind, as we will see in the following paragraph. One of the strengths of the Big Data resides in being able to bring together and combine every type of information and his specific treatment to reach the quite homogeneous one.

4. <u>Veracity</u>. It refers to the quality of the information and his availability; in an environment described by the previous V-variety, it is necessary to find tools to verify the received information; the technologies created to the service of the Big Data prove to be indispensable and efficient to confront the challenges.

5. <u>Value</u>. To work with Big Data has to serve to contribute value to the company, the companies, the governments and to the people in general; the whole process has to help to stimulate the development, the innovation and the competitiveness, but also to improve the quality people lifes.

What change did this suppose for the commerce?

The analysis of information always has had a great influence in the marketing, a better knowledge of the consumer and his needs lets us know how to increase the sales; the analysis of information allows us to establish relations between variables, to predict behaviors, to realize groups (clustering) of homogeneous groups, and even to analyze texts to extract information. Now with Big Data, all that is obtained real time and with every new update of our repository of information it is possible to see the changes in the statistics immediately (MiBloguel, 2015).

We are going to see examples with how it helps to the trades:

- An e-Commerce can optimize the stock of his stores across the information extracted from for what the people look in his web or analyzing the trends in social networks and forums; also to fix dynamic prices in his products extracting information of multiple sources (the actions of the clients, preferences of the suppliers or summary of prices of the competition).

- The sector of the telecommunications is a privileged industry, thanks to his networks and the proliferation of mobile devices; the most evident opportunity is to extract information of the experience of the user thanks to the traffic of voice and information, and to be able like that to offer discharges in personalized contracts, to extend the battle for the competition and even to create new sources of income.

- In many cities, already the analysis of information is used to transform in more modern and intelligent: public transport interconnected to minimize the times of wait, or semaphores that before the forecast of an increase of the traffic are regulated to minimize the cloggings.

- The banking has one opportunity to put means to fight against the fraud, the financial crimes and the safety gaps by means of Big Data. The financial institutions are investing enormous quantities of money in perfecting algorithms and the technology of analysis to minimize risks and to strengthen his image with a view to the client.

(MiBloguel, 2015)

2016 was a year of great transcendence for the Big Data. A major quantity of organizations began to store and process information of all kinds of format and size, besides extracting value from them. In 2017, it will continue the growth of the systems that admit big volumes of information, both structured and not structured. The market will demand platforms that facilitate to the persons in charge of the information the tasks of administration and safety of the Big Data. In addition, these platforms will have to allow the final users to be able to analyze the mentioned above. These systems will grow to work correctly in the frame of the systems and managerial standards of the technology of the information (TI) (Tableau, 2017).

2.3.2.11. Distance selling (1920)

Though the sale distantly is not a technology, it is a very important step that directs us to the electronic commerce.

The year in which the distance selling arose was about 1920 in the United States with the sale for catalogue. This new system of distribution was a great revolution in this moment, since it was the first time that it was possible to buy without before seeing the product. The sale for catalogue was working by means of illustrative photos of the product. (Lynkoo, 2012).

First catalogs in the United States

Source: Lynkoo

But it was not until 1980 that modernized the trade for catalogue with the help of the television with the "televentas" (shopping on the TV) and the widespread appearance of the personal computers. The television provided to the trade for catalogue a major realism of the products since they could be exhibited highlighting his attributes and more important characteristics. This type of direct sale was doing to itself by means of the utilization the telephonic calls and the payment was realized across the credit cards.

What change did he suppose for the commerce?

To sell for catalogue has been, for many years, a strategy of marketing that has brought big benefits to companies of all the sectors, specially the focused ones on the industry. The catalogue has been (and it still is) a fundamental piece in the industrial marketing, in many occasions substituting the big surfaces destined for the exhibition of machinery and elements of certain volume (Retos en supply chain, 2015).

In more general terms, the difficulties, the costs and the requirements of space that carries the exhibition of some products and services have allowed the sale for catalogue to fill the gap between the strategies of sale most appealed by companies of any sector, allowing to start even projects of sale and distribution scarcely to realize initial investments in the acquisition and the maintenance of stocks.

2.3.2.12. Electronic commerce (1990)

We refer to the binomial online-offline, since last years with the Internet warning, it has changed the behavior of purchase of the consumers, who decide " to do increasingly the purchase " (online), without having to go out of his house, in spite of " going shopping " (offline), enjoying in the shops as one more form of leisure (Palomares Borja, 2015). The electronic commerce also is commonly an acquaintance as e-commerce.

In the year 1960 the EDI was invented in the United States by the Exchange of Electronic Information. The history of the e-commerce begins in this year when Electronic Data Interchange creates the EDI and allows to the companies to realize electronic transactions and exchange of commercial information.

But it was not until ends of the 90s, with the help of the Internet, that the electronic commerce grew like never before. There were created portals exclusively dedicated to this activity, such as eBay and Amazon, which are kept operative and in full growth until today.

Since it appears in the image later, the turnover of the electronic commerce in Spain rounded up in the third quarter of the year 2015 (29.2%), up to 5.303 million Euros, he supposes the major pace of growth from the first quarter of 2010, when it increased 34.8% (El País, 2016).

