Online Shopping Behavior in Offline Retail Stores: Strategic Value for Companies?

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Abstract

Title: Online shopping behavior in offline retail stores: Strategic value for companies?

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In a world where e-tailing and traditional in-store shopping live together and complement each other in several shopping activities (Chu, et. al, 2010), little is known about the possibility of an emerging reality in which online and offline shopping merge into one single phenomenon. The purpose of this dissertation is to explore whether consumers are willing to engage in a shopping behavior inside retail stores in a way that is similar to the one they have when shopping online. Additionally, it sheds light on the strategic value the online-offline shopping holds.

To accomplish these objectives, a smartphone shopping scenario is designed to represent a situation that enables consumers to perform in-store shopping tasks in a digital manner, mixing and enhancing the features and benefits of e-tailing with traditional retail store experience. Moreover, a research model, that includes preliminary assumptions and eleven hypotheses to be tested, is designed to fundament the research methodology used.

Based on this research model and the smartphone shopping scenario, a survey is conducted in order to collect empirical data on customer's appraisal of the online-offline shopping process as well as their availability to permit recording their shopping data obtained after performing shopping tasks via smartphone. Furthermore, to access the strategic value of the online-offline shopping process, Resource-based View theory is used in order to identify the existence of possible sources of sustainable competitive advantage.

The findings from the research show that respondents value the characteristics of the online-offline shopping process as well as they are willing to permit recording their own shopping data so that they are able to benefit from a contextual personalized shopping experience while shopping in traditional retail stores.

The dissertation concludes that because customers value the characteristics of the online-offline shopping process they have a strong motivation to engage in an online-offline shopping behavior. Moreover, since they are willing to trade their shopping privacy for a contextual personalized shopping experience, it is plausible to admit that a strategy based on contextual personalization has potential to be strategic for retail companies. In fact, to generate such a strategy, the customer knowledge generated in the process is argued to be a firm resource that, combined with dynamic capabilities to leverage its utility in providing a contextual personalization experience, is considered to be a source of sustainable competitive advantage meaning the online-offline process has potential to be strategic to retail firms.

Keywords: Retailing, E-tailing, M-commerce, Online Consumer Behavior, Permission Marketing, Customer Relationship Management, Contextual Personalization, Sustainable Competitive Advantage, Firm Resources, Dynamic Capabilities, Customer Knowledge

Acknowledgments

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1. Introduction

The World Wide Web has revolutionized the global commerce not only because it introduced online transactions but also because it changed the way people acquire information and communicate as well as it originated lifestyle transformations (Lu & Hung, 2010).

In fact, there is a growing number of consumers who shop online (Demangeau & Broderic, 2007). According to Statista (2013), in USA, the global value of B2C online transactions has grown from 72 billion US $ in 2002 until 289 billion US $ in 2012, which represents an average annual growth of 27% in that period. Moreover, E-marketer (2013) states that the annual turnover of worldwide B2C e-commerce sales in 2012 was 104 298 billion US $. The same author estimates that the figures will continue to grow reaching nearly 186 000 US US billion $ in 2016.

With the birth and development of electronic commerce (e-commerce), several terms related to it appeared, such as:

- Electronic shopping (e-shopping) - searching and/or buying consumer goods and services via the Internet (Mokhtarian, 2004).
- Electronic retailing (e-tailing) - part of e-commerce that focuses on the business to end consumer (B2C) transactions of retail goods (Burt & Sparks, 2003).
- Mobile-commerce (m-commerce) – subset of e-commerce which refers to any transaction involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer mediated networks with the help of mobile devices (Ngai & Gunasekaran, 2005; Tiwari & Buse, 2007).

M-commerce has produced major impacts in business, modifying inclusively the business models in some industries such as retailing (Chong, 2013a). It is still growing at an explosive compound annual growth rate (Chong, 2013b) which is predicted to be of 42% between 2013 and 2016 (Mobile Enterprise Strategies, 2015). Statista (2015) estimates that global m-commerce revenues will grow from U.S.$ 133 billion in 2013 to U.S.$ 626 billion in 2018.

M-commerce adoption is a consequence of the appearance of the Mobile Internet (MI) (Clark, 2001). Indeed, the last and the recent decade have assisted to the adoption and utilization of MI which is

described as *"internet access through cellular communication networks via various portable appliance categories"* (Gerpott & Thomas, 2013).

As Gerpott & Thomas (2013) claim, the explosive growth of MI adoption is closely linked to the proliferation of various portable appliance categories. Therefore, for the purpose of this thesis, it is created a shopping scenario mediated by a smartphone, due to its massive use and almost ubiquitous presence in Europe and North America and growing presence in developing regions such as Asia-Pacific, Middle-east and Africa (E-marketer, 2014). Actually, the same author predicts that by the end of 2016 smartphone users worldwide will surpass 2,16 billion.

The usability of smartphones, along with advanced computing and connectivity capabilities (Okazaki & Mendez, 2013) makes this device very convenient for the practice of m-commerce, particularly in what e-tailing is concerned (Shankar et. al, 2010).

There is evidence that e-tailing and offline retail shopping can be considered complements since both the internet and brick-and-mortar stores have unique features (Chu, et. al, 2010). Actually, although e-commerce is still growing fast in terms of volume and revenues, Mandilas et al. (2013), claim that the traditional retail shops are not in danger of being completely replaced by online stores.

In fact, using the internet reduces search costs and enables easy and fast access to information regarding the price and other product features as well as facilitates a quick comparison between products. Moreover, online shopping provides other advantages like reduced transportation costs, no need for product carrying, no restrictions on shopping hours, time saving and convenience. However, it does not allow physical evaluation (touch, feel, sample and trial) with the product and often incur shipping and handling costs. In contrast offline retail shopping allows physical contact with the product, instant gratification, but it also involves high transportation and searching costs, and has restrictions in shopping hours (Grewal et al., 2004).

Since online and offline shopping exist simultaneously and are related with each other, there might be a chance that consumers are demanding for an interaction in off-line retail shopping similar to the one that happens in e-tailing. Actually, some authors like Floridi (2007) claim that *"the threshold between online and offline will soon disappear"*. Moreover, Baym (2009) insists that *"online and offline are not different entities that need to be contrasted"* and *"what happens via new technology is completely interwoven with what happens face-to-face and via other media"*. In fact, as previously referred, Chu, et al. (2010) talks about

online and offline retail shopping as complements which might mean that the boundaries between online and offline retailing are increasingly blurred and in the near future they will disappear turning offline and online shopping into one single reality. With this assumption in mind, this work analyses whether people are available to have a shopping behavior in offline retail shops similar to the one they have in online retail shops and if companies can explore it strategically.

The research question:

Are people available to engage in a shopping behavior inside traditional retail stores that is similar to the one they have online and can retail companies explore it strategically?

To address the problem statement, three dimensions are evaluated. Firstly, it is determined (1) whether engaging in an online shopping behavior in offline retail stores is valuable to customers. Secondly, (2) it is accessed the customers' willingness to permit recording the data generated in the online-offline shopping process since it has the potential of being used to provide a contextual personalized experience which might have strategic impact for retail companies. Finally (3), this work explores the online-offline shopping process strategic relevance for retail companies. From the mentioned above, three subsidiary research questions are addressed in order to help answering the main research question.

(1) Do customers value the online-offline shopping characteristics?
(2) Are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience?
(3) Can the online-offline shopping process generate any source of sustainable competitive advantage?

1.1. Methodology

With the objective of obtaining relevant information about the research proposal, this work finds answers to the main research question.

To help answering the main research question, a shopping scenario in offline retail stores mediated by smartphone is created. This scenario includes the major shopping characteristics promoted by online shopping which were previously enunciated in the Literature Review. It intends to present a situation where the consumer-product interaction in offline retail stores is similar to the one happening online.

Subsequently, the research model is designed to fundament the methodology used to answer to the subsidiary research questions and the main research question. It includes the preliminary assumptions; the

hypotheses to be tested through the survey as well as an explanatory scheme of the whole research model. Afterwards, the scenario, as well as the attributes and advantages of the online-offline shopping experience, are exposed in a survey that is conducted with the purpose of obtaining data to check whether the hypothesis regarding the attributes and advantages consumers value are validated.

The next step is analyzing the data collected, followed by deriving preliminary conclusions which are then discussed in order to answer the research questions. Subsidiary research question 3 is answered using applied theory on Resource-Based Value (RBV) which results from a combination of several scientific concepts developed, among many others authors, by Wernerfelt (1984), Barney (1991 and 1995) and Stalk et al. (1992). Therefore, this work determines whether the collected information from the digital interaction in traditional offline retail environments contributes to create at least one source of sustainable competitive advantage.

To achieve the objectives of the dissertation, seven chapters are developed.

The next chapter is dedicated to the literature review which presents conceptual knowledge on electronic retailing, mobile commerce, online shopping characteristics, online consumer behavior, *omnichannel* consumer experience, personalization in a mobile context, permission marketing, customer relationship management, and Resource-based view theory.

The third chapter is concerned with the presentation of the online-offline shopping scenario mediated by smartphone.

In chapter four – *Research model and survey* – it is presented and described in detail the research model and survey as well as it is written a deep explanation of the assumptions and hypothesis to be tested.

Chapter 5 – *Results presentation and statistical analysis* – aims to describe, analyze and synthetize the data collected from the survey, as well as to draw preliminary conclusions from the same data.

The following chapter – *Discussion* – is intended to match the treated data with the hypothesis in order to check their validity. Afterwards the subsidiary research questions and the main research question are answered based on the previous information.

Finally, in the *Conclusion* chapter it is presented a clear and grounded thesis statement which answers the main research question. It also addresses the study limitations and suggestions for future research.

2. Literature Review

The aim of this chapter is to provide a background overview of the theoretical subjects needed to support answering the research question.

With the referred goal in mind, the Literature Review is organized around several topics. As a matter of fact, it begins with the definition of e-tailing and m-commerce. Afterwards it focuses on the online shopping characteristics in a customer perspective as well as on the online consumer behavior. The chapter proceeds with an explanation of what is the recent reality of the *omnichannel* consumer experience in shopping activities. Finally, it concludes with a strategic perspective of the topics of Permission Marketing, Customer Resource Management (CRM) and Resource-based View (RBV).

2.1. Electronic retailing (E-tailing)

Because the basis of online shopping behavior related to retail shopping is strongly connected with e-tailing, it is relevant to start the literature review with a brief conceptualization of e-tailing.

E-tailing is a short expression for electronic retailing that is recurrently used in internet discussion since the mid-nighties (Huang & He, 2011). As previously referred, Burt & Sparks (2003) define e-tailing as a part of e-commerce that focuses on the business to end consumer (B2C) transactions of retail goods.

When compared to traditional retailing, e-tailing conveys benefits to both consumers and retailers. As far as consumers are concerned, e-tailing offers more vendors and product alternatives since, in theory, customers are able to reach all the e-tailers around the globe. Comparison of product features is much easier online and there is more information available to the customers. All these issues combined with a personalized shopping experience and flexible e-payment methods transform e-tailing in a time saving and convenient way of shopping. Regarding retailer's benefits, e-tailing has the potential of cost saving in physical store building and operation. Additionally, e-tailing allows e-tailers to reach a larger number of customers (Huang & He, 2011).

Annex 1 develops a little further the e-tailing thematic.

2.2. Mobile commerce (M-commerce)

Using a mobile device to shop is something that is considered for the purpose of this work. Therefore, to understand the availability of people to behave in offline shops the same way they behave in online ones, it is relevant to extract some insights of m-commerce.

Therefore, the term m-commerce is an abbreviation for mobile commerce. It emerged and evolved alongside with the mobile internet and the development of various portable appliance categories (Clark, 2001; Gerpott & Thomas, 2013).

As stated before, m-commerce is a subset of e-commerce which refers to any transaction involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer mediated networks with the help of mobile devices (Ngai & Gunasekaran, 2005; Tiwari & Buse, 2007).

It is possible to find more information on m-commerce in annex 2.

2.3. Online shopping characteristics in a customer perspective

In order to understand whether or not people are available to engage in online shopping behavior in offline stores, it is important to present and describe the principal motivations to shop online as well as the principal characteristics of online shopping in a customer perspective.

In fact, according to Jiang et. al. (2012), "*shopping convenience has been one of the principal motivations underlying customer inclination to adopt online purchasing*". The same authors measured consumer perceptions of online shopping convenience and classified them into four dimensions, which are deeply explained in the following figure:

Table 1 - Consumer perception of online shopping convenience (adapted from Ling et al., 2012)

Access convenience	Online shopping is flexible in terms of time and place, meaning consumers take advantage of economies of time. They are also able to make purchases from any location as long as they are connected to the internet. Moreover, shopping online provide psychological benefits related to avoiding crowds, reducing waiting time and expending less effort in travelling to physical stores.
Search convenience	The search convenience aspect depends essentially on four different aspects: download speed, web site design, search function and product classification. If all of these referred aspects are properly designed and operating, online shopping allows quality product searches without physically visiting multiple locations destined to find the desired products.
Evaluation convenience	Using the internet to shop results in evaluation convenience because the internet is a rich source of detailed yet easy-to-use product description. In fact, different online platforms such as company web-sites, retail websites, consumer forums, social networks, and others, present the product features resorting to various formats such as text, graphics and video. Moreover, the overwhelming selection of accessible products and its detail information can be complemented with customer comments/reviews about their product experience. Such a peer evaluation system has proven to be a valuable evaluation tool to be used before ordering, resulting in saving time and efforts.
Transaction convenience	Transaction convenience in online shopping refers to the use of flexible e-payment systems to perform the transaction. Although there is no queue in online shopping, the check-out process is considered convenient when the e-payment system used is simple and easy to follow.

Given the referred aspects associated with Ling et.al (2012) explained convenience dimensions, several online shopping characteristics were selected and explained deeply in annex 3, ranging from ubiquity to flexible e-payment methods.

2.4. Online consumer behavior and *omnichanel* consumer experience

In order to analyze with precision the availability of customers to behave in offline shopping the same way they do in online shopping, it is useful to understand the processes behind online consumer behavior.

Online consumer behavior is described as the process of purchasing products or services through the internet (Liang and Lai, 2000). The typical process begins when potential consumers recognize a need for some product or service. The next step is searching for information in the web related with their specific need. After deciding, the transaction is performed and post-sales services are provided (Li & Zhang, 2002).

In fact, the process consists of five steps similar to those associated with traditional consumer behavior (Liang & Lai, 2000). Therefore, the following figure specifies and describes the several phases of traditional consumer behavior representing an adapted model from Engel, Kollat & Blackwell (1978).

Problem/need recognition	Stage in which the consumer perceives he/she has a need that motivates him to search for a product to satisfy it.
Information search	Stage in which the consumer searches for information about the product needed. This search is either internal (memory) or external (external sources).
Evaluation of alternatives	Stage in which the consumer compares products (brands, prices, quantity, etc.) of the evoked set.
Choice/purchase	Stage in which the consumer chooses the product that corresponds to the best alternative of the evoked set.
Post-purchase behavior	Stage in which the consumer assesses whether he/she is satisfied or dissatisfied with the purchase.

Figure 1 – Consumer Behavior Process (adapted model from Engel; Kollat and Blackwell, 1978)

However, the internet provides specific tools which help consumers performing the referred steps in a different way in comparison with the traditional offline consumer behavior (Butler & Peppard, 1998). Annex 4 explains deeply this process.

According to Brynjolfsson et al. (2013) the retail industry is currently adapting itself to the emerging reality of the *omnichannel* consumer experience. *Omnichannel is a multichannel approach to sales that seeks to provide the customer with a seamless shopping experience whether the customer is shopping online from a desktop or mobile device, by telephone or in a bricks and mortar store* (Techtarget, 2015).

Brynjolfsson et al. (2013) explains that since technology is blurring the distinction between physical and online retailing, the retailers and their supply-chains need to rethink and re-structure their competitive strategies. Annex 5 explores a little this thematic.

2.5. Personalization in a mobile context

One of the attributes of shopping in a traditional store while engaging in an online shopping behavior is the possibility of enjoying a personalized shopping experience. For this reason, this chapter explains the

aspects of personalization services used in mobile devices, such as the smartphone. It begins with the evolution of personalization in mobile context and ends with the explanation of contextual personalization.

2.5.1. Defining and classifying personalization

According to Asif & Krogstie (2012) the increasing capability of smartphones and related technologies permitted the development of a vast number of personalizing possibilities, making the personalization of mobile services a growing trend. The same author states that *the goal of personalization is to support the user by providing the right service at the right moment* which is a characteristic appreciated by customers and a relevant aspect for its popularity.

There are several definitions for personalization and some of them are described in the following table.