GRAPHIC 7: Evolution of e-commerce in Spain, in millions of euros

VOLUMEN DE NEGOCIO
En millones de euros. Trimestral

VARIACIÓN INTERANUAL
En porcentaje
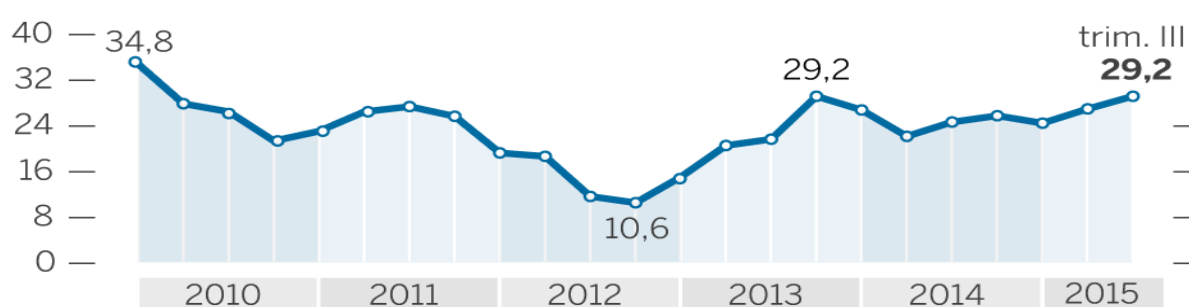
Source: CNMC, El País

The sectors of activity with major income have been the travel agencies and tourist operators, with 20.8 % of the total turnover; the air transport, with 13 % and the cloths, thirdly, with 5.6 %. To major distance it emerges the direct marketing (4.9 %), the travelers' terrestrial transport (4.1 %) and the artistic, sports and creative spectacles (4.1 %).

As for the geographical segmentation, the web pages of electronic commerce in Spain obtained 60.4% of the total income. 39.7% remaining corresponds to purchases with national origin realized across web portals of electronic commerce taken root out of the Spanish borders.

The future of the e-commerce

The social networks, the mobile communications, the web 2.0., the intelligent telephones, the tablets that nowadays we have to our scope are changing the habits of consumption of our world. Already it is not enough to put a catalogue of products in a shop online in a static way and hope that the users buy. Every time they are more the persons who use his tablet or Smartphone to realize searches, to compare prices and also to buy online.

(Lynkoo, 2012).

What change did he suppose for the commerce?

As we were commenting, this technology has changed the form that was perceiving the trade. With his use we can obtain the following advantages (Bastón, 2015):

o Disappearance of the geographical and temporary limits.

Due to the fact that the process of dealing is realized in Internet, each of the parts can be in a different place and to different times. It means opened shops 24/7 and major comfort for buyer and seller. They eliminate the physical shops in favor of the virtual shops, and even from traditional points of sale one takes traffic to web gangplanks, a phenomenon known like showrooming (Ronco, 2013)**.**

o Cost reduction of production, administration and storage.

On the part of the seller, the logistics has improved with the profitability of the distribution routes or intermediaries' reduction between others, which has allowed to cheapen the costs. To it a major competition adds, which favors to that the buyer benefits from a more limited final price (Ronco, 2013).

In addition they can save the costs that there supposes having a physical opened shop, Already be the expenses of the rent or of employees (Bastón, 2015).

o You get more online and offline customers thanks to the increased visibility that allows the internet.

Internet is like a jungle. You'll have to do it well to stand out in the middle of all the stores that are hosted on the net and find your future customers (Bastón, 2015).

o New business relationships are created.

The e-commerce democratizes the trade agreement. In this way, C2C (Consumer to Consumer), B2B (Business to Business), B2C (Business to Consumer) and even C2B (Consumer to Business) relationships are established where an individual can sell to a business, as the role is diluted between customer and supplier. (Ronco, 2013).

o Flexible payment methods.

Internet allows unify all the available means of payment, facilitating both the electronic ones and the traditional ones. It is possible to effect payment in cash since it is the payment against reimbursement and overcoat with bank means (card of credit or debit or transfer) or across new intermediaries born in Internet as Paypal or Bitcoin (Ronco, 2013).

o Increase of the range of products.

Across only the screen, there is had access to an almost infinite range of suppliers, and with it the as wide as possible range of products. This allows to compare and to confirm options in royal time, and to choose what more adjusts to the concrete needs (Ronco, 2013).

> " *You cannot ask the clients what is what they want and then to try to give it to him. In the moment of which you make it they will want something new* "
>
> *– Steve Jobs –*

o Facility to offer the comparative one between products, including characteristics and prices (Bastón, 2015).

2.3.2.13. Augmented Reality (1992)

The augmented reality arose for the first time in the 70s, as a technology orientated to the experiences in virtual worlds. The term was coined by Tom Caudell in 1992, and from this moment different applications and platforms happened to develop more technology and applications of augmented reality (Realidad Aumentada, 2017).

The increased reality can be defined as a vision across a technological device, direct or indirect, of a physical environment of the real world, which elements combine with virtual elements for the creation of a mixed real time reality, that is to say, it is the possibility of creating a new reality combining the real world with the virtual one (Wikipedia, 2017).

What change did he suppose for the commerce?

According to the agency Mas Digital (Agencia Mas Digital, 2014), it is an excellent way of which the clients experience what the product can offer them of an entertaining and interactive form. The principal advantages that he supposes are:

o It allows to commercialize the products / services projecting an innovative and showy image, beside being able to have the brand under a sophisticated way in a digital and personalized area.
o Increase of sales and clients in any part of the world without having a shop in every place.
o To catch the attention of the objective group motivating it to taking part in more interactive campaigns.
o Generates virality, which can allow to have major visibility of the company or product.
o To stimulate the client to realize an action related to the brand.
o The clients will remember the products.
o Possibility of measuring the level of acceptance of the products or services.

For example, the company Lego Digital Box, used this technology in order that the clients could know the product without need to open the box. Across a simple code, it was allowing to explore the content and to live through the same experience that if it was touching it.

On the other hand, something that is having increasingly acceptance they are the virtual fitting rooms. These establish themselves or inside the shop or out in order that the pedestrians have the possibility of the clothes being proved without entering the establishment (Beltrán, 2012).

Source: Web page "Help my Shop"

2.3.2.14. <u>Web page / APP (1996)</u>

The **World Wide Web** (WWW) is a global way of information which users can read and write across computers connected to Internet. The term is used often erroneously as the synonymous one for the Internet itself, but the Web is a service that operates on the Internet, since also the e-mail does it. About 1996 turns obviously for the majority of companies that the public presence in the Web was not any more than an option, but it was a clear opportunity to show the products (Wikipedia, 2017).

The first mobile applications (APP's) date back of ends of the 90s. These were what we know as the agenda, games Arcadian as the snake, publishers of ringtone, etc … These applications were fulfilling basic and elementary functions and his design was simple enough. The evolution comes with the technology EDGE and his connection to Internet, allowing thus a major development of the already existing applications, but restrictions of manufacturer who were doing his own operating systems and external developers were not allowing. Everything changes with the appearance in 2007 of the Iphone of Apple that raises a new strategy, offering his telephone as a platform to unload applications that were stopping to developers and external companies to offer them in his app store. The same year, Android did the same thing, started a shop of applications called Google Play (Apps Móviles, 2017).

**What is better for a trade, to develop an application or
a web page for mobile devices?**

Each of these tools has his advantages and disadvantages, since the applications are in the habit of being more rapid than the webs, but to develop it also is costlier, by what depending on the needs of the trade there will be chosen one or other one, or both (Barandaráin, 2015).

Hernán Rodríguez (The director of the Spanish Association of mobile Communications) indicates as basic aim to adapt the web in order that it could see in all the mobile devices, due to the increase that takes place year after year of navigations from the mobile. Following this line, Ricardo Tayar (founder of Flat101), answers to the question of 'Is it worth creating an APP?' This one affirms that due to the boom of applications that were created, nowadays it is much more difficult than the people give a space on his screen to a

brand. Therefore if a strong brand is possessed there is had a clear opportunity to enter on the screen of any mobile device, otherwise it will turn out to be very difficult (Plaza, 2013).

What change have they supposed for the trade?

The increasing use of these intelligent devices has provoked that to develop an APP for company turns into a strategy that can contribute big advantages for the business, between them they stand out (CIC, 2015):

- o Presence in any part, reputation and strengthening brand.
- o Wide diffusion of the contents. The synchronization of the APP with the social networks of the company improves the diffusion and viralization of the contents.
- o It is achieved new clients find and to fidelize the ancient clients.
- o It is a new channel of communication with the clients. The mobile devices are important channels of communication in that to share news, images and relevant information for the users and clients.
- o Improves the relation with the clients, since it is possible to establish direct communications, generating immediate stimuli in the users.
- o It improves the positioning on SEO. It increases the organic searches from the mobile across a good positioning of the APP in the shops of mobile applications.

According to statistics obtained of reports of the Consulting one of digital strategy (Ditrendia, 2016), We see that at least 30 % of the users of smartphones uses the APPS elaborated by the trades for someone of the following ends showed in the image:

TABLE 15: Use of commerce apps

Source: Digital Strategy Consultant 'Ditrendia'

2.3.2.15. Omni-channel (2000)

To be able to define omni-channel before must have other two concepts clear: the multi-channel and the cross channel.

Multi-channel

It uses several channels to sell or to connect, but every channel preserves his identity. There is an attempt of linking elements as the inventory, for what the preparatory purchases online do not show products as available that are not really in the shop when the client comes there, but there being no royal attempt of producing a real experience of purchase to the client (Time To Marketing). The tools of CRM (Customer Relationship Management) helped the retailers to take decisions on what public ends they must be the communications directed, when and what channel, being based on the historical information contained in his marketing of database (Time to marketing, 2014).

Cross-channel

It is an evolution of the multi-channel. The client uses different channels with the retailers, they have to interact between yes and to take decisions that it is convenient for them. In every channel the message is different, according to the best adequacy of the means for which it is spreading (Catalá Bonet, 2016).

Omni-canal (Omni-channel)

The Omni-channel is the evolution of both previous ones, is most used nowadays. The Omni-channel uses all the channels as if they were variations between yes. There is no difference between the goods, the prices and other aspects between the experiences online and offline. This one is the perfect experience that the clients really want (Campbell, 2003).