<center>Table 2 – Definitions of personalization according to different authors</center>

Author	Definition of personalization
Blom (2000)	*A process that changes the functionality, interface, information content, or distinctiveness of a system to increase its personal relevance to an individual.*
Riecken (2000) cited by Asif & Krogstie (2012)	*Personalization is about mapping and satisfying user's goal with respect to service's goal.*
Jørstad. et al (2004)	*Personalization of a service means that mechanisms exist to allow a user U to adapt, or produce, a service A to fit user U's particular needs, and that after such personalization, all subsequent service rendering by service A towards user U is changed accordingly.*
Krogstie et al (2004)	*Personalization means information systems that both automatically adapt themselves to the preferences of the user and that can be explicitly tailored by users through a specific user interface.*
Asif & Krogstie (2012)	*Personalization is a controlled process of adaptation of a service to achieve a particular goal by utilizing the user model and the context of use.*

Following Asif & Krogstie (2012) definition and the particular goal enunciated in the first paragraph of this subsection, the referred authors enunciated the key elements for personalization of mobile services. In fact, these key elements are:

Users and Goal
- refers to sending the right information to the right users, meaning that irrelevant information sent to the user has a negative effect on passing the message. Therefore, an accurate personalization capability needs to represent correctly user needs, interests and requirements

Choice and Flexibility
- Personalization services need to be user-friendly, meaning they have to possess the characteristics of being quick and easy to learn and use as well as it should avoid manual configuration, be ready to use when needed and running without delay

Control and privacy
- Since the user model behind the personalization services is generally based upon user's personal information, there arise several privacy concerns (Simon et al, 2010). For this reason, Korth & Plumbaum (2007) emphasis that the designers of a personalization service must be aware that its users, in order to keep their privacy, need to have control over their personal information and need to be aware that the service they are using requires the access to personal information.

Figure 2 – Key elements of personalization in mobile services (adapted from Asif & Krogstie, 2012)

Asif & Krogstie (2012) have also identified the main dimensions of personalization. These dimensions are presented in the following figure:

Dimensions of personalization

Explicit or Implicit
- Explicit personalization happens when one of the parts sets the parameters of the service manually.
- Implicit personalization happens when the service is continually adapting itself to specific user behaviors and assumed requirements.

Static or Dynamic
- Static personalization is a dimension which relies on user information that remains the same as time passes. This dimension is linked with long term user preferences.
- Dynamic personalization is a dimension which relies on user information that changes as time passes. This dimension is linked with short term user preferences.

System or User oriented
- Both the system and the user participate in the process and therefore, this dimension is related with the type of interaction established between the user and the system, knowing that the user can subscribe to the services and the system can recognize some aspects of user's interaction.

Figure 3 – Dimensions of personalization (content searched in: Asif & Krogstie, 2012)

Moreover, Asif & Krogstie (2012) divided personalization in 3 levels according to the design perspective: simple personalization (basic level), profile-based personalization (second level) and contextual personalization (third level).

The simple personalization is a level with explicit and static personalization. In other words, the user sets the preference parameters and the application behaves according to those preferences (Asif & Krogstie, 2012). The following figure, taken form Asif & Krogstie (2012) illustrates this basic level of personalization.
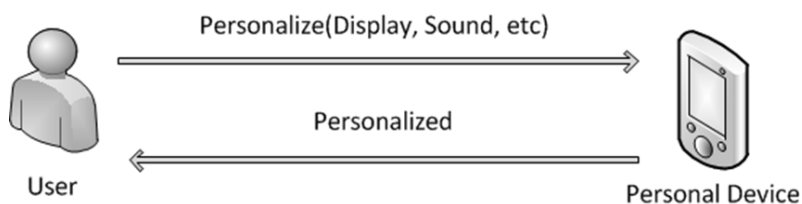
Figure 4 – Basic level of personalization (taken from: Asif & Krogstie, 2012)

According to Asif & Krogstie (2012), the profile-based personalization level is focused on delivering personalized services based on the user's profile. This profile consists in information related to the user as actor and accompanies him/her everywhere independently of the context. According to Hella and Krogstie (2010) the information collected to build a user profile can be classified in three main types which are personal information, stable interests and temporary interests. This profile information can be gathered explicitly or implicitly. The following figure, taken form Asif & Krogstie (2012) illustrates the second level of personalization.
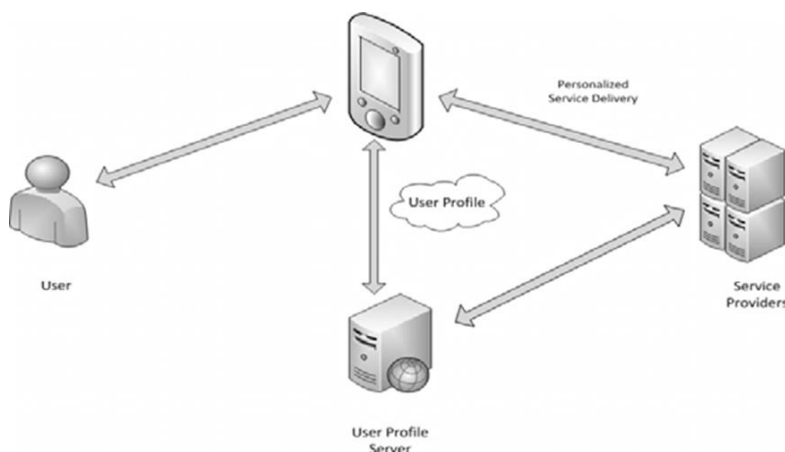
Figure 5 – Second level of personalization (taken from: Asif & Krogstie, 2012)

Finally the contextual personalization level allows the integration of user's profile with contextual information in order to create a personalization experience endowed with context-awareness which can improve significantly the user experience (Asif & Krogstie, 2012).

The next sub-chapter explains deeper the concept of contextual personalization, given its importance in the smartphone shopping scenario.

2.5.2. Contextual Personalization

Contextual personalization has become a topic with increasing attention since the context the user faces affects the manner he/she is consuming the given content which affects the decisions made about it (Kosir et al., 2011). For this reason, in order to create a contextual personalization service, it is essential to integrate the user's profile and contextual information to make the service able to adapt to the user situation. This fact implies the necessity of both modeling the user and the context (Asif & Krogstie, 2012).

Dey & Abowd (2000), Krogstie et al. (2004) and Sigg et al. (2010) identified several context elements that play an important role in modeling the context. In fact, the main context elements are:

- Identity – static information about the user;
- Location;
- Time;
- Task or activity.

The following figure, taken form Asif & Krogstie (2012) illustrates the basic scheme behind contextual personalization, including the relationship between context model plus user profile and contextual personalization achievement.
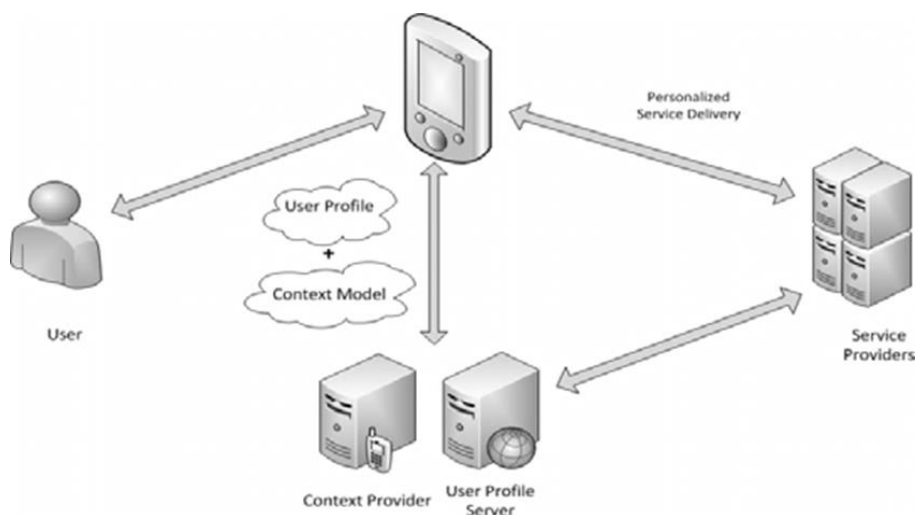
Figure 6 – Contextual personalization (taken from: Asif & Krogstie, 2012)

Palmisano et al. (2008) proved that knowing the context and providing a contextual personalization experience generates gains in the service performance versus the non-contextual personalization model. This fact, allied with the potential to improve the consumer's shopping experience might mean that consumer's value contextual personalization while shopping online.

2.6. Permission Marketing

Shopping offline with the support of a smartphone while having an online shopping behavior is a more satisfactory experience when the customer permits the companies and the applications to record and analyze his/her shopping data in order to receive personalized ads and promotions in particular, and generically a personalized shopping experience. For this reason, it is crucial to understand the concept of Permission Marketing (PM), coined by Godin (1999) representing an evolution of direct marketing (Tezinde et al., 2002) in which the customers are responsible for beginning the relationship with a specific company by permitting it to send them selling messages and product related information. Therefore, this subchapter explains the underlying logic of PM and identifies the main differences of it in relation to traditional marketing. Moreover, this subchapter presents the relation between PM and customer knowledge obtainment.

According to Godin (1999) PM emerged as a response to the widespread and ever increasing advertising stimuli that companies subject consumers to. In fact, the same author realized that it is physically impossible for consumers to pay attention to the vast range of products and services promoted in literally everywhere (outdoors spread all over the cities, TV and internet ads, junk e-mails, magazine ads, unsolicited calls, etc.). For this reason, Godin (1999) suggests that the best way to promote products and services is by asking consumers for permission to send them selling messages and product related information, instead of inundating them with thousands of random and costly communications to which they do not pay attention to. Given this, Godin (1999) states that a consumer who gives permission to receive selling messages and product related information from a company is willing to pay attention to those messages and, hence, there is more probability of responding positively to them. Therefore, Godin (1999) see this permission as a valuable asset that no competitor can take away from the company.

Everitt (2012) lists several advantages that PM techniques provide both to the company and the customers. Actually, the same author's list of PM advantages is presented in the following table.

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                        ┌─────────────────────────┐
                        │   Permission Marketing  │
                        │         Benefits        │
                        └─────────────────────────┘
                            ╱                 ╲
                           ╱                   ╲
            ┌──────────────────────┐   ┌──────────────────────┐
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Benefits to the company	Benefits to the customers
• More targeting precision; • Lower costs due to more efficiency and less wasted advertising; • Easy to test future campaigns; • Easy to track campaign results; • Increased customer lifetime value; • More opportunities for additional sales, referrals and promotions; • Possibly of converting more qualified leads into customers; • Higher rate of positive responsiveness by the customer.	• Receiving useful and interesting information; • Receiving information about other products and services relevant to the customers; • More possibilities of saving money with special offers and deals; • Receiving the initial incentive; • Receiving the benefits of the product or service sold; • Communication and shopping experience personalization.

Figure 7 - Benefits of Permission Marketing (adapted from Everitt, 2012)

2.6.1. Using Permission Marketing to obtain customer knowledge

As Godin (1999) refers, PM enables companies to create and maintain long-term and interactive relationships with the customers. Nevertheless, in order to maintain a solid relationship with customers in which they share their personal information, it is necessary that companies gradually achieve higher levels of permission. Moving consumers up the permission ladder allow turning strangers into friends, friends into customers and customers into loyal customers, increasing the revenues per customer.

The same author suggests that the higher the level of permission the company gets from the customer, the higher the personalization of the marketing efforts which results in achieving higher profits. Moreover, Moschtaghi (2002) states that PM linked with a strong CRM is a key success factor that leverages close and trusty relations that motivates even more the customers to grant permission to the companies to recommend and sell products and services to them. Therefore, getting permission is a highway to obtain customer knowledge enabling the personalization of marketing efforts leading to better and more trustworthy shopping experience.

2.7. Customer Relationship Management

As Celep et al. (2013) states, CRM has been proved to be, in several cases, a tool to obtain sustainable competitive advantage. In fact, a great part of the data generated by online-offline shopping experience might be recorded and analyzed through CRM systems and integrated in a broad firm strategy to obtain and make use of sustainable competitive advantage. Therefore, it is important to understand the concept

and applications of CRM as well as how to integrate it in a business strategy and its potential to obtain customer knowledge.

According to Gartner (2004), Customer Relationship Management (CRM) is a business strategy designed to optimize profitability, revenue and customer satisfaction by organizing the enterprise around customer segments, fostering customer-centric behaviors and implementing customer-centric processes. Therefore, Chen & Popovich (2003), claim that it is an integrated approach to managing relationships by focusing on customer retention and relationship development.

Although CRM is not just a technology-only strategy, a great portion of CRM is technology and is built upon information systems (Gartner, 2004). In fact, Khodakarami & Chan (2013) state that CRM systems are categorized as:

Table 3 – Categorization of CRM systems (adapted from Khodakarami & Chan, 2003)

Collaborative CRM systems	Manage and integrate communication channels as well as customer interaction touch points. Some examples of this type of CRM systems are email, company websites, customer portals and video/web conference.
Analytical CRM systems	They have the objective of providing a better understanding of individual customer's behavior and needs. In fact, analytical CRM systems facilitate customer behavior predictive modeling and purchase pattern recognition. Some examples of analytical tools of this category are data warehouses, data mining and online analytical processing.
Operational CRM systems	Systems designed to automate CRM processes in order to improve their efficiency and productivity. Some examples of operational CRM systems are customer service and support systems like call centers, sales force automation like point of sales systems and marketing automation.

Dutu & Halmajan (2010) claim that CRM has improved businesses performances. In fact, these authors state that CRM has a positive impact on customer retention, satisfaction and loyalty which is proved to have a positive impact on business profitability.

Annex 6 develops CRM theme by explaining the key elements of a CRM strategy as well as the use of CRM in the context of knowledge creation.

2.8. Resourced-based View

Because Resource-based View is one of the most widely accepted theory in the strategic management field (Powell, 2001), it will be utilized as a basis to verify whether the Knowledge generated through the online-offline consumer experience consists in a source of sustainable competitive advantage. For this reason, it is relevant to understand the Resource-based View theory and its evolution in time.

Resource-based view (RBV) theories appeared in a context in which product-market economic tools were the mainstream instruments used to study sources of competitive advantage. Nevertheless, Wernelfelt (1984) followed and developed the primordial idea of Penrose (1959) of analyzing firms as a broad set of resources. Actually, Wernelfelt (1984) claims that, in a firm perspective, resources and products are two sides of the same coin, since most products require the services of several resources and most resources can be used in several products.

According to Caves (1980) a firm's resource is defined as assets (tangible and intangible) which are tied semi permanently to the firm, for instance brand names, in-house knowledge, production experience, technology, trade contacts, machinery, efficient procedures, capital, and many others.

Taking this definition in consideration, Wernelfelt (1984) developed a set of simple economic tools meant to analyze a firm's resource position. He also examined the relationship between profits and resources as well as ways to manage a firm's resource position over time. The main conclusions derived were:

- Analyzing firms relatively to its resources leads to different immediate insights than through the lens of the traditional product perspective;
- It is possible to identify specific types of resources that have the potential of leading the firm to higher profits. Those are attractive resources which enable the firm to be protected by resource position barriers (egg. machine capacity, customer loyalty, production experience, technological leads);
- Designing a strategy for a big firm involves finding a balance between the exploitation of existing resources and the development of new ones;
- Mergers and acquisitions consist in an opportunity to buy or sell otherwise non-marketable resources in bundles. This type of transactions are performed in highly imperfect markets giving the buyer the opportunity of maximizing this imperfection by basing the purchase on a rare resource in order to improve his chances of buying cheap and getting good returns.

In 1991, Barney deepened Wernelfelt (1984) resource-based view of the firm by specifying the conditions under which firm resources can be a source of sustained competitive advantage. In order to achieve it, Barney proposed a revised definition of firm resources and established his distinction between competitive advantage and sustained competitive advantage based on the criterion of the possibility of competitive duplication.

Therefore, according to Barney (1991 and 1995) firm resources are defined as all the physical, financial, human and organizational assets utilized by a firm to develop, manufacture, and deliver products or services to its customers. This author assumes that the resources and capabilities of a firm are distributed among firms of a given industry in a heterogeneous manner as well as they are not perfectly mobile across firms.

As far as his distinction between competitive advantage and sustained competitive advantage is concerned, Barney (1991) clarified that the first one refers to a value creating strategy that is not simultaneously implemented by any current competitor(s) while the former refers to a value creating strategy that is not simultaneously implemented by any current competitor(s) and when these other firms are unable to duplicate the benefits of this strategy.

Having stated that, Barney (1991) claimed that a resource, in order to be considered a resource which holds the potential of leading to a sustained competitive advantage, must possess all of the following four attributes:

- Be valuable – a resource is valuable when it enables a firm to conceive of or implement strategies that improve its efficiency and effectiveness.
- Be rare – a resource is rare when it is distinctive and not widely available to be obtained or owned by large number of other firms;
- Be imperfectly imitable – A resource is considered imperfectly imitable when it possesses one or a combination of the following three characteristics:
  - Unique historical conditions – happens when resources generated by a firm are a result of a particular and unique path through history that it followed;
  - Causal ambiguity – happens when the link between the resources controlled by a firm and a firm's sustained competitive advantage is not understood or understood only very imperfectly;

- o Social complexity – happens when a resource derives of a very complex social phenomena, beyond the ability of firms to systematically manage and influence, meaning that the ability of other firms to imitate that resource is significantly constrained. Examples of resources with social complexity are a firm's culture as well as a firm's reputation among his customers;
- Be non-substitutable – a resource is non-substitutable when there is no strategically equivalent valuable resource or bundle of resources which are themselves either not rare or imitable.