Omni-channel is the form in which the consumers prefer buying. The modern consumer is " agnostic - channel ", in the phrase of Carsten Thoma. It means that the consumers do not worry for the channels, they worry for the experience. They are online, without connection, in the web, in applications (Lake, 2014). The consumers are attracted increasingly by the digital channels and wait for a perfect experience in all the points of contact that have with a retail brand, already it is a shop offline, a mobile application or a shop in the network (Wincor Nixdorf, 2015). Omni-channel of retail is brings over of guaranteeing that the organizations offer a perfect experience for the clients in all these

channels. The offers, the prices and the promotions must be consistent in general, providing essentially to the clients the only account and a sight of the database of the retailers, at the same time as they offer to the retailer the only vision of the interaction of the client in the whole organization (Wincor Nixdorf, 2015). This integration of the different channels can be seen in the following figure:

GRAPHIC 8: Offline and Online commerce

Source: Kris Lake (2014)

What change did he suppose for the commerce?

The change that he supposed for the trade has been very favorable. We are going to see it basing on the results of a study that Sopadjieva, Dholakia and Benjamin shared in 2017. The study was published in *The Harvard Business Review (HBR)(2017).*

The study of 46.000 consumers shows that the retail omni-channel not only is working, but it is prospering. The study was carried out during a period of 14 months from June, 2015 until August, 2016, and one asked the clients on every aspect of his trips of purchases, centring specifically what channels they were using and why. In general, only 7% of the polled ones was buying only online, and 20 % was buying only in physical shops. The remaining majority (73%), it used multiple channels during his trip of purchases, we will be call these clients of omni-channel (Sopadjieva, Utpal M., & Beth, 2017).

The results showed that to the clients of omni-channel was charmed with using the points of contact of the retailer, in all kinds of combinations and places. Not only there were using applications of intelligent telephones to compare prices or to unload a coupon, but also they were users eager for digital tools in the shop, as an interactive catalogue, a checker of prices or a tablet. They bought online and gathered the order in the shop, or bought in the shop and asked for the sending to house. In what continues, one counted every application, digital tool and place of purchases provided by the retailer as an independent channel.

On the other hand there was demonstrated that the clients of the omni-channel of the retailer are more valuable in multiple accounts, all those more devices use. After controlling the experience of purchase, they spent an average of 4% more in every occasion of purchases in the shop and 10% more on line than the clients of an alone channel. Furthermore convincing, with every additional channel that they were using, the buyers were spending more money in the shop. For example, the clients who used four or more channels spent 9% more in the shop in comparison with those that used an alone channel.

Surprisingly, the accomplishment of the previous investigation online in the own site of the retailer or sites of other retailers took 13% more in the shop of expense between the buyers omni-channel. This finding goes in opposition to what is known as the purchases by impulse in the establishment (bulks), since this impulse already " does not exist ", but it is the final behavior after a before deliberate search that takes the clients to major purchases in the shop.

Beside having baskets of bigger purchases, the buyers of omni-channel also are more loyal. In the space of six months after an experience of purchases omni-channel, these clients had registered 23% more trips of the repetition of the purchase to the shops of the retailer and were more probable the brand recommended to the family and friends that those who used an alone channel.

Source: Google Images

Can any business implant an Omni-channel successfully?

In order develops a model effective Omni-canal, the retailers have to bear several elements in mind. The first element to considering is to change the organizational structure to provide a constant management across different channels. And therefore, it might generate an experience of consistent client, the integration of services online in the shop online and out offline in the services of the physical shop. For it, the retailers must begin to accept the digital revolution and the improvements that these changes mean for them. A clear example of the acceptance of the digital evolution is the integration in the digital communities and the social networks, though it is necessary to create new departments specialized in this sector. Finally, in order that all that works correctly, it is necessary that the retailers invest in CRM (Customer Relationship Management), tools of analysis and monitoring of social networks and digital communities (Catalá Bonet, 2016).

2.3.2.16. Street Control (2012)

The retail trade uses technology to know the persons who happen opposite to the facilities across a system called Street Control (Catalá Bonet, 2016).

Source: Google Images

Street Control went out to the light in Spain the year 2012 appearing to retailers, owners of places, real-estate commercial agents, associations of merchants, consulting strategic of analysis of consumers and users in general as the solution for the count of the pedestrian traffic that helps to know and analyze the temporary statistics of the persons' step for a street or mall of way to be necessary, the 24h of the day and detailed by time slots of 30 minutes (Total Retail 2017, 2017).

How does this technology work? The information is gathered across a few sensors that are formed by a cell that counts the pedestrians who circulate along the sidewalk up to an adjustable distance of up to 5 meters of extent, without turning out to be affected by the incident of the solar light, the increase or decrease of exterior lighting, the changes of temperature or the climatology. This count can be realized of continued form (fixed sensors) or in a punctual way (mobile sensors), according to the needs of the clients. Later this information is stored and treated in the web portal (TC-Street, n.d.) that allows to consult all the pedestrian flows of the principal streets and malls of the world.

What change did he suppose for the commerce?

The evaluation of the pedestrian traffic allows to know, to compare and to foresee the pedestrian flows of the commercial streets of the cities, to admit the zones demographically and to analyze the competition. It is possible to know how many clients leave of the place without buying, allows to manage the time of wait of the clients and to know the warm zones, those of major traffic (TC Group Solutions, 2017).