The following framework is taken from Barney (1991) article and summarizes the relationship between resource heterogeneity and immobility; value, rareness, imitability, and substitutability; and sustained competitive advantage.
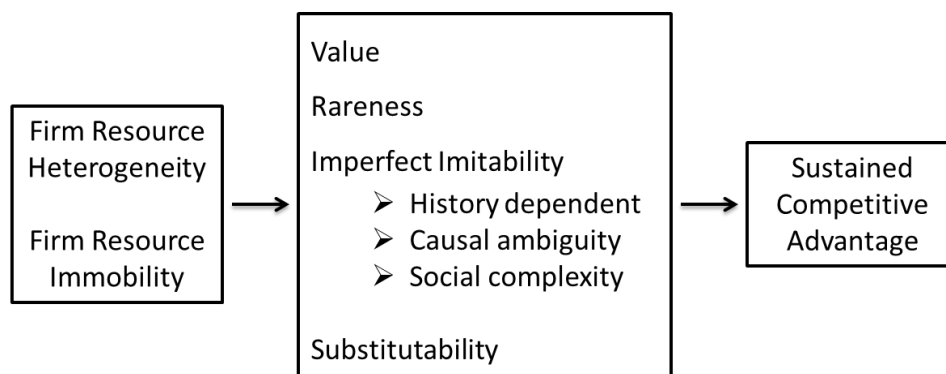
Figure 8 - Relationship between resource heterogeneity and immobility; value, rareness, imitability, and substitutability; and sustained competitive advantage (adpted from Barney, 1991)

2.9.1. Resources and capabilities in a resource-based view perspective

According to Grant (1991), due to the great volatility of a firm's external environment, internal resources and capabilities are critical factors to ensure a secure foundation for long-term strategy. In fact, resources are the primary sources of competitive or sustainable competitive advantages and capabilities are the means of applying those resources in order to build competitive or sustained competitive advantages.

Having defined before what resources are, it is relevant to analyze the definition of capabilities because it permits understanding that strategic resources enable the creation of capabilities which can be used to obtain sustainable competitive advantages. Therefore, Akio (2005) cites Stalk et al. (1992) when stating that capabilities refer to a firm's capacity to deploy resources, usually in combination, using organizational processes, to produce a desired effect. This desired effect can result in a sustainable competitive advantage which creates abnormal superior performance which can have the consequence of improving the company's profits.

3. Smartphone Shopping Scenario

The scenario described in annex 7 intends to be used as a tool that helps to answer the proposed research question: "Are people available to engage in an offline shopping behavior in retail shops similar to the one they have online and can retail companies explore it strategically?"

With this objective in mind, the smartphone shopping scenario represents a situation in which consumers have the means to behave in a traditional retail store in a way that is very similar to the one they practice when they shop online. Moreover, the scenario proposed tries to present a solution that is intuitive, interactive, efficient and effective when it comes to assist the customer in the several steps of his/her purchasing behavior.

In fact, as described in the literature review chapter, the consumer purchasing behavior has essentially 5 steps. Although it is essentially the same when shopping online or offline, the online shopping behavior has some particularities (Liang and Lai 2000) which were referred in the literature review and correspondent annex 4. Therefore, this scenario intends to be responsive to those particularities so that it is obtained a situation that is very close to the traditional online shopping one.

For that reason, the shopping scenario assumes that the costumer possess a smartphone with mobile internet connection and a proposed shopping application which serves as a mediator between the buyer and the seller in a traditional brick and mortar store. These tools, in combination with other technologies enable the customer to behave in an offline store in a similar way he/she would behave in online shopping.

4. Research Model and Survey

The aim of this chapter is to present the research model and the survey used to support it. In fact, the research model intends to both describe and structure the knowledge purposed to be achieved and the method used to obtain it. Therefore, in order to answer the research question, several hypotheses are created and the survey is designed to test them. Given this, a deeper explanation of the research model, the survey and the connection between them are deeper exhibited thoroughly the chapter.

4.1. Research Model

As previously stated, the research model clarifies the method used to obtain the desired knowledge. It is built on a structure that possesses some divisions. Firstly, as a starting point, assumptions of the model are shown. Afterwards, based on both the literature review and the smartphone shopping scenario, it is created a framework of the research model alongside with the hypotheses used to answer the three subsidiary research questions that arise from the main research question. The survey part is concerned with matching each one of the survey's questions to the hypotheses that it intend to validate.

4.1.1 Assumptions

The research model has three assumptions to be considered:

Table 4 – Research model assumptions

1. Smartphones are widespread	According to Business Insider (2013), smartphone adoption rate has been explosive, reaching 22% of the world population at the end of 2013. This means that smartphone penetration has already surpassed pc penetration. In fact, in the developed countries, there are many cases in which the same person possesses more than one smartphone. Moreover, in many countries, mobile subscriptions have reached over 100% of the population. E-marketer (2014) suggests an almost ubiquitous presence of smartphones in Europe and North America as well as a growing presence in developing regions such as Asia-Pacific, Middle-east and Africa (E-marketer, 2014). For the stated reasons it is plausible to state that, in the present, smartphones are widespread in the developed countries and in the future it is extremely probable that smartphones will be widespread all over the world. Therefore, this assumption may be considered credible.
2. Consumers know how to use the purposed smartphone shopping application	According to Mobithinhking (2013), by the end of 2012 there were 1.2 billion users of mobile apps. In fact, the same author estimates an average growth rate of mobile apps users close to 30%, reaching a number of 4,4 billion in 2017. Moreover, Techcrunch (2014) claims that people are spending on average 2 hours and 19 minutes/day using mobile apps. Therefore, if there is a fast growing number of individuals using regularly mobile applications, it is plausible to assume that consumers know how to use the purposed smartphone shopping application.
3. Companies possess all the enabling technologies needed to the smartphone shopping scenario and they allow exchanging data, information and knowledge related to the online-offline shopping process to the smartphone shopping application.	According to Benjamin et al (1983) technology and strategy are inseparable. The smartphone shopping scenario is designed to use technology to bring strategic value to companies. For this reason, if a technologic process brings strategic value to companies, it is plausible to assume that companies are willing to obtain the enabling technologies and permit the exchanging of data, information and knowledge to take full advantage of the online-offline shopping process.

4.1.2. Research model framework and hypothesis

As previously referred, the research question of this dissertation is: "are people available to engage in a shopping behavior inside traditional retail stores that is similar to the one they have online and can retail companies explore it strategically?" To assist answering the main research question, three subsidiary questions are formulated (1 – Do customers value the online-offline shopping characteristics? / 2 – Are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience? 3 – Can the online-offline shopping process generate any source of sustainable competitive advantage?). Having this in mind, the subsidiary questions hypotheses are generated and tested so that reasoned preliminary conclusions and final conclusions are obtained. The following figure on the next page presents the research model framework.
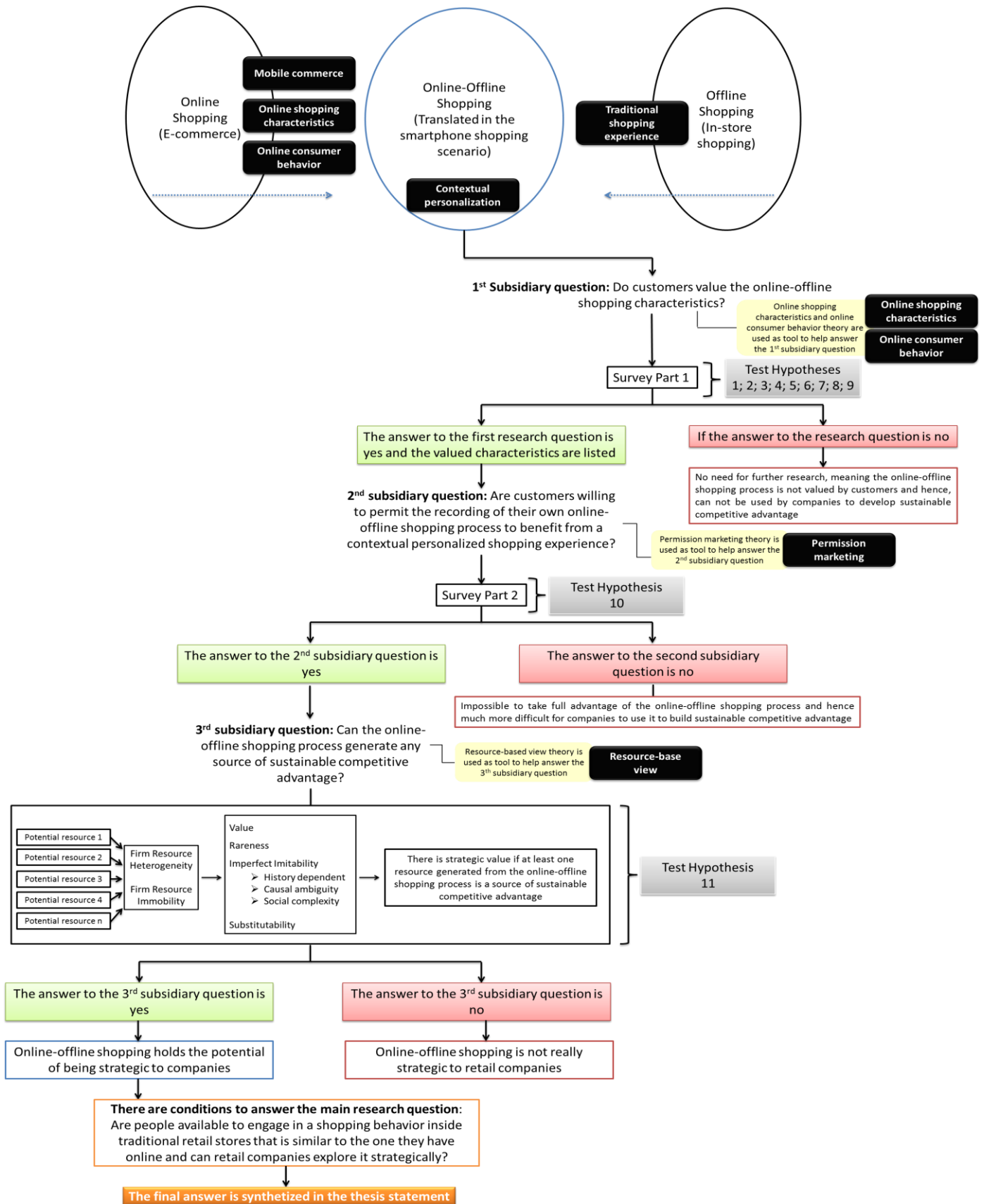
Online Shopping (E-commerce)

- Mobile commerce
- Online shopping characteristics
- Online consumer behavior

Online-Offline Shopping (Translated in the smartphone shopping scenario)

- Contextual personalization

Offline Shopping (In-store shopping)

- Traditional shopping experience

1st Subsidiary question: Do customers value the online-offline shopping characteristics?

Online shopping characteristics and online consumer behavior theory are used as tool to help answer the 1st subsidiary question

- Online shopping characteristics
- Online consumer behavior

Survey Part 1 — Test Hypotheses 1; 2; 3; 4; 5; 6; 7; 8; 9

The answer to the first research question is yes and the valued characteristics are listed

If the answer to the research question is no

No need for further research, meaning the online-offline shopping process is not valued by customers and hence, can not be used by companies to develop sustainable competitive advantage

2nd subsidiary question: Are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience?

Permission marketing theory is used as tool to help answer the 2nd subsidiary question

- Permission marketing

Survey Part 2 — Test Hypothesis 10

The answer to the 2nd subsidiary question is yes

The answer to the second subsidiary question is no

Impossible to take full advantage of the online-offline shopping process and hence much more difficult for companies to use it to build sustainable competitive advantage

3rd subsidiary question: Can the online-offline shopping process generate any source of sustainable competitive advantage?

Resource-based view theory is used as tool to help answer the 3rd subsidiary question

- Resource-base view

- Potential resource 1
- Potential resource 2
- Potential resource 3
- Potential resource 4
- Potential resource n

Firm Resource Heterogeneity
Firm Resource Immobility

Value
Rareness
Imperfect Imitability
  - History dependent
  - Causal ambiguity
  - Social complexity
Substitutability

There is strategic value if at least one resource generated from the online-offline shopping process is a source of sustainable competitive advantage

Test Hypothesis 11

The answer to the 3rd subsidiary question is yes

The answer to the 3rd subsidiary question is no

Online-offline shopping holds the potential of being strategic to companies

Online-offline shopping is not really strategic to retail companies

There are conditions to answer the main research question: Are people available to engage in a shopping behavior inside traditional retail stores that is similar to the one they have online and can retail companies explore it strategically?

The final answer is synthetized in the thesis statement

Figure 9 – Research model framework

Having this framework in mind, the hypotheses used to assist answering the subsidiary and main research question are explained next.

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The first subsidiary research question suggests the existence of a list of online shopping characteristics. Therefore, the chosen online shopping characteristics are presented in the format of hypothesis so that it becomes possible to test whether or not these characteristics are accepted by consumers who shop offline. Consequently, the hypotheses created to support answering the first subsidiary research question are:

Table 5 – Hypotheses to test the 1st subsidiary research question

H1 – Customers value having low search costs derived from using a smartphone linked to the internet to search for product information.	In the literature review correspondent annex (A3 – 2), it is mentioned that using the internet to search for product information reduces the search costs to almost zero (Bakus, 1997). Actually, travelling to another store and searching for the desired products is generally more costly than searching on the web given the transportation and the opportunity costs associated. For this reason, the smartphone shopping scenario purposes an interactive and efficient manner of web-searching for product information with very low search costs. In consequence, this hypothesis is designed to evaluate through survey whether customers value having low search costs derived from using a smartphone linked to the internet to search for product information.
H2 – Customers value the possibility of using the internet to search for product information from multiple digital sources while deciding whether or not to buy a product taken from the store shelf.	As previously referred in the literature review, when consumers shop online, they tend to use multiple digital sources provided by the internet, in order to obtain information about the product and companies that sell it. For this reason, the smartphone shopping scenario purposes an interactive and efficient manner of web-searching in multiple digital sources like different web-sites, social-networks, blogs, forums, and other platforms. Therefore, H2 is developed to check through survey whether or not people value the possibility of using the internet to search for product information while deciding whether or not to buy a product taken from the store shelf.
H3 – Customers value the fact of obtaining information about similar or complementary products while deciding whether or not to buy a product taken from the store shelf.	As described in annex 3 (A3 – 4) of the literature review, recommender systems are specifically designed to improve the sales performance by delivering suggestions of other related products that the customer might be interested while searching for a specific product Schafer et al. (1999). Actually, the smartphone shopping scenario makes use of a superior recommendation system that is enhanced by the smartphone shopping application real-time CRM. This superior recommendation system enables customers to enjoy the benefits of similar and complementary products suggestions. Therefore, H3 is created to verify through survey whether or not customers value the fact of obtaining information about similar or complementary products while deciding whether or not to buy a product taken from the store shelf.
H4 – Customers value to have a personalized shopping experience provided by the smartphone shopping application while they are shopping in a traditional offline store.	As explained in the literature review correspondent annex (A3 – 4), Tam & Ho (2005) suggests that personalization implies the ability to sense and respond to the unique needs and wants of individual customers by providing "the right content, in the right format, to the right person, at the right time". In fact, Adomavicius & Tuzhilin, 2005 state that personalization leads to customer loyalty which is relevant to improve the companies' profits in the long run. The smartphone shopping scenario is designed to provide a superior contextual personalization experience. Therefore, H4 is designed to check through survey whether or not customers value to have a contextual personalized shopping experience provided by the smartphone shopping application while they are shopping in a traditional offline store.
H5 – Customers value digital social interaction while shopping in traditional offline stores.	In the literature review correspondent annex (A3 – 5), Kim & park (2013) state that s-commerce has introduced new variables in e-commerce since distant consumers can interact in real time with each other and with the companies by exchanging information on products and services. In fact, s-commerce is based on digital social interaction in what online shopping tasks are concerned and makes part of the online shopping behavior. Actually, the users of smartphones have the possibility of using multiple social networks which allow them to interact and ask opinions to friends while they are inside a traditional offline store shopping. Moreover, the purposed smartphone shopping application tracks the people known by the customer who have already bought the same product the consumer is analyzing at the moment. This means that the consumer can have immediately access to a product review given by someone that is closer to him/her through the use of social networks. Consequently, this hypothesis is generated to evaluate through survey whether people value or not to digitally interact with other people not physically present while shopping at a traditional offline shop.

H6 – Customers value the fact of not having to wait on queues inside a traditional offline store.	Queues have a negative effect on customer satisfaction (Jiang et al., 2012), as referred in annex 3 (A3 – 6) of the literature review. In fact, not having to wait in queues is one of the characteristics of online shopping. The purposed smartphone scenario is designed so that customers avoid waiting on queues inside a store, either to pay or to be assisted by a shopkeeper. In fact, the majority of the tasks performed by the shopkeeper are capable of being substituted by the purposed smartphone application. For these reasons, this hypothesis tests through survey whether clients value the fact of not having to wait on queues inside a traditional offline shop.
H7 – Customers value the possibility of using e-payment methods to pay the bill when they shop in traditional offline stores.	As stated in the literature review correspondent annex (A3 – 7), Kim et al. (2010) claim that e-commerce is built on e-payment systems. In fact, the favorable features offered by this type of payments turns e-payment systems very popular for e-commerce transactions. The existence of smartphones makes mobile payments not only possible but easy and fast. Therefore, this hypothesis is created to check through survey whether people value or not to pay the final bill inside a traditional brick and mortar offline shop by performing a mobile payment using the smartphone.
H8 – Customers value the possibility of comparing prices for a specific product in different online and offline stores while deciding whether or not to buy a product taken from the store shelf.	In basic economics, the law of the demand states that the quantity of products a person is willing to buy decreases as the price rises, except for Giffen goods and luxury goods (Mankiw, 1997). Therefore, pricing decisions play generally an important role on consumer's willingness to buy a certain product. For this reason, people often compare prices before making a decision on what product to buy. With the purposed smartphone application, not only can customers compare prices inside a store for the same category of products but they can also compare prices of the same product in other physical stores nearby or in a selected location or even in online stores. Consequently, this hypothesis is created to test through survey whether or not customers value the possibility of comparing prices for a specific product in different online and offline stores while deciding whether or not to buy a product taken from the store shelf.
H9 – Customers value the possibility of using augmented reality to enhance their shopping experience in traditional offline stores.	The literature review correspondent annex (A3 – 8) refers that augmented reality is used as tool to enhance customer's online shopping experience. As previously referred, the smartphone shopping scenario incorporates three methods to use augmented reality to improve the customer experience inside traditional stores. Therefore, H9 is created to test through survey whether or not customers value the possibility of using augmented reality to enhance their shopping experience in traditional offline stores.

With the previous hypotheses tested, it is already possible to answer to the first subsidiary question. Nevertheless, even if the online-offline shopping behavior is proved to be useful to people, it does not mean that companies can take fully potential of it by creating a contextual personalized experience because people may not be available to allow the recording of the online-offline shopping process personal data, information and knowledge generated. For this reason, H10, which appears in the following table, is used to help answer the second subsidiary question.

Table 6 – Hypothesis to test the 2nd subsidiary research question

H10 – Customers are willing to permit the recording of their personal data, information and knowledge generated through the online-offline shopping process to benefit from a contextual personalized shopping experience.	To answer the second subsidiary question, it is crucial to access whether customers are willing to allow the smartphone application to record the personal data, information and knowledge obtained from the online-offline shopping process. In fact, it is essential to know this so that it becomes possible to imply that the smartphone shopping application can exchange data with the retail companies' CRM in order to enable them to use it strategically. Therefore, H10 is created to test trough survey whether or not customers are willing to allow the recording of transaction and choices data to benefit from a personalized offline-online shopping experience. Even if the second subsidiary question is answered positively, it is not guaranteed that the online-offline shopping process is strategic to companies. For this reason, having in mind the Resource-based View theory, the third question is used to evaluate whether or not the referred process has the potential to generate at least one sustainable competitive advantage. Consequently, H11, that is explained next, is used to help answer the third subsidiary question.

Even if the second subsidiary question is answered positively, it is not guaranteed that the online-offline shopping process is strategic to companies. For this reason, having in mind the Resource-based View theory, the third question is used to evaluate whether or not the referred process has the potential to generate at least one sustainable competitive advantage. Consequently, H11, explained in the following table, is used to assist answering the third subsidiary question.

Table 7 – Hypothesis used to the 3rd subsidiary research question

H11 – The online-offline shopping process holds the potential of being a tool used for the creation of a key strategic firm resource capable of generating sustainable competitive advantage.	If clients value the online-offline shopping experience and if they are willing to permit that the customer knowledge obtained in the online-offline shopping process is recorded and used by both the smartphone shopping application and the companies involved, then there might be a chance that this process can be used to generate a sustainable competitive advantage. To test it, Barney's (1991) framework is used. Consequently, this hypothesis is designed to prove through Barney's (1991) method whether or not the online-offline shopping process holds the potential of being a tool used for the creation of a key strategic firm resource capable of generating sustainable competitive advantage.

Finally, after collecting, analyzing and synthesizing all the relevant data collected, preliminary conclusions are draw and used to from the final conclusions that answer to the main research question.

4.1.3. Testing the hypotheses

The hypotheses considered in the research model are tested by survey (H1 to H10) and by Barney's (1991) method (H11).

For the first subsidiary question, the following figure associates each hypothesis to each survey question/s designed to validate those same hypothesis:
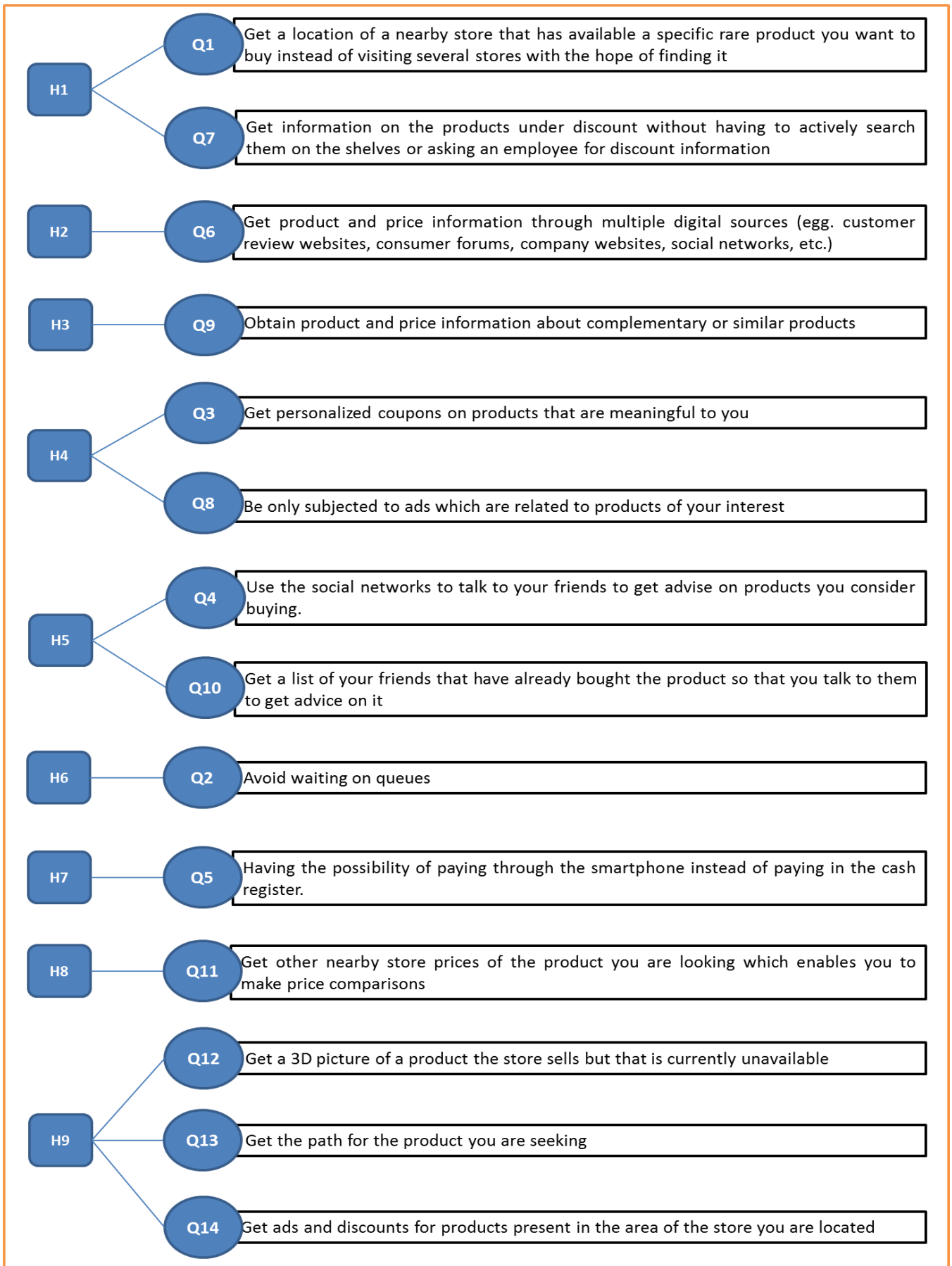
H1	Q1	Get a location of a nearby store that has available a specific rare product you want to buy instead of visiting several stores with the hope of finding it
	Q7	Get information on the products under discount without having to actively search them on the shelves or asking an employee for discount information
H2	Q6	Get product and price information through multiple digital sources (egg. customer review websites, consumer forums, company websites, social networks, etc.)
H3	Q9	Obtain product and price information about complementary or similar products
H4	Q3	Get personalized coupons on products that are meaningful to you
	Q8	Be only subjected to ads which are related to products of your interest
H5	Q4	Use the social networks to talk to your friends to get advise on products you consider buying.
	Q10	Get a list of your friends that have already bought the product so that you talk to them to get advice on it
H6	Q2	Avoid waiting on queues
H7	Q5	Having the possibility of paying through the smartphone instead of paying in the cash register.
H8	Q11	Get other nearby store prices of the product you are looking which enables you to make price comparisons
H9	Q12	Get a 3D picture of a product the store sells but that is currently unavailable
	Q13	Get the path for the product you are seeking
	Q14	Get ads and discounts for products present in the area of the store you are located

Figure 10 – Questions to test hypotheses from 1 to 9

For the second subsidiary question, the following figure associates H10 to the survey question designed to validate that same hypothesis:

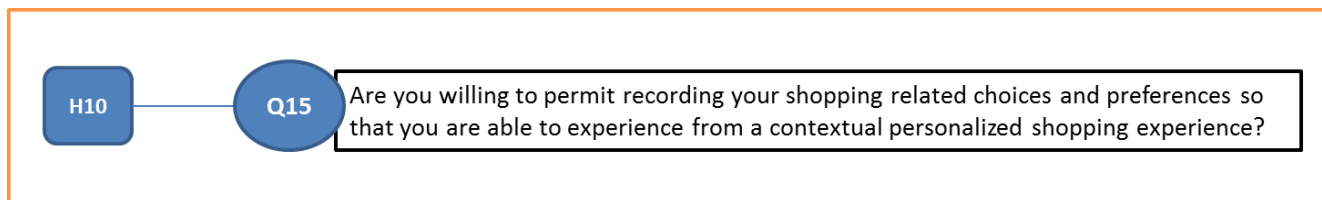| H10 | Q15 | Are you willing to permit recording your shopping related choices and preferences so that you are able to experience from a contextual personalized shopping experience? |

Figure 11 – Question to test hypothesis 10

As far as H11 is concerned, Barney's (1991) method is used to find whether or not this process holds the potential of being a tool to provide sustainable competitive advantage. Therefore, it is necessary to identify one or more potential resources and submit them to the analytical framework presented in the literature review so that it becomes possible to classify it as a potential source of sustained competitive advantage.

4.2. Survey and sample characterization

With the objective of obtaining primary data on the relationship between online and offline shopping, an online survey was conducted between the 4th and the 30th of April, 2015. The referred survey was designed in Qualtrics software and is possible to consult in annex 8.

The survey was the method of data collection chosen due to its intrinsic characteristics. Actually, it is easy to use, convenient and confidential. Furthermore, the survey enables a situation in which respondents are not subjected to any kind of inhibitors frequently associated to face-to-face questionnaires. Therefore, the risk of bias is diminished and the reliability is increased.

As far as the survey distribution and divulgation are concerned, two different channels were adopted. In fact, it was distributed via Facebook and direct e-mail, being Facebook the main platform used due to its broad reach and cost effectiveness characteristics.

The survey is divided into five main blocks of questions used to obtain empirical results over the online-offline shopping characteristics appraisal, customer's willingness to permit recording their shopping data as well as demographic issues.

There were 104 respondents who accessed the survey, but only 89 started to answer to it. Nevertheless, the number of respondents who started and completed the survey was 62, which is considered the relevant number of observations for analysis purposes. Of these 62, 51,61% are male and 48,39% are female. The survey comprises respondents from all age intervals.

4.2.1. Sample size determination

The considered population size used in this study includes the total number of people in the world that own a smartphone and have at once one time used the smartphone to make a purchase. In fact, it is plausible to consider this population size since the people that fit this population have the means to perform the online-offline shopping process and it is credible to admit that they seem to be the more motivated people to do so.

According to Dazeinfo (2014), the estimated number of smartphone users around the world is 1 914 600 000 people, which represents more than 25% of the world total population. Edigitalresearch (2015) state that 50% of smartphone owners have now completed some sort of purchase on their device.

Therefore, the population size considered is obtained by multiplying the estimated number of smartphone owners (1 914 600 000) with the percentage of smartphone owners who have at least one time made a purchase through smartphone (50%). Hence, the population size is 957 300 000 people.

In order to perform a rigorous study, it would be satisfactory to consider a 5% margin of error, 95% confidence level (z-score of 1,96) and a standard deviation of 0,05. Given the vast population size, by computing the following formula it is possible to obtain the necessary sample size:

Necessary Sample Size = (Z-score)^2 * StdDev * (1-StdDev) / (margin of error)^2 = (1,96)^2 * 0.5 * (1-0,5)/ (0,05)^2 = 384,16 ≈ 385

Therefore, 385 respondents would be the desired number of answers to produce a rigorous study according to the defined parameters. Nevertheless, according to SuperSurvey (2009) which is platform with similar characteristics of Qualtrics, the typical total response rate of this type of surveys is 13,35%. In fact, in order to collect 385 answers, it would be needed to send this survey to approximately 2884 people, which was considered too time consuming and expensive for this dissertation. Therefore, the number of answers collected (62) gives general insights for the conclusions derived but, further research should be conducted.
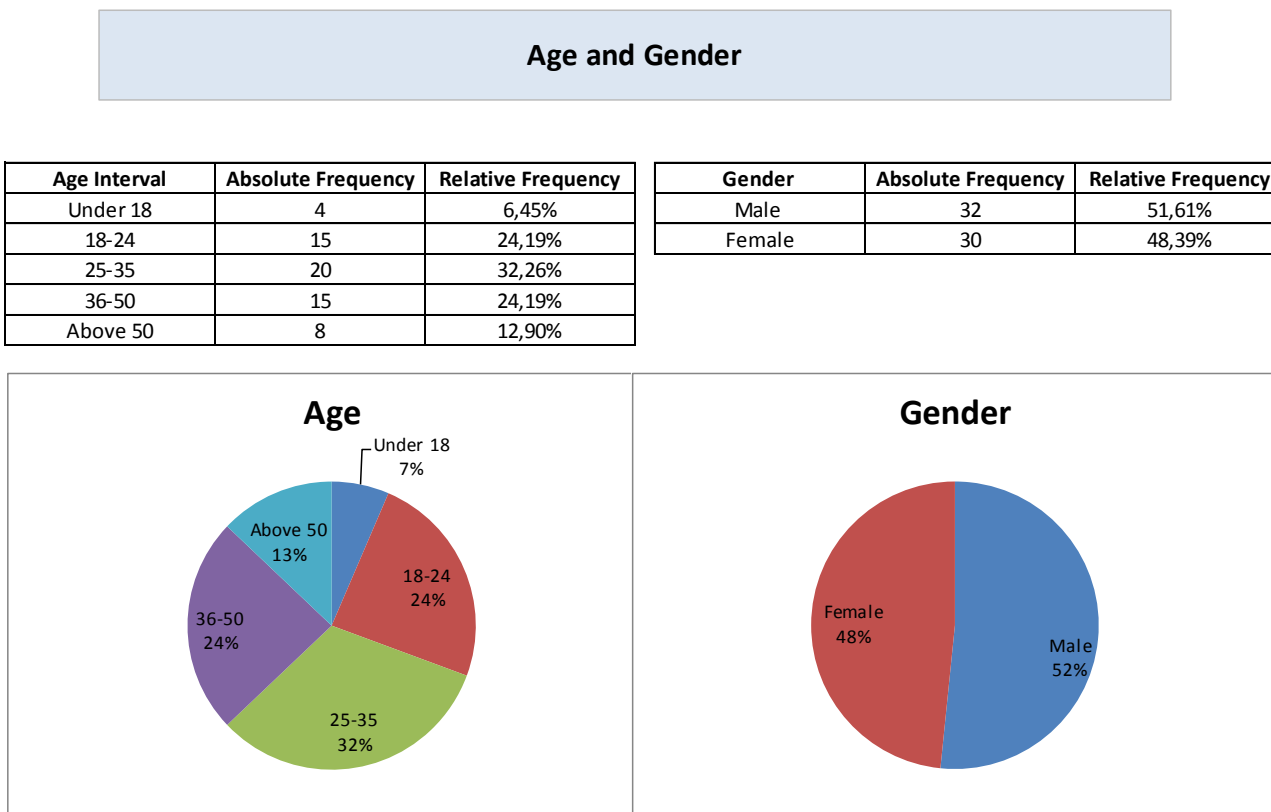
5. Results and Preliminary Conclusions

This chapter is divided in two main parts. Firstly, results are presented and statistically analyzed, beginning with the demographic description of the sample and proceeding with the presentation and analysis of the data obtained about online-offline shopping characteristics valuation as well as customers willingness to permit recording their own private shopping data so that they can benefit from a contextual personalized shopping experience. Secondly, preliminary conclusions are draw from the data collected.