In addition it helps to quantify the potential clients of concrete locations as well as to value new criteria for the appraisal of commercial concrete locations. This new criterion to considering in the appraisal of business premises is the Cost for Potential Client (CCP), dealing for this information that person who happens ahead from the place, being impressed by the shop window of the same one.

2.3.2.17. Beacons (2013)

The Beacons they are small devices based on technology Bluetooth of low consumption, which they issue a sign that he identifies from the only form to every device. This one sign can be received and interpreted by other devices (normally a Smartphone), knowing in addition the distance to which they are (The Valley, 2014). These are some of the most important advantages of these devices:

o Are small: his size does not overcome that of a currency, so they can be placed and to hide itself in almost any place for very difficult access that has.
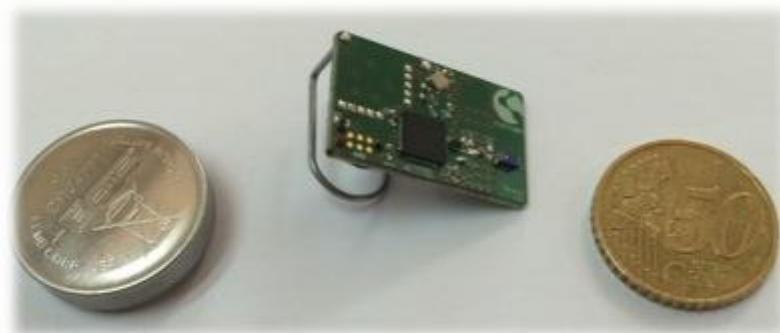

Source: Google Images

- o Work for Bluetooth: thanks to this technology we can establish one channel of persistent communication with the recipient (as when we synchronize the mobile with the Bluetooth of the car).
- o Are of low consumption: his batteries have a very long duration, up to 2 years with a simple battery of button.
- o Issue a sign that he it identifies of the only form: every Beacon has the only number that he it identifies, and therefore doubts cannot exist on the physical origin of a sign.
- o His sign can be got for other devices: this sign is interpreted by other devices recipients, with which there is established a channel of communication that remains alive while they are within reach of the sign (approximately 40 meters).
- o Distance to which they are: the intensity of the received sign is major or minor depending of it nearby that is of the Beacon, which allows us to calculate the distance to which he is.
- o Geo-location of the users of Smartphone: we will know where there are the clients who take above a Smartphone, in the office, in the elevator, in the parking …

The company Apple was the first one in doing it, adding in summer of 2013 the technology iBeacon to the version iOS 7 of his devices and installing it in all his shops of USA at the end of the same year. The technology Beacon of Google, under the name Eddystone, is very similar, except in the detail of the compatibility, which is of code opened.

What change did he suppose for the commerce?

We see that these devices have a wide usefulness in the trades. Following the example of 'The Valley, 2014' we are going to see an example:

1- A client walks along the mall, near our shop of clothes. The GREEN Beacon is permanently sent a sign that the App in his Smartphone is capable of interpreting.
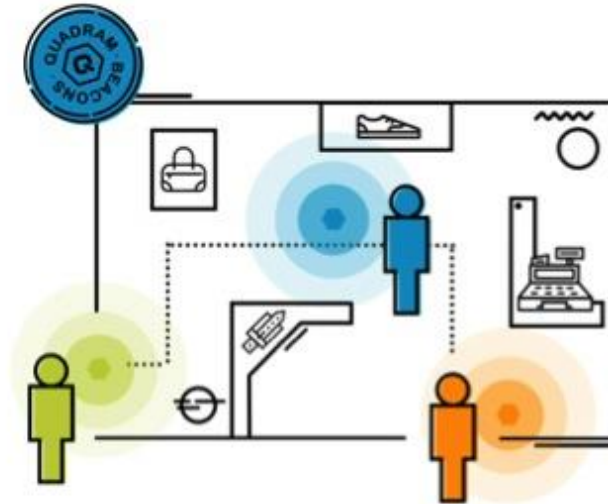
Then " the App wakes up ", that verifies the identity of the client, his last purchases and shows a message in the Smartphone:

" Hello Carlos, we have a few boots that they combine perfectly with the cowherds that you bought a few weeks ago. In addition they are to 20 % of discount, enter and look! "

2- The client enters the shop, the boots are proved and he likes them. It prepares to pay in cash machine when, thanks to the BLUE beacon, it wakes the App up and shows another message:

" Hello Carlos, what does look like to you this belt? It combines perfectly with the boots and the cowherds. We recommend it to you! "

3- The client decides to buy the products and when it goes out of the shop, thanks to the ORANGE Beacon we detect his exit, so the App shows a message of farewell:

" Bye-bye Carlos, happy purchases! We hope that the winter is hotter with your new articles. "

(The Valley, 2014)

Though this example is basic enough, easily we can imagine a world of possibilities Indoor: trades, parkings, museums, events, restaurants, universities, colleges, public centers … also in the exterior.