5.1 Results Presentation and statistical analysis

5.1.1. Demographics

The following set of tables, graphics and text information describe the sample demographics.

Age and Gender

Age Interval	Absolute Frequency	Relative Frequency
Under 18	4	6,45%
18-24	15	24,19%
25-35	20	32,26%
36-50	15	24,19%
Above 50	8	12,90%

Gender	Absolute Frequency	Relative Frequency
Male	32	51,61%
Female	30	48,39%

The age interval with the highest number of respondents is 25-35 followed by the age intervals of 18-24 and 36-50. In terms of gender, there is almost an even number of female and male respondents, being the number of males respondents slightly higher.

Figure 12 – Sample demographics

5.1.2. Perceived utility of the online-offline shopping attributes

This section includes the online-offline shopping characteristics which were surveyed and previously translated into hypothesis. In each one of them, it is shown the question or questions connected to the specific characteristic surveyed, as well as the observations presented in table and graphic format. Finally, for each question specified in the following sub-chapters, a brief analysis is exhibited in the form of figure with tables, graphics and text analysis.

5.1.2.1. Very low search costs

Question 1			
Get a location of a nearby store that has available a specific rare product you want to buy instead of visiting several stores with the hope of finding it.			

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	0	7	14	41
Relative Frequency	0,00%	11,29%	22,58%	66,13%
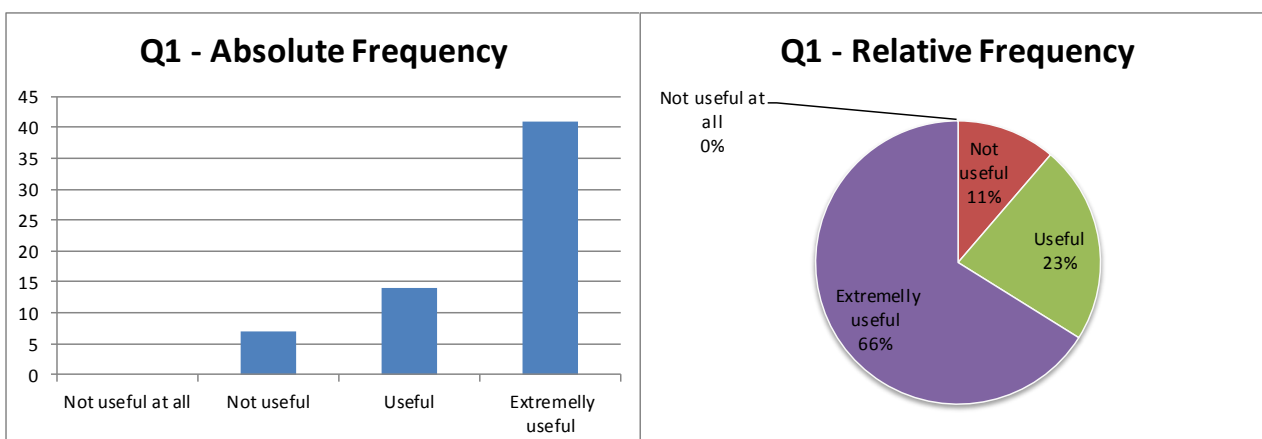
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

The majority of the respondents (89,74%) consider this attribute useful or extremely useful versus a minority of 10,26% which found it not useful. The mode (extremely useful) emphasizes this tendency.

Figure 13 – Question 1 results

Question 7

Get information on the products under discount without having to actively search them on the shelves or asking an employee for discount information.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	1	8	24	29
Relative Frequency	1,61%	12,90%	38,71%	46,77%
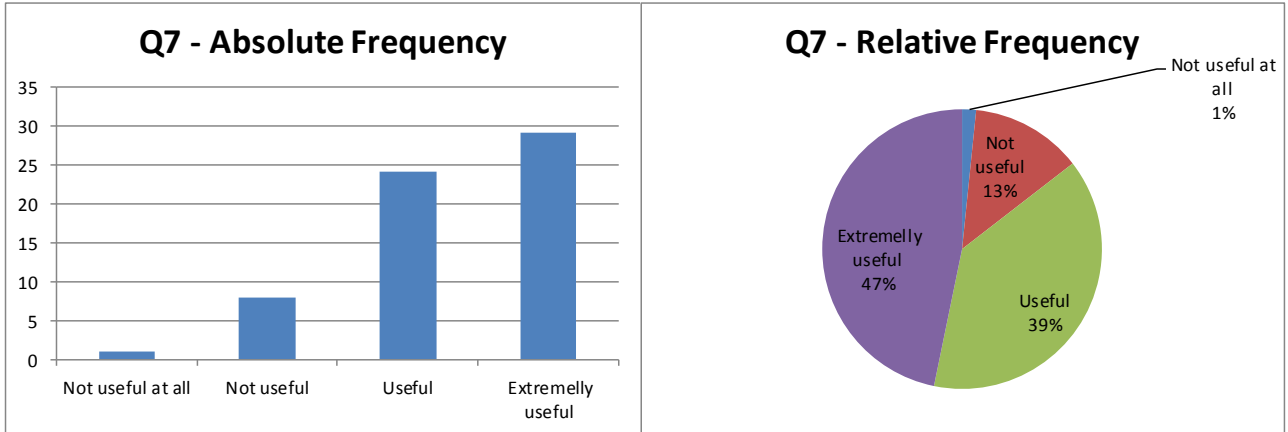
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

When it comes to evaluate the possibility of obtaining information on the products under discount without having to actively search them on the shelves or asking an employee for discount information, the majority (85,48%) consider this attribute useful or extremelly useful. Only a minority of 14,52% consider it not useful or nor useful at all. The mode (Extremelly useful) comes in line with this tendency.

Figure 14 – Question 7 results

5.2.1.2. Multichannel digital information obtainment

Question 6

Get product and price information through multiple digital sources (egg. customer review websites, consumer forums, company websites, social networks, etc.).

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	2	8	28	24
Relative Frequency	3,23%	12,90%	45,16%	38,71%
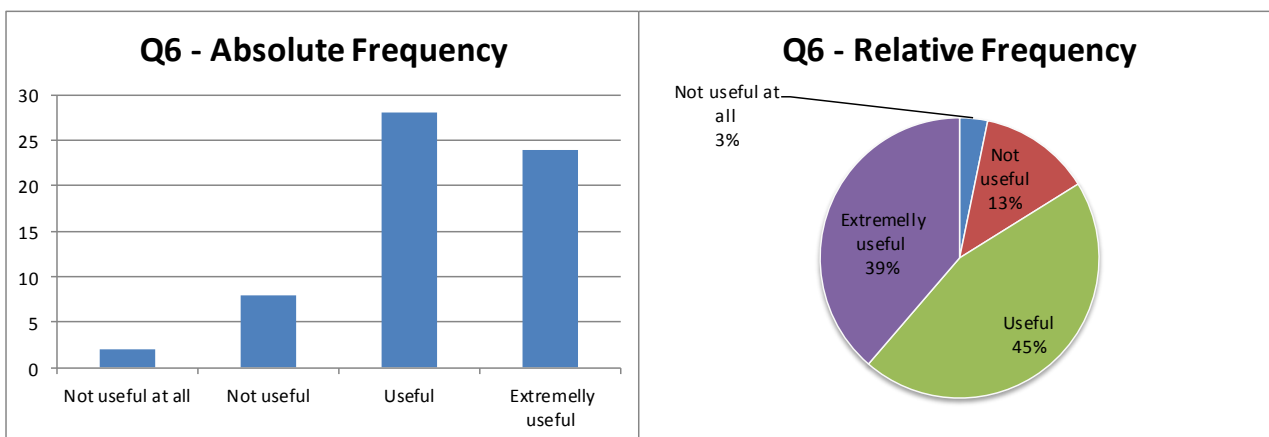
Descriptive statistic relevant for nominal variables	
Mode	Useful

It is possible to observe that the majority of the respondents (83,87%) find obtaining information through multiple digital sources useful or extremelly useful. In fact, only a minority of 16,13% consider this attribute either not useful or not useful at all. The mode (Useful) comes in line with the reffered tendency.

Figure 15 – Question 6 results

5.1.2.3. Similar or complementary product information obtainment

Question 9

Obtain product and price information about complementary or similar products.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	0	10	23	29
Relative Frequency	0,00%	16,13%	37,10%	46,77%
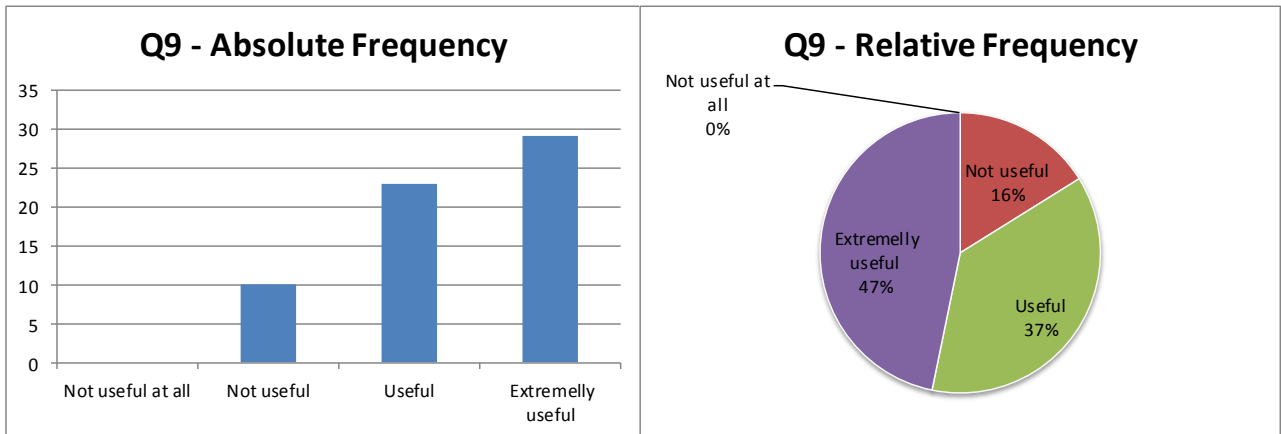
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

As one can observe in the information above, there is a higher number of respondents (83,87%) who consider that obtaining product and price information about complementary or similar products useful or not useful, versus a smaller number (16,13%) who find it not useful. The mode (extremelly useful) reenforces this tendency.

Figure 16 – Question 9 results

5.1.2.4. Personalized shopping experience

Question 3

Get personalized coupons on products that are meaningful to you.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	3	9	25	25
Relative Frequency	4,84%	14,52%	40,32%	40,32%
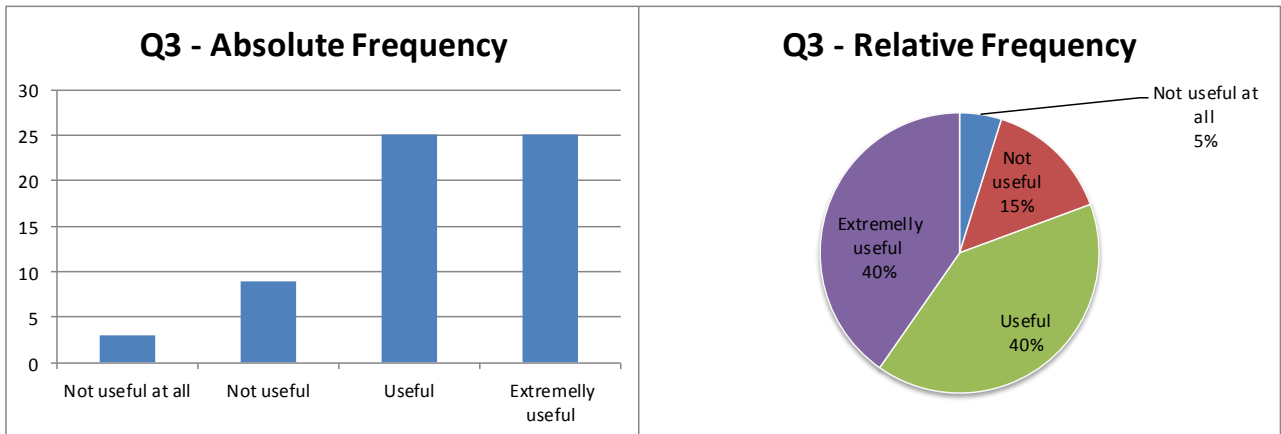
Descriptive statistic relevant for nominal variables	
Mode	Useful / Extremelly useful

The majaority of the respondents (80,64%) find that obtaining personalized coupons on products which are meaningful to them is either extremelly useful or useful. The remaning minority (19,36%) evaluate this attribute as not useful and not useful at all. The existence of two modes (useful and extremelly useful) confirms the reffered tendency.

Figure 17 – Question 3 results

Question 8
Be only subjected to ads which are related to products of your interest.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	3	15	20	24
Relative Frequency	4,84%	24,19%	32,26%	38,71%
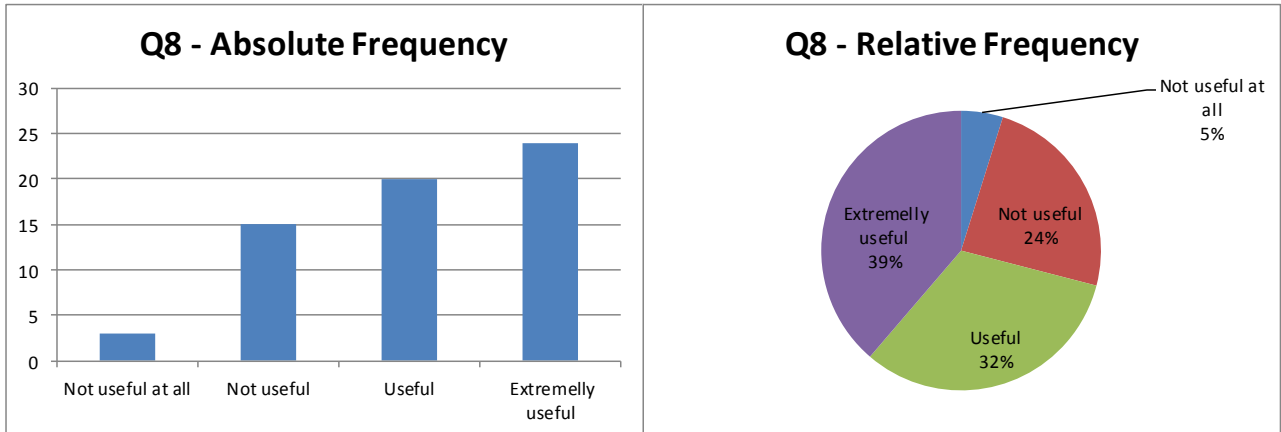
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

As it is possible to observe, there is a greater number of respondents (70,97%) that consider useful or extremely useful the attribute of being ony subjected to ads which are related to products of their interest, while the remaning minority (29,03%) evaluate this attribute as not useful and not useful at all. The mode (extremelly useful) confirms the reffered tendency.