According to the company of mobile advertising Beintoo, if 14 % of the users opens the notifications that it receives, this percentage increases 53 % when this notification comes from a Beacon, because the message is more relevant, since it comes to them in a concrete context and situation, where they are more receptive (Ticbeat, 2016).

The brands use the Beacons to generate engagement with the user. Then already depending on the sector, this one can be translated in sales or loyalty. Because of it his use fits well not only in shops, but in airports, concerts, sports events or you confer. Some hospitals, for example, already are using the technology Beacon to improve the attention of his patients (Ticbeat, 2016).

Which is the difference with the NFC?

With the technology NFC (Near Field Comunication) the devices have to be to a maximum distance of 15/20 centimeters and in addition the channel of communication is not persistent, is not constant, so it does not allow to detect the movement, the distance, etc.

2.3.2.18. System of payment for mobile (NFC) (2015)

The systems of payment with cards without counted or of credit route mobile phone across the technology NFC (Near Field Communications) the user can realize transactions only bring the mobile phone over to a reader.

Many experts say that 2015 is the moment in which the payment for mobile began to take off finally to be implanted as something widespread. This owes principally to two factors. The first one is the impulse that it is going to represent the fact that the company known as " The giant Apple " has thrown his own system of payments and, the second factor, is the consideration that both the technology and the market are sufficiently mature as to give this step (Barandaráin, 2015).

GRAPHIC 9: Mobile evolution
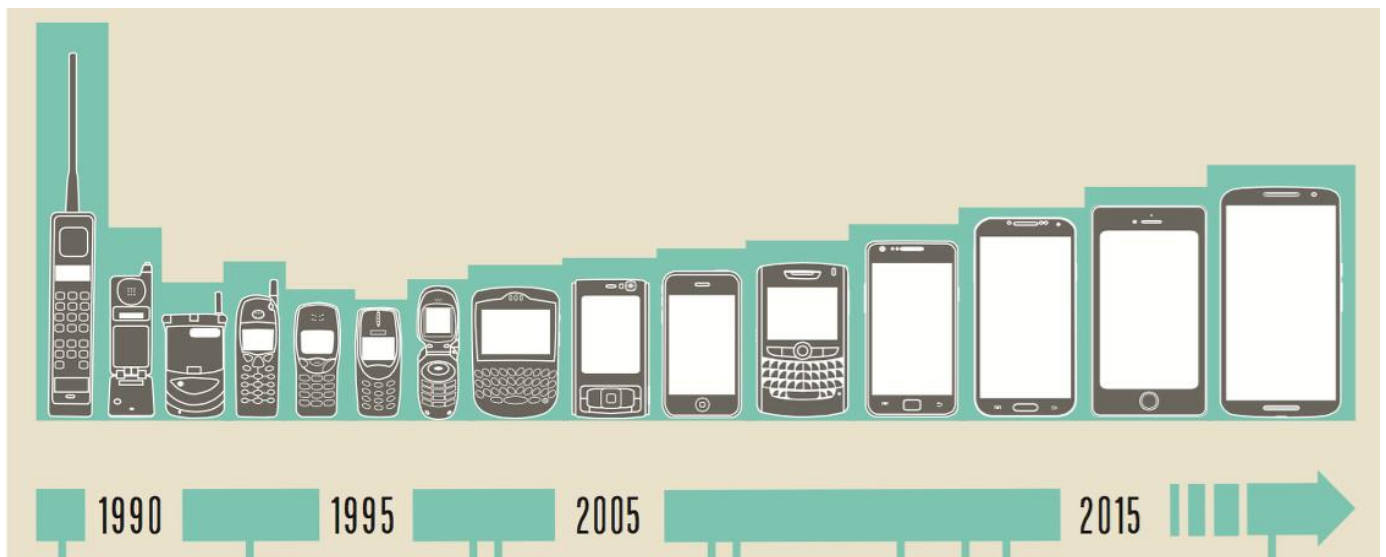
Source: Web Page (Omicrono, 2015)

Numbers of the Smartphone at present

According to a report by "*Ditrendia*", titled 'Mobile en España y en el Mundo 2016' (Ditrendia, 2016), at the end of 2015 the penetration of the mobile phones the world promoted 97%, there being in Europe 78 of every 100 inhabitants with an intelligent mobile phone (Smartphone). Likewise, the report emphasizes that in Spain:

o The smartphones represent already 87% of the total of mobile phones, which it places to the country in the first positions to European level.

o There is more smartphones that computers: 80% of the Spanish has a smatphone, whereas only 73% has computer (already be desktop or portable).

o The age of beginning is much earlier. In 2015 98% of the young persons from 10 to 14 years was counting already with a smartphone with connection Internet. In addition, the children from 2 to 3 years use habitually the mobile of his parents.

o The traffic across mobile information will multiply for 7 between 2015-2020, which supposes a year-on-year increase of 46%.

o The Spanish use it principally to accede to the mail (87%), instantaneous messenger company (82.8 %) and to sail along the network.