Figure 18 – Question 8 results

5.2.1.5. Social shopping in offline stores

Question 4

Use the social networks to talk to your friends to get advise on products you consider buying.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	10	24	17	11
Relative Frequency	16,13%	38,71%	27,42%	17,74%
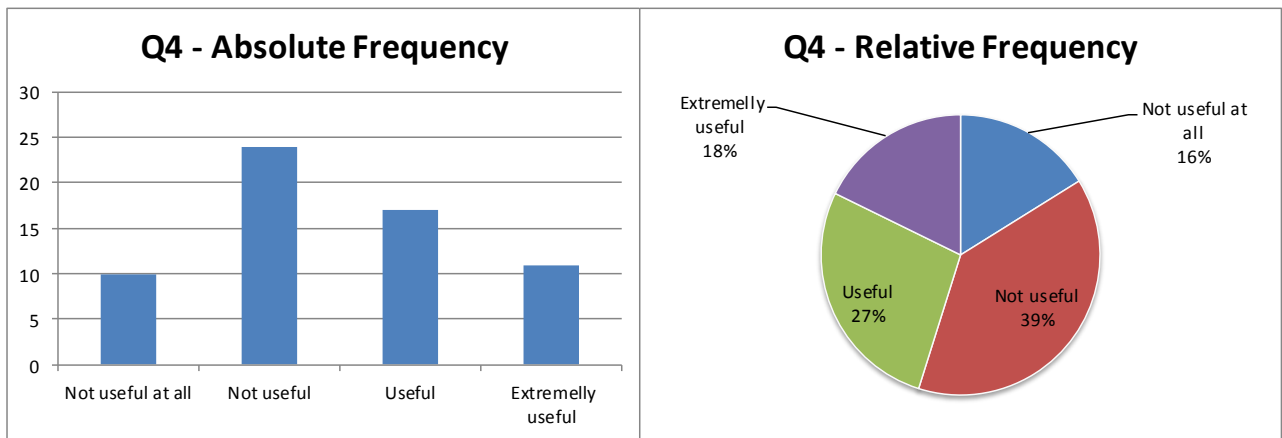
Descriptive statistic relevant for nominal variables	
Mode	Not useful

Although there is a considerable percentage of respondends who consider that using social networks to talk to friends in order to get advise on products is useful or extremelly useful, there is also a higher percentage who dislike this attribute evaluating it by not useful or not useful at all. In fact there is a majority of 54,84% of respondents who do not value this attribute versus a minority of 45,16% who do. The mode (not useful) comes in line with this tendency.

Figure 19 – Question 4 results

Question 10

Get a list of your friends that have already bought the product so that you talk to them to get advice on it.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	8	24	19	11
Relative Frequency	12,90%	38,71%	30,65%	17,74%
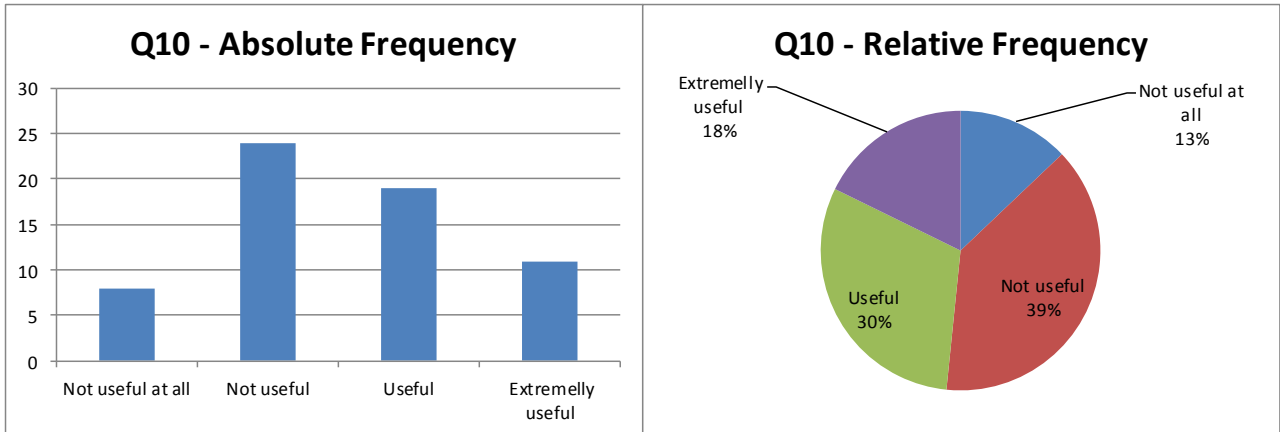
Descriptive statistic relevant for nominal variables	
Mode	Not useful

Although there is a considerable percentage of respondends who consider this attribute useful or extremelly useful, there is also a higher percentage who dislike this attribute evaluating it by not useful or not useful at all. In fact there is a majority of 51,61% of respondents who do not value this attribute versus a minority of 48,39% who do. The mode (not useful) comes in line with this tendency.

Figure 20 – Question 10 results

5.1.2.6. Avoid waiting on queues

Question 2

Avoid waiting on queues.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	1	6	20	35
Relative Frequency	1,61%	9,68%	32,26%	56,45%
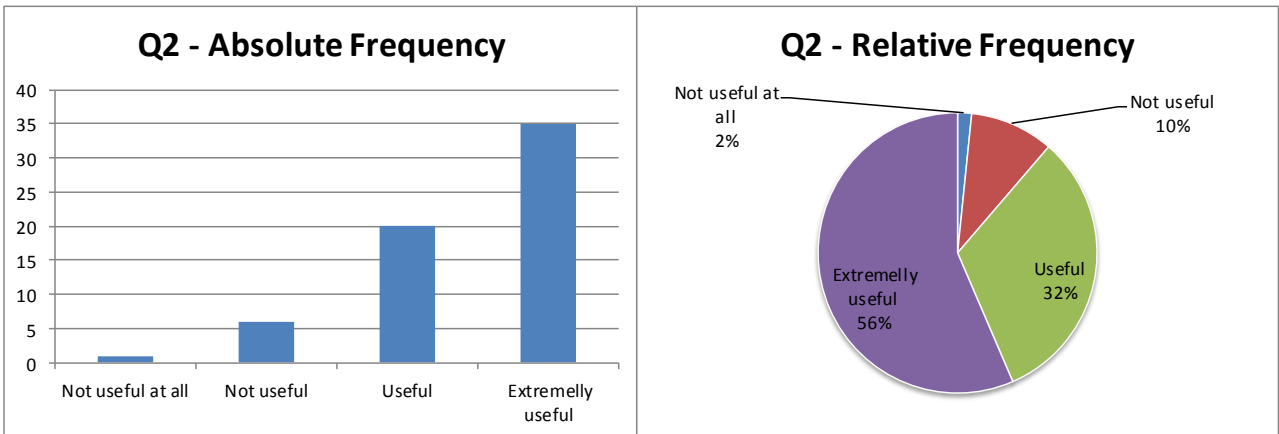
Descriptive statistic relevant for nominal variables	
Mode	Extremely useful

There is clearly a majority of 88,71% of respondents that find the possibility of avoidind waiting on queues useful or extremelly useful vesrus a small minority of 11,29% who consider this attribute not useful or not useful at all. The mode (extremelly useful) confirms this tendency.

Figure 21 – Question 21 results

5.1.2.7. E-payment

Question 5
Having the possibility of paying through your smartphone instead of paying in the cash register.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	14	11	16	21
Relative Frequency	22,58%	17,74%	25,81%	33,87%
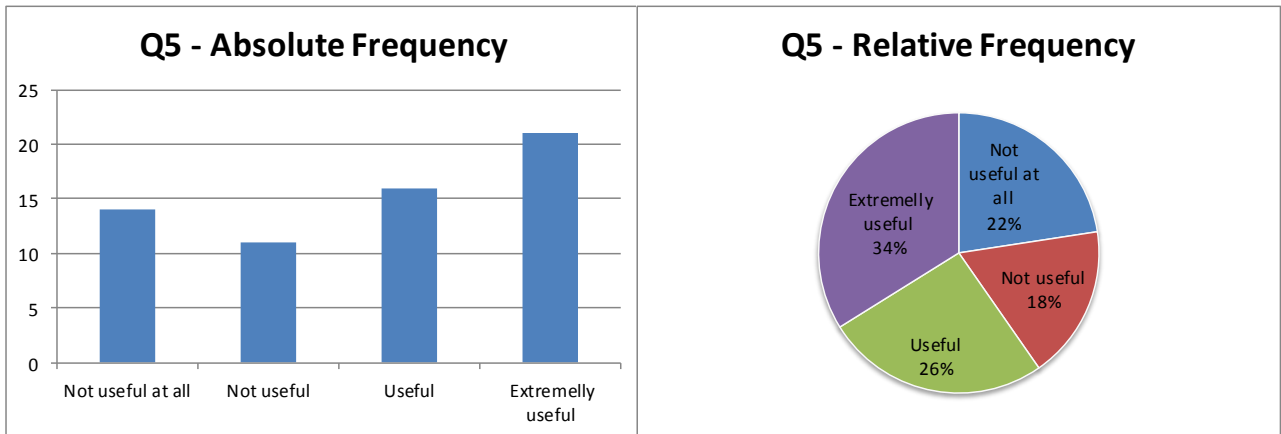
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

When it comes to having the possibility of paying through smartphone instead of paying in the cash register, the respondents are divided. In fact, although the majority of the respondents (59,68%) find this attribute useful or extremmely useful, there is a considerable relative number of respondends (40,32%) who find it not useful or not useful at all. The mode of extremmelly useful follows the majority central tendency.
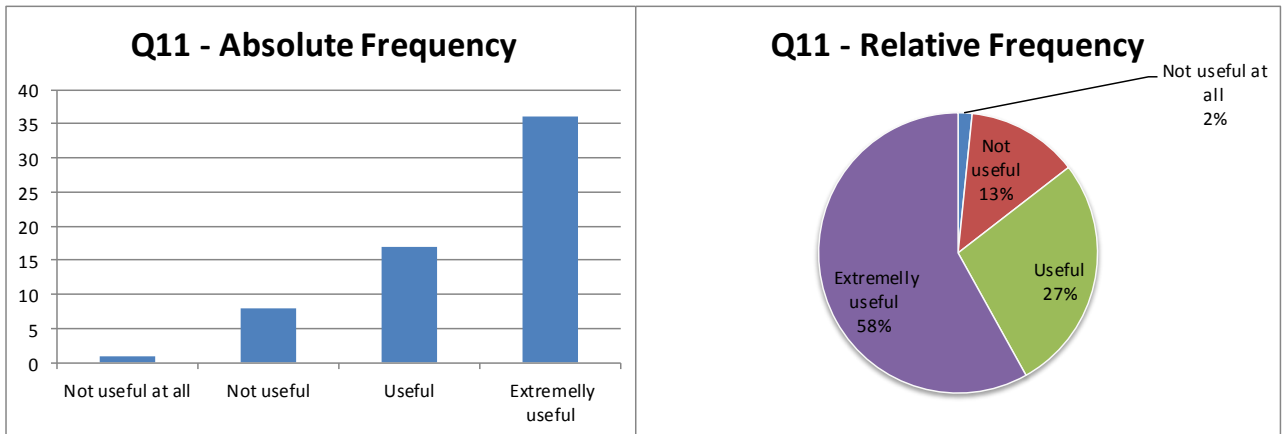
Figure 22 – Question 5 results

5.2.1.8. Dynamic price comparison

Question 11
Get other nearby store prices of the product you are looking which allows you to make price comparisons.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	1	8	17	36
Relative Frequency	1,61%	12,90%	27,42%	58,06%

Descriptive statistic relevant for nominal variables	
Mode	Extremely useful

The majority of the respondents (85,48%) evaluate this attribute as useful or extremely useful versus a minority of 14,52% who consider it not useful or not useful at all. The mode (extremely useful) emphasizes this tendency.

Figure 23 – Question 11 results

5.2.1.10. Augmented reality

<table>
<tr><td></td><td colspan="4">Scale</td></tr>
<tr><td></td><td>Not useful at all</td><td>Not useful</td><td>Useful</td><td>Extremelly useful</td></tr>
<tr><td>Absolute Frequency</td><td>3</td><td>15</td><td>25</td><td>19</td></tr>
<tr><td>Relative Frequency</td><td>4,84%</td><td>24,19%</td><td>40,32%</td><td>30,65%</td></tr>
</table>

Question 12

Get a 3D picture of a product the store sells but that is currently unavailable.
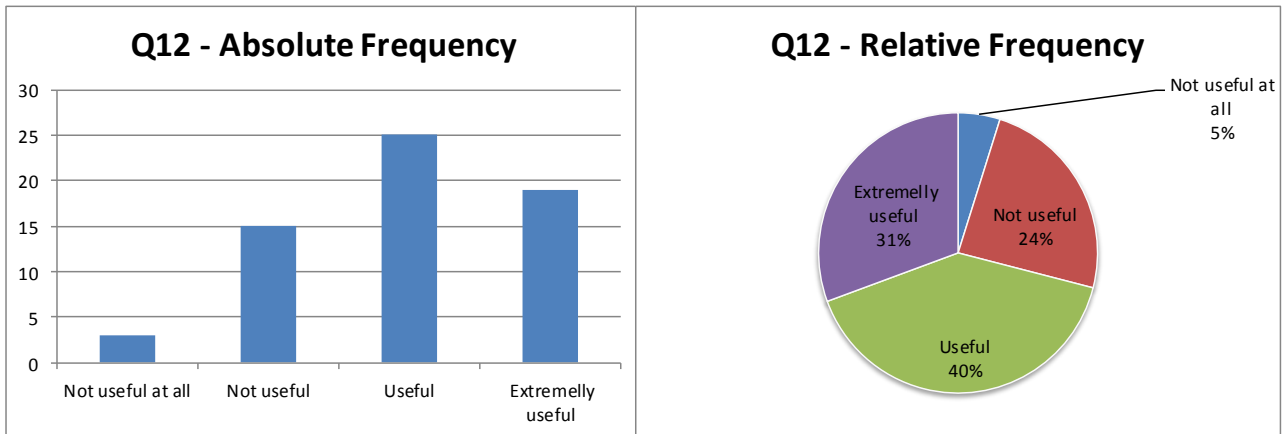
Descriptive statistic relevant for nominal variables	
Mode	Useful

The majority of the respndents (70,97%) perceive the attribute of obtaing a 3D picture of a product the store sells but that is currently unavailable useful or extremely useful. A minority of 29,03% consider this attribute not useful or not useful at all. The mode (useful) reflects the tendency.
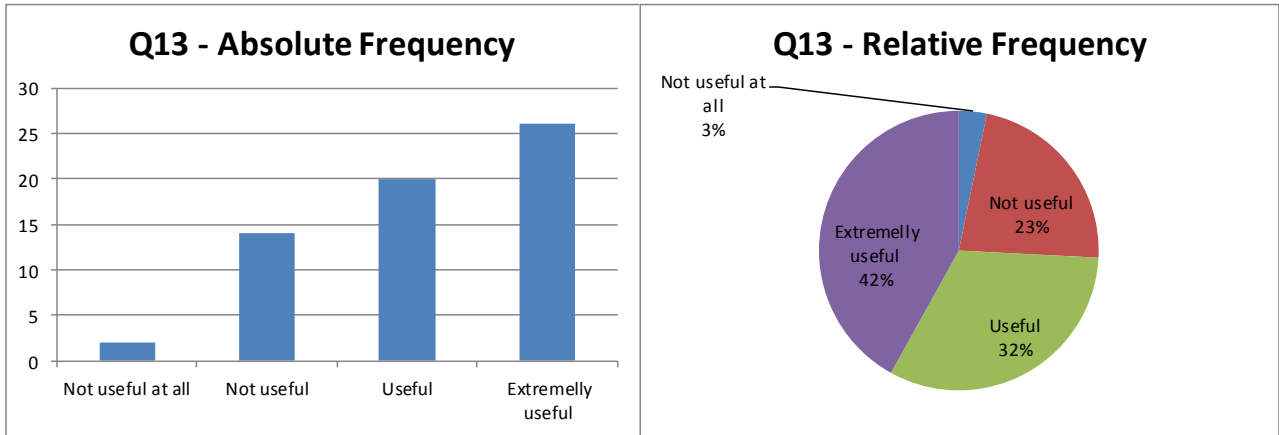
Figure 24 – Question 12 results

Question 13

Get the path for the product you are seeking.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	2	14	20	26
Relative Frequency	3,23%	22,58%	32,26%	41,94%

Descriptive statistic relevant for nominal variables	
Mode	Extremmely useful

As it is possible to observe, there is a majority of respndents (74,02%) who this attribute as useful or extremely useful versus a minority of 25,98% who perceive it as not useful or not useful at all. The mode (extremelly useful) emphasizes this tendency.

Figure 25 – Question 13 results

Question 14

Get ads and discounts for products present in the area of the store you are located.

	Scale			
	Not useful at all	Not useful	Useful	Extremelly useful
Absolute Frequency	2	11	19	30
Relative Frequency	3,23%	17,74%	30,65%	48,39%
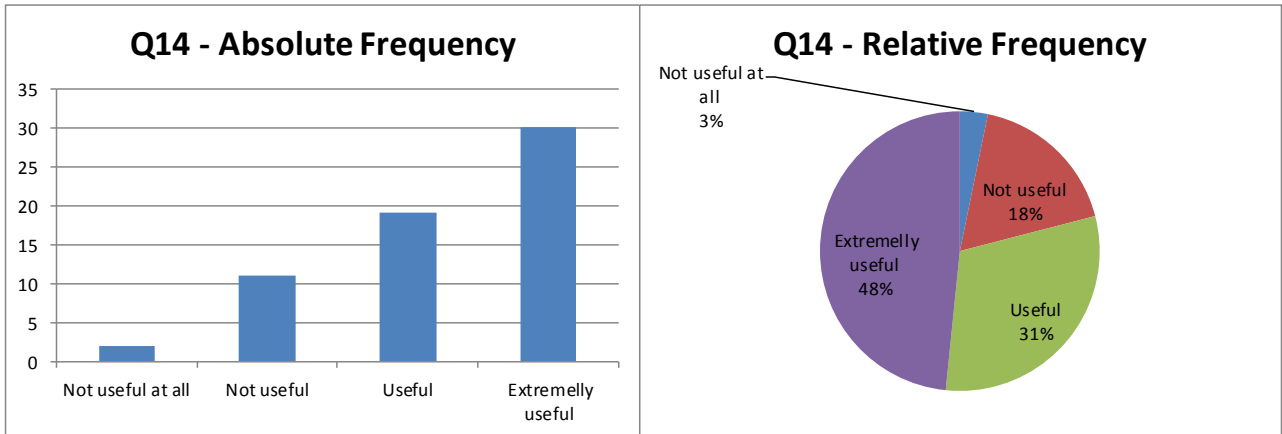
Descriptive statistic relevant for nominal variables	
Mode	Extremelly useful

Regarding the visualization of discounts for products located in the area of the store that they are located, the majority of the respondents (79,04%) consider this attribute useful or extremely useful. There is a minority of 20,96% with a contrary sentiment considering this attribute as not useful or not useful at all. The mode, extremelly useful comes in line with the reffered tendency.

Figure 26 – Question 14 results

5.2.2. Willingness to permit recording personal shopping information

In this section, the results are presented in the same manner of the previous one but they concern to customers' willingness to permit recording their personal shopping experience in order to benefit from a contextual personalized shopping experience. The following figure presents them.

Question 15
Are you willing to permit recording your shopping related choices, searches and preferences so that you are able to experience a contextual personalized shopping experience?

	Scale	
	Yes, I am willing	No, I am not willing
Absolute Frequency	42	20
Relative Frequency	67,74%	32,26%

Q15 - Absolute Frequency

Q15 - Relative Frequency
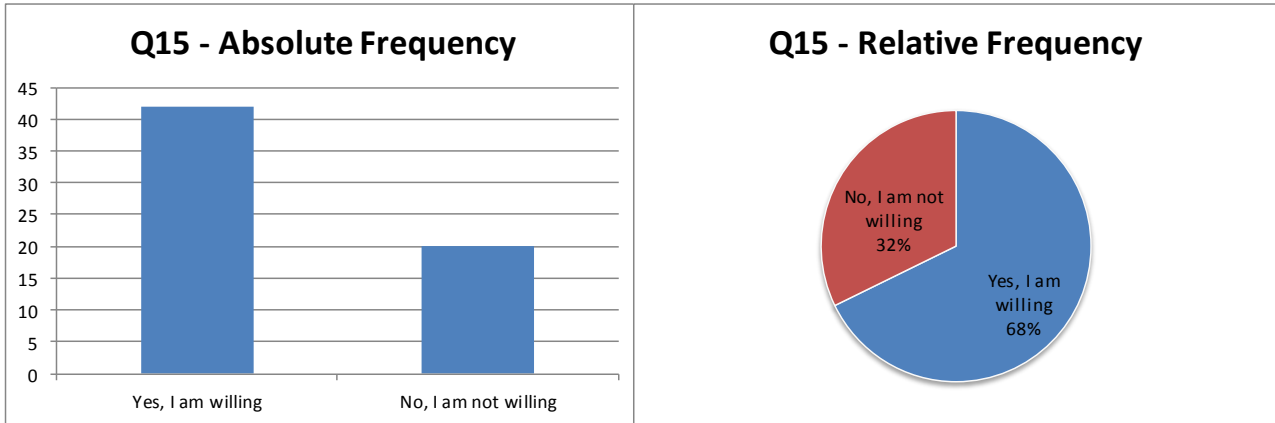
Descriptive statistic relevant for nominal variables	
Mode	Yes, I am willing

The majority of the respondents (67,74%) and obviously the mode are willing to permit recording their shopping related choices versus a minority of 32,26% who is not willing to do so.

Figure 27 – Question 15 results

5.2. Preliminary conclusions

After presenting the results generated from the data collected, preliminary conclusions are drawn, which are subsequently crossed with the hypotheses intended to be validated.

In this perspective, it is possible to divide the results in three different groups. The first one is concerned with the perceived utility of the several online/offline shopping attributes evaluated by the respondents. The second group is related with respondent's willingness to trade their personal shopping data, information and knowledge for a personalized shopping experience. The last group is focused on strategic analysis about possible sources of sustainable competitive advantage that the online-offline shopping process may present.

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5.2.1. Perceived utility of the online-offline shopping attributes

The results presented demonstrate that 12 out of 14 attributes were generically considered useful or extremely useful; hence, enhancing the respondent's retail shopping experience. Of these 12, only 7 are largely considered positive since more than 75% of the respondents evaluated them as useful or extremely useful. The remaining 5 are only perceived as useful or extremely useful for a percentage of respondents between 50 and 75%.

The two attributes which were mainly perceived as not useful or not useful at all are related with social shopping in offline stores. The percentage of respondents who rated them as not useful or not useful at all are in the quartile located between 50% and 75% of the respondents.

The following table makes a synthesis of the attributes and the respondents' perception regarding to them.

Table 8 - Synthesis of respondents answers about the online-offline shopping characteristics

Online/Offline shopping characteristic	Online/Offline shopping attribute	Majority of customer's sentiment towards the specific utility of the attribute	Utility or inutility range
Very low search costs	Get a location of a nearby store that has available a specific rare product you want to buy instead of visiting several stores with the hope of finding it	Useful or Extremely Useful	More than 75% of respondents
	Get information on the products under discount without having to actively search them on the shelves or asking an employee for discount information	Useful or Extremely Useful	More than 75% of respondents
Multichannel digital information obtainment	Get product and price information through multiple digital sources	Useful or Extremely Useful	More than 75% of respondents
Similar or complementary product information obtainment	Obtain product and price information about complementary or similar products.	Useful or Extremely Useful	More than 75% of respondents
Personalized shopping experience	Get personalized coupons on products that are meaningful to you	Useful or Extremely Useful	More than 75% of respondents
	Be only subjected to ads which are related to products of your interest	Useful or Extremely Useful	Between 50 and 75% of respondents
Social shopping in offline stores	Use the social networks to talk to your friends to get advise on products you consider buying	Not useful or not useful at all	Between 50 and 75% of respondents
	Get a list of your friends that have already bought the product so that you talk to them to get advice on it	Not useful or not useful at all	Between 50 and 75% of respondents
Avoid waiting on queues	Avoid waiting on queues	Useful or Extremely Useful	More than 75% of respondents
E-payment	Having the possibility of paying through your smartphone instead of paying in the cash register	Useful or Extremely Useful	Between 50 and 75% of respondents
Dynamic price comparison	Get other nearby store prices of the product you are looking which allows you to make price comparisons	Useful or Extremely Useful	More than 75% of respondents
Augmented reality	Get a 3D picture of a product the store sells but that is currently unavailable	Useful or Extremely Useful	Between 50 and 75% of respondents
	Get the path for the product you are seeking	Useful or Extremely Useful	Between 50 and 75% of respondents
	Get ads and discounts for products present in the area of the store you are located	Useful or Extremely Useful	More than 75% of respondents

Giving the presented results, it is possible to conclude that, generically, the respondents value the majority of the online/offline shopping characteristics.

5.2.2. Willingness to permit recording personal shopping information

As far as privacy issues are concerned, the results show that the majority of the respondents (67,74%) are willing to permit the recording of their personal data, information and knowledge generated through the online-offline shopping process so that they can benefit from a contextual shopping experience. Therefore, it is possible to conclude that the majority of the respondents are willing to trade their shopping privacy for a contextual shopping experience.

5.2.3. Possible source of sustainable competitive advantage

Given that the majority of the respondents are willing to trade their shopping privacy for a contextual shopping experience, it is plausible to admit that contextual personalization might be an online-offline shopping key characteristic most valued by the majority of the respondents. In fact, if a specific company can implement a strategy that implements contextual personalization in such a way that it impossible for competitors to duplicate that strategy, then this company will benefit of a sustainable competitive advantage.

For a company to provide a contextual personalized shopping experience it has to possess customer knowledge. For this reason, there might be a chance that customer knowledge is a firm resource capable of generating sustainable competitive advantage. Therefore, in the discussion chapter, a deeper analysis on customer knowledge in the light of Resource Base View is developed, in order to access whether it can or cannot be a key strategic resource capable of generating a sustainable competitive advantage.

6. Discussion

In order to provide a reasoned answer to the main research question, it necessary to answer properly to the three subsidiary research questions intended to help answer the main one. Therefore, this chapter consists in matching the hypotheses with the results, preliminary conclusions and theory presented in the Literature Review chapter, so that all the three subsidiary research questions are answered.

After the three research questions are answered, the main research question is answered.

6.1. First subsidiary research question: Do customers value the online-offline shopping characteristics?

To answer the first subsidiary question, it is essential to priory check whether hypotheses 1 to 9 are validated or not. Only after, there are conditions to give a reasoned answer to it. The hypotheses validation analysis is presented in table form below each specific hypothesis sub-chapter, beginning on the next page.

6.1.1. Hypothesis 1 – Customers value having low search costs derived from using a smartphone linked to the internet to search for product information

Table 9 – Hypothesis 1 analysis

V A L I D A T E D	As referred in the Literature Review correspondent annex (A3 – 2), Bakus (1997) argues that internet based information systems can serve as very efficient intermediaries between buyers and sellers which deeply reduces the cost of acquiring information related to firms, products and prices. Moreover, they enable a consumer search that is easy, quick, reliable and very cheap. Indeed, this is true for pure e-tailing and the results of the survey indicate that this is also a characteristic of the online/offline shopping process that customers value.
	In fact, in both questions 1 and 7 of the survey, more than 75% of the respondents assumed that they valued obtaining information about the location of a nearby store that has available a specific rare product they want to buy instead of visiting several stores with the hope of finding it, as well as they valued information on the products under discount without having to actively search them on the shelves or asking an employee for discount information.
	Therefore, it is plausible to admit that Bakus (1997) arguments also apply to the online-offline shopping process. Moreover, customers perceive that shopping in traditional retail stores with the help of a smartphone enables them to handle the perceived risk that results from the purchase decision by priory searching for product and firm information at almost zero cost, while on the move. Therefore, the online-offline shopping process empowers the customer's shopping decisions inside a traditional store because it enables them to obtain pertinent information almost without financial and opportunity cost.
	Hence, hypothesis 1 is validated.

6.1.2. Hypothesis 2 – Customers value the possibility of using the internet to search for product information from multiple digital sources while deciding whether or not to buy a product taken from the store shelf

Table 10 – Hypothesis 2 analysis

<table>
<tr>
<td rowspan="3">V
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D</td>
<td>As stated in the Literature Review correspondent annex (A3 – 3), one of the major benefits of shopping online is the ability to access and utilize information in order to engage in more conscious and efficient purchases. In fact, because the Internet possesses a powerful capacity for searching, organizing, sharing and disseminating shopping related information (Peterson & Merino, 2003), the internet is a very popular mean of conducting pre-purchase information search (Jepsen, 2007) that can be performed through multiple digital platforms such as e-commerce platforms, customer review websites, consumer forums, company websites, social networks, etc..</td>
</tr>
<tr>
<td>Effectively, the results confirm that using the internet to search for product information from multiple digital sources inside the store is also an online-offline shopping characteristic that is mostly valued by consumers since more than 75% of the respondents answered positively to question 6.</td>
</tr>
<tr>
<td>In fact, the obtained result comes in line with Chu, et. al statement (2010) when this author refers that e-tailing and offline retail shopping can be considered complements since both the internet and brick-and-mortar stores have unique features. In fact, using the internet to search for product information from multiple digital sources inside the store is an online-offline shopping characteristic which allows the link between online shopping and traditional retail shopping to be instantaneous, smoother and more intuitive. In this more transparent way of shopping, there is transference of power from the company to the customer inside the store, enabling the customer to benefit from gains derived from perfect information and that is probably the main reason why respondents found this attribute useful and extremely useful.

Hence, hypothesis 2 is validated.</td>
</tr>
</table>

6.1.3. Hypothesis 3 – Customers value the fact of obtaining information about similar or complementary products while deciding whether or not to buy a product taken from a store shelf

Table 11 – Hypothesis 3 analysis

V A L I D T E D	In the Literature review correspondent annex (A3 – 4), it is referred that in e-tailing, information about similar or complementary products is generated by recommender systems. Shafer et al. (1999) affirms that, if recommendations are good, the average order size tends to increase. In fact, the same author states that recommender systems improve loyalty by creating a value-added relationship between the site and the customer, which increases the volume sold. In fact, the results prove that not only does this apply to online shopping but also it is true for online-offline shopping. When answering to question 9, more than 75% of the respondents admitted obtaining product and price information about complementary or similar products is useful or extremely useful. Given these results, it is possible to assume that consumers value this online-offline shopping characteristic because the smartphone enables them to be assisted in the first three stages of the consumer behavior process identified by Engel, Kollat and Blackwell (1978). Actually, recommender systems are able to recognize the customer need (after the first product input from the customer), perform a quick and reliable information search and generate products that respond to the specific customer need. In fact, in the online-offline shopping process, after the customer scans the bar code of the physical product taken form the shelf, the recommender system has the capability of: • Recognize the customer need by relating a specific product with a specific need (need recognition stage); • Perform a product search aligned with the customer need (information search stage); • Generate several product possibilities which are accompanied with relevant information like customer reviews so that the customer can perform a grounded evaluation of the different alternatives (evaluation of the alternatives stage). This shopping assistance mediated by the smartphone in traditional stores is valued by the customers enhancing their overall shopping experience. Hence, hypothesis 3 is validated.

6.1.4. Hypothesis 4 – Customers value to have a personalized shopping experience mediated by the smartphone shopping application while they are shopping in a traditional offline store

Table 12 – Hypothesis 4 analysis

V A L I D T E D	In the Literature review correspondent annex (A3 – 4), it stated that there are personalization technologies available today which allows e-tailers to offer a personalized online purchasing experience to individuals on the basis of knowledge about their preferences and behavior (Hagen et. al., 1999). Actually, personalization is considered a key aspect for e-tailing companies to increase sales because it allows them to build customer loyalty by engaging in a meaningful one-to-one relationship with the customers (Adomavicius & Tuzhilin, 2005). In fact, not only do customers value shopping personalization in e-commerce but they also value it in online-offline shopping, as the results demonstrate. The majority of respondents (range of more than 75%) considered the attribute of question 3 (obtaining personalized coupons on products that are meaningful to them) useful or extremely useful. As far as question 8 is concerned, the majority of respondents (range between 50 and 75%) admitted that it is useful or extremely useful to be only subjected to ads which are related to products of their interest. Although, for pricing incentives reasons, personalized coupons seem to be more attractive than personalized ads. Nevertheless, the prevailing sentiment is that personalization attributes in online-offline shopping are valued by customers. There is a possible reason to explain these results. Customers might perceive that the level of personalization achieved by using the smartphone to shop in traditional stores is more effective than the one achieved when interacting with a seller, who most of the times do not even know the customer. Hence, hypothesis 4 is validated.

6.1.5. Hypothesis 5 – Customers value digital social interaction while shopping in traditional stores

Table 13 – Hypothesis 5 analysis

N O T V A L I D T E D	As stated in the Literature Review correspondent annex (A3 – 5), companies begun to strategically use social networks for commercial reasons giving birth to the term social-commerce. Social-commerce involves the use of internet based media "*that allow people to participate in the marketing, selling, comparing, curating, buying and sharing of products and services in both online and offline markets and in communities*" (Zhou et al., 2013). According to Statista (2015), social commerce revenue worldwide has been growing fast since 2011 when the revenue generated was 5 billion U.S. dollars. Actually, in 2012 it was U.S.$ 9 B, in 2013 it was U.S. $ 14 B, in 2014, it was U.S.$ 20 B and the same author predicts that in 2015, this revenue grows to 30 billion U.S. dollars.

Nevertheless, as far as online-offline shopping is concerned, the results of the survey show that although there is a considerable percentage of respondents who answered positively to questions 4 and 10, the majority of respondents (between 50 to 75% of respondents) do not value the attributes of using the social networks to talk to their friends to get advise on products they consider buying or to get a list of their friends who have already bought the product they are analyzing so that they talk to them to get advice on it.