o The Spanish use a smartphone 3h 23m diaries whereas there happens an average of 1h 41m in a Tablet. Though in the graph that we have seen in the paragraph "Internet" of information of the year 2017, we see that these numbers now are top.
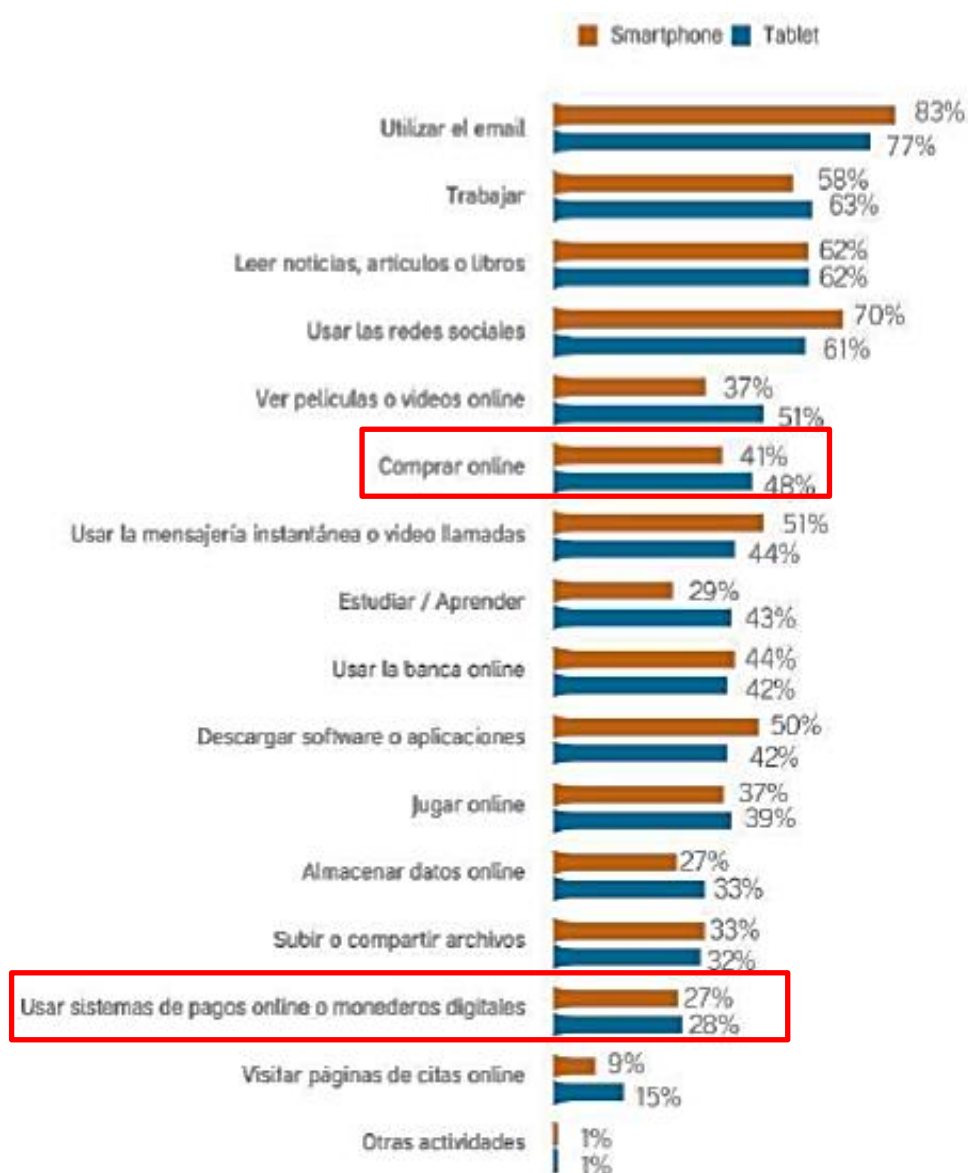
- 6 of every 10 Spanish users of mobile it affirms that already a smartphone has used at some time to realize purchases. Principally they buy products of leisure (31%), mode (28%) and trips (21%) and his method of payment of preference is PayPal.
- 9 of every 10 Spanish he assures that the mobile uses in some occasion during the process of purchase, already be to search on the products (80%), to compare prices (78%) or to look for opinions of other users (72%).

Of more widespread form, in the whole world:

- More than the half of the visits that receive the big seekers come already from the mobile and 62% of last total time for the users in the world online already it is realized from smartphones and tablets.
- Every time we are more addicted to the mobile: we it verify an average of 150 times a day, dedicating him from 177 minutes to the day (2h 57 m).
- The purchases across mobile (m-commerce) are growing almost three times more than the traditional e-commerce and displacing to the purchases across tablets.
- The mobile appears every time with major frequency along the process of purchase. In the world 82 % of the users of mobiles assures that they use them to look for information about products before realizing a purchase.
- The tablets are used furthermore to buy online that the smartphone.

GRAPHIC 10: Most accomplished activities from mobile devices and tablets in the word in 2015

■ Smartphone ■ Tablet

Utilizar el email — 83% / 77%
Trabajar — 58% / 63%
Leer noticias, articulos o libros — 62% / 62%
Usar las redes sociales — 70% / 61%
Ver peliculas o videos online — 37% / 51%
Comprar online — 41% / 48%
Usar la mensajería instantánea o video llamadas — 51% / 44%
Estudiar / Aprender — 29% / 43%
Usar la banca online — 44% / 42%
Descargar software o aplicaciones — 50% / 42%
Jugar online — 37% / 39%
Almacenar datos online — 27% / 33%
Subir o compartir archivos — 33% / 32%
Usar sistemas de pagos online o monederos digitales — 27% / 28%
Visitar páginas de citas online — 9% / 15%
Otras actividades — 1% / 1%

Source: Digital Strategy Consultant 'Ditrendia'

What change did he suppose for the commerce?

The incorporation of the system of payment for mobile, contributes to the trade rapidity (in periods of reductions or epochs of big purchases he is a great ally) and comfort (the mobile phone is in the habit of being more to hand that the credit card). In addition it is a question of a tool of easy insertion in the small trades, as it would be the datephone for the credit cards.

For example, in the company of buses in Donostia and of the meter in Bilbao (Dbus) it gives the possibility of paying across the mobile, only it is necessary to bring the telephone over to a machine validator (Barandaráin, 2015).

2.3.2.19. Other technologies: ESL & Security (2015)

The **System of Electronic Labelling of Prices** (ESL) is the management of the prices of remote, instantaneous and automated form compatible with the technology TPV. It serves to keep always updated the prices of the products exposed to the public, and to change them without mistakes take place (Palomares Borja, 2015).

In what concerns the technology of the **safety**, the trust worthiest tool in the processes of dealing is the biometric. The biometric allows to identify the consumers depending on his physical characteristics (fingerprint, voice …), which achieves that no mistake takes place.

3. **<u>CONCLUSIONS</u>**

As result of the investigation on the new technologies applied to the retail trade, it is possible to conclude that there has been a substantial increase in the use of the technology for the retailers, in order to have a better comprehension of the potential clients (persons who have the possibility of acquiring a brand or service but it never doing) and therefore to increase the sales.

The information obtained of the clients is managed and classifies across different types of software like Big Data, TPV, the APP's or any another specialized software. This information of management is very important for the decisions thought by the retailers, from financial topics up to topics of strategy of business. The information is there out and always it is valuable if it is known how to obtain it and to manage it.

The traditional trades in the last years, due to the evolution and the development of strategies of growth on the part of the big companies, have had modernize and to adapt to these big changes inside sector in which they practice. These, before the need of be reinvented, have been applying different tools, as the new technologies, the application of different commercial formats and the integration of small programs of sustainability that they contribute value.

A very out-standing fact that we have seen during this project is the great increase of the mobile devices as a way across which the purchases are realized across Internet. In spite of this increase and that the retailers have realized the increasing importance of this method of purchase, in any cases the retailers still have not adapted sufficiently his methods of sale such devices. After the retailers online, another fact to bearing in mind is that though there are a variety of methods of payment, the majority of the clients choose significantly for the PayPal and the payment across the credit cards. The explanation of this is that nowadays many clients are unwilling to provide the number of his credit card; they prefer alternative methods as that of PayPal. This distrust at the moment of doing purchases online depends to a great extent on socioeconomic, demographic aspects, of kind or age.

As for the shops offline (physical shops), some of the technologies most advanced for the control of the persons and his behaviors are the beacons and the Street Control. We finalize with that it is a good way of obtaining information for the retailers, but also it is invading the privacy of the clients, these can feel observed while they are doing his

purchases. It can lead in some cases to cause a rejection or a feeling invasion of privacy, so the retailers must have care with his use because it can be counter-productive to his interests.

Also we must conclude that if we analyze the advantages and disadvantages that the trade online and offline the disadvantages of a help are generally objected, that is to say, to other one and *vice versa*. Due to this, in the last years there has been an increase in the number of retailers who have decided to fuse both methods of sale to be able like that to mitigate the negative effects of a use of other one.

As for the economic aspects, sample that from 2007 (year in which it began the economic Spanish crisis), the trade out of line has experienced a decrease of the sales and on the other hand the trade online has been increasing gradually. This owes to itself to which the trade across Internet often offers that are not in shops out of line and with the decrease of the purchasing power of the population due to the crisis, has done the most conscious persons of the price of the goods and services. Besides the fact that it is more comfortable to buy from house and it is possible to obtain information and compare it much simpler.

The last information on the current situation of the retail trade in Spain is encouraging after several years of fall. This small recovery on the part of the companies, is owed principally to the economic recovery or improvement of the economic situation, though also he contributes the increase of the public policies of support on the part of the Government and the incorporation that there have done the trades of the new trends in innovation.

It is necessary to indicate that the electronic commerce is closely together to the numbers that present the physical establishments and, in the numbers of sales of certain products or services, as the acquisition of trips, technological applications or products for the accomplishment of sports, the electronic commerce is in summit.

Changing the trends and the increasing demands of the consumers when online realize a purchase in retail shops or offline, they have led the retailers to using the channels known as Omni-channel. Thanks to the use of this type of channel the retailers have managed to offer a better experience of purchase to the clients, since the different stages of the process of sale are interconnected between them and work like only, integrating physical channels with virtual and to obtain a channel as extension of other one. Therefore, there is achieved an increase of the clients who are ready to buy in the retail business that uses them, and increasingly retailers are implementing this type of technology in his business.

As final conclusion, we can say that the use of the technology for the trade online and for the trade offline has given place to a major knowledge between the retailers it brings over of his clients, a better management of the obtained information and a better way of managing and serving the clients.

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