There are three possible reasons for these negative results:

- The adoption of social commerce is a growing tendency that has not still evolved until a significant level in which a great number people have used it so that they clearly know their advantages. Assuming this reason, it is valid to admit that consumers, who did not benefit from the advantages of social commerce, do not feel the need for it in traditional stores.
- The majority of consumers do not value these attributes in traditional offline retail shopping because it may be not such a convenient task to perform. In fact, if a consumer is inside a store and wants an immediate review from a friend, his/her friend has to simultaneously be online and available to give that review which might not always happen.
- Consumers might be worried about their own privacy while shopping because if they know which of their friends bought a specific product, their friends will know as well other products he/she may have bought. This intrusion on the consumer privacy may not be well accepted by the majority of consumers.

Given the results and the reasons discussed, this hypothesis is not validated.

6.1.6. Hypothesis 6 – Customers value the fact of not having to wait on queues inside a traditional offline store

Table 14 – Hypothesis 6 analysis

V A L I D T E D	As referred in the Literature review correspondent annex (A3 – 6), the perception of the waiting time formed based on the observed queue length affects the customer purchasing behavior (Lu et al., 2012). Moreover, the same authors claim that customer's sensitivity to waiting is heterogeneous and negatively correlated with price sensitivity. However, in an e-commerce scenario, there is no queue effect since customers are immediately served by digital means. The same happens with online-offline shopping scenario and the results demonstrate that consumers value this characteristic. When answering to question 2, more than 75% of the respondents admitted avoiding waiting in queues is useful or extremely useful. These results might be explained by the fact that the online-offline shopping process conciliates the best of the online and the offline shopping processes. Actually, in this shopping process, clients can touch and feel the products they are analyzing, as well as they can be served immediately by digital means, meaning, for instance, they do not have to wait in the paying line. Hence, hypothesis 6 is validated.

6.1.7. Hypothesis 7 – Customers value the possibility of using e-payment methods to pay the bill when they shop in traditional offline stores

Table 15 – Hypothesis 7 analysis

V A L I D T E D	In the Literature Review correspondent annex (A3 – 7), it is stated that the appearance of the internet revolutionized the payment methods between individuals and companies, since it led to the development of electronic-payment (e-payment) systems. As mobile devices and m-commerce gained relevance in the market, efficient mobile payment (m-payment) methods became a central aspect of concern for retail companies, meaning that customers are increasingly relying on m-payment methods (Veijalainen et al., 2006). Actually, this tendency seems to apply to the online-offline shopping process. In fact, the majority of the respondents (59,68% - range of 50 and 75%) consider that having the possibility of paying through smartphone instead of paying in the cash register is useful or extremely useful, being extremely useful the mode. Although the results obtained are not so positively high as in some other questions, there is evidence that the majority of consumers find m-payments convenient when shopping in traditional offline stores. This might be explained not only by the fact of saving time in the paying process, but also because it is simple, intuitive and does not directly depend on cash or other traditional paying mean that involves man handling. Nevertheless, 40,32% of the respondents do not consider this characteristic valuable. One reason that can explain this negative perception is security concerns. Actually, Liu et al. (2012) claim that security issues are the most critical factor that is holding back the consumer adoption of e-payment methods. In fact, the problem of identity theft as well as the existence of high number of unregulated readers is preventing many people from using m-payment methods. To sum up, although 40,32% of the respondents do not value the possibility of using e-payment methods in offline stores, the majority, emphasized by the mode, find this characteristic valuable. Hence, hypothesis 7 is validated.

6.1.8. Hypothesis 8 – Customers value the possibility of comparing prices for a specific product in different online and offline stores while deciding whether or not to buy a product taken from the store shelf

Table 16 – Hypothesis 8 analysis

V A L I D A T E D	As previously referred, the law of the demand states that the quantity of products a person is willing to buy decreases as the price rises, except for Giffen goods and luxury goods (Mankiw, 1997). Therefore, pricing decisions play generally an important role on consumer's willingness to buy a certain product. In fact, when shopping online, a great number of customers tend to compare prices among different e-commerce platforms with the hope of making the best possible deal. The same predisposition to do so seems to happen in online-offline shopping, as the results demonstrate. Actually, respondents were very clear about evaluating positively the attribute of question 5 (get other nearby store prices of the product you are looking which enable them to make price comparisons). In fact, 85,48% (range of more than 75%) considered this attribute useful or extremely useful. Therefore, these results demonstrate that customers value the convenience of price comparison provided by the smartphone. The easiness to search combined with the quickness of results generation are possible reasons to explain why consumers appreciate this online-offline shopping characteristic. Hence, hypothesis 8 is validated.

6.1.9. Hypothesis 9 – Customers value the possibility of using augmented reality to enhance their shopping experience in traditional offline stores

Table 17 – Hypothesis 9 analysis

V A L I D A T E D	In the Literature Review correspondent annex (A3 − 8), it is stated that augmented reality in e-commerce can be used to add the physical dimension, material, color and tactile impression of the products, enhancing customers' online shopping experience (Park & Lee, 2004). Results indicate that augmented reality can enhance the online-offline shopping experience too, not only by giving a 3D shape of a non-existent product but also by augmenting the reality of the store itself. As stated before, in combination with other technologies, like beacons, it has the potential of indicating the path to a specific product and generate ads and discounts for products in a determined area of the store: two attributes that respondents value.

In fact, when answering to questions 12 (get a 3D picture of the product the store sells but that is currently unavailable) and 13 (get the path for the product that he/she is seeking) the majority of respondents, which were in a range of 50% to 75%, evaluated these two attributes as useful or very useful. Regarding question 14 (get ads and discounts for products present in the area of the store they are located), a majority of respondents, in the range of more than 75%, admitted they consider that attribute useful or extremely useful.

These results can be explained by several reasons:

• Generating a 3D picture of an unavailable product might be a way to overcome the impossibility of sensing it and analyzing it based on sensorial perceptions. Although it is not the same as having the real product in hand, it is much better than having nothing at all and for this reason the majority of consumers value this attribute. Nevertheless, the 29,03% of the clients that do not value this attribute might find that augmented reality is not an effective technology to overcome this problem. In fact, it is possible that some of them have not experience augment reality yet and, for this reason, do not recognize their benefits;
• Obtaining the path for a specific product using augmented reality might be perceived as an effective and efficient method of locating a product that a customer is not finding and that maybe why the majority of respondents value this attribute. However, the 25,98% of the respondents that do not value this attribute might think it might be easier to ask the employee where the specific product is located;
• Obtaining ads and discounts of the products located in a specific area of the store through augmented reality might be perceived as more intuitive and interactive way of visualizing ads and knowing what products are under discount.

Since the majority of consumers evaluated the augmented reality attributes as useful and extremely useful, it is plausible to state that customers value this online-offline shopping characteristic.

Hence, hypothesis 9 is validated. |

6.1.10. Answer to the first subsidiary research question

As far as the answer to the first subsidiary question is concerned, it is plausible to state that customers do value the online-offline shopping characteristics. Actually, there is only one characteristic that is not valued by the majority of respondents (social shopping in offline stores) in contrast with the other eight characteristics which are mainly evaluated as useful or extremely useful.

For this reason, it is possible to state that the majority of customers have also a predisposition to engage in an online-offline shopping behavior since they consider this kind of shopping process responds to their need of a more informed, personalized and intuitive retail shopping experience. In fact, it is likely to admit that if traditional offline retail stores were equipped with technology that enables the online-offline shopping scenario, consumers would probably develop the online-offline shopping process.

Therefore, the first subsidiary question is positively answered.

6.2 Second subsidiary research question: Are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience?

Before answering the second subsidiary question, on the next page, hypothesis 10 is discussed to check its validity.

6.2.1. Hypothesis 10 – Customers are willing to permit the recording of their personal data generated through the online-offline shopping process to benefit from a contextual personalized shopping experience

V A L I D T E D	As stated in the Literature Review, the concept of permission marketing implies that the customer gives permission to start a business relationship with a specific company. In fact, Godin (1999) mentions that by giving permission to receive personalized product and company information, the customer is willing to pay attention to those messages and, hence, there is more probability of responding positively to them. In most cases, giving permission means accepting the terms of a specific company. Actually, in e-commerce, customers need to accept the terms of an e-tailer so that they are able to buy products and receive personalized information and treatment. In online-offline shopping, it is crucial for companies to have customer permission so that they can maximize the potentialities of contextual personalization because companies must be allowed to have access to customer's shopping related data so that they can transform it into customer knowledge by real-time CRM methods in order to provide a superior contextual personalized shopping experience. As a matter of fact, the results indicate that the majority of respondents (range between 50 and 75%) is willing to permit recording their shopping related choices and preferences so that they are able to enjoy a contextual personalized shopping experience. The remaining 32,26% might perceive their shopping privacy is more valuable than the contextual personalized service provided. By giving this kind of permission, the majority of customers seem to be willing to trade their shopping privacy for a contextual personalized shopping service, meaning they really value that online-offline characteristic. Moreover, by allowing the recording and treatment of customer information and knowledge, it becomes possible to enhance the customer shopping experience and determine whether or not it is possible of obtaining any source of sustainable competitive advantage based on contextual personalization. Given the answers of the majority of the respondents it is plausible to affirm that hypothesis 10 is validated.

6.2.2. Answer to the second subsidiary research question

As stated in hypothesis 10 discussion, the majority of the respondents give a higher value to the possibility of benefiting from a contextual personalized shopping experience than the value they give to their shopping privacy.

Therefore, because the majority of respondents is willing to permit the recording of their personal data, information and knowledge generated through the online-offline shopping process to benefit from a contextual personalized shopping experience, the second subsidiary question is positively answered.

6.3. Third subsidiary research question: Can the online-offline shopping process generate any source of sustainable competitive advantage?

In order to give a proper answer to the third subsidiary question, it is essential to priory check whether hypothesis 11 is validated or not.

6.3.1. Hypothesis 11 – The online-offline shopping process holds the potential of being a tool used for the creation of a key strategic firm resource capable of generating sustainable competitive advantage

Assuming that a strategy based on superior contextual personalization that cannot be duplicated by competitors enables a firm to possess a sustainable competitive advantage, it is crucial to understand whether or not customer knowledge, essential to generate contextual personalization, is a firm resource capable of generating a sustainable competitive advantage. For this reason the following lines of the discussion are used to access it.

Customer knowledge is a knowledge-based resource which is considered by Barney (1991) as a firm resource, assumed to have heterogeneity and immobility properties. In fact, although its origin is external, in the moment a company acquires that knowledge and is able to use it in his favor, it is possible to state that it becomes an internal resource (Powell, 2000).

As stated before, customer knowledge is a precious resource for companies in the context of the current economic era (Khodakarami & Chan, 2013). Nevertheless, is it a source of sustainable competitive advantage? Following Barney's (1991) logic, to answer to this question, one may be able to determine whether customer knowledge is valuable, rare, imperfectly imitable and non-substitutable resource.

Therefore, the following table synthetize some arguments regarding customer knowledge as source of sustainable competitive advantage.

Is costumer knowledge …	
Valuable ?	According to Shi & Yip (2007) customer knowledge can be considered valuable because it enables the company to respond quickly to customer needs as well as to better adapt to changing markets. Moreover, since it is a knowledge-based resource, it has the potential of being used to improve processes, products, services and technologies. (Ekionea & Abou-zeid, 2005)
Rare ?	Taking in consideration that customer knowledge is a knowledge-based resource, it is rare due to its dependence on the knowledge and experiences of current and past employees. Additionally, it is a result of specific organizational and prior knowledge. (Ekionea & Abou-zeid, 2005)
Inimitable ?	Because customer knowledge is a knowledge-based resource, it is inimitable due to its tacit characteristics (Nooteboom, 1993). In fact, it is impossible for a company to possess the same knowledge of any other company because different companies have different human resources and knowledge acquiring processes (Kim, 2002 and Autio et al, 2000). Therefore, since customer knowledge is context specific and contains tacit knowledge embedded in complex organizational routines which are developed from experience, it is impossible for a company to acquire and make use of the same customer knowledge of any other company, and for this reason it is considered inimitable. (Ekionea & Abou-zeid, 2005). Therefore, following Barney's (1991) reasoning, customer knowledge can be considered to possess the characteristics of unique historical conditions, causal ambiguity and social complexity.
Non-substitutble ?	Since customer knowledge is a knowledge-based resource, it is non-substituble because the actions and processes generated by knowledge as well as the results of them are dependent on the environment in which they are executed. For this reason, as the context in which the knowledge has been created and used is impossible to replicate, then competitors cannot use something different to create equal results. (Jackson & Williamson, 2010; Ekionea & Abou-zeid, 2005)

All these arguments are possible to be used to justify the fact claimed by Rollins & Halinen (2005) that customer knowledge has been increasingly recognized as a key strategic resource in any company's success. In fact, among other capabilities, costumer knowledge can be used to create personalization capability which has the potential of increasing customer satisfaction and thus increasing customer retention. (Rimer & Totz, 2001).

Because customer knowledge appears to be a firm resource with potential to generate sustainable competitive advantage, this hypothesis is validated.

6.3.2. Answer to the third subsidiary research question

As stated in the preliminary conclusions, since the majority of the respondents are willing to trade their shopping privacy for a contextual shopping experience, it is plausible to admit that contextual personalization might be an online-offline shopping key characteristic most valued by the majority consumers. To provide it, a company must possess customer knowledge.

The discussion on hypothesis 11 implies that customer knowledge is a firm resource capable of generating sustainable competitive advantage to a company. For this reason, customer knowledge might be strategic to the creation of a strategy based on contextual personalization in online-offline shopping that has condition to provide a source of sustainable competitive advantage.

Therefore, the third subsidiary question is positively answered.

6.4. Answer to the research question: are people available to engage in an offline shopping behavior similar to the one they have online and can retail companies explore it strategically?

The first subsidiary research question (do customers value the online-offline shopping characteristics?) helps to answer the first part of the main research question. In fact, as previously demonstrated, customers do value the online-offline shopping experience and, because this shopping process adds value to them, it is plausible to admit that customers are available to engage in an offline shopping behavior similar to the one they have online.

As far as whether retail companies can explore the online offline shopping process strategically, the second and the third subsidiary research questions present relevant insights in order to answer to that part of the main research question.

Actually, the fact that the second subsidiary research question (are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience?) is positively answered suggests customers view contextual personalization as such a valuable online offline shopping characteristic that they are willing to trade their shopping privacy to benefit from it. Therefore, it is plausible to assume that a strategy based on leveraging contextual personalization might be strategic for retail companies because it depends on resources and dynamic capabilities which are impossible or very hardly copied by competitors.

The main resource behind contextual personalization generated by the online-offline process is customer knowledge which was previously argued as a firm resource with potential to generate sustainable competitive advantage. In fact, the third subsidiary research question (can the offline-online shopping process generate any source of sustainable competitive advantage?) was positively answered due to the generation of customer knowledge. The way customer knowledge is generated is deeply explained in subchapter 3 correspondent annex 7, resulting from a combination of different technologies including the smartphone shopping application and the CRM system of each retail company. Therefore, online-offline shopping enables the transformation of data and information into the creation and management of knowledge for customers, knowledge about customers and knowledge from customers by the knowledge creation processes of externalization, combination and internalization. In fact, it is the way each retail company converts customer information into customer knowledge and the way each retail company manages that knowledge in order to create a superior contextual personalization strategy that will or will not create a sustainable competitive advantage for that specific company. This process is unique and intrinsic to each retail company and involves the creation and the development of several dynamic capabilities to manage customer knowledge and integrate it into a superior contextual personalization strategy.

For all these reasons, the main research question is positively answered.

7. Conclusions

The main purpose of this dissertation is to answer the following research question: "are people available to engage in an offline shopping behavior similar to the one they have online and can retail companies explore it strategically?" The relevance of this question drifts from the existing reality of retail shopping which relies both on online shopping and traditional in-store shopping. In fact, as Chu et. al (2010) states, e-tailing and offline retail shopping can be considered complements since both the internet and brick-and-mortar stores have unique features. For this reason, and assuming the boundaries of online and offline reality are bound to disappear, understanding whether there is a demand for an interaction in offline retail shopping similar to the one that happens in e-tailing as well as knowing whether companies can explore that new shopping behavior strategically assumes a considerable importance.

To address the main research question, a smartphone shopping scenario was created which intends to present a situation that enables consumers to perform an in-store shopping behavior similar to the one they have online; with the benefit of exploring enhanced characteristics this process holds that results from matching offline with online shopping. Therefore, with the smartphone shopping scenario as a basis to obtain insights about the online-offline shopping behavior, three subsidiary research questions were posed in order to assist answering the main research question:

1. "Do customers value the online-offline shopping characteristics?"
2. "Are customers willing to permit the recording of their own online-offline shopping process to benefit from a contextual personalized shopping experience?"
3. "Can the offline-online shopping process generate any source of sustainable competitive advantage?"

The first subsidiary research question relates the Literature Review topics of online shopping characteristics and online shopping behavior with empirical findings on the value attributed by customers to the online-offline shopping characteristics. Eight out of the nine hypotheses formulated to fundament the answer were validated, as the survey results suggest. In fact, the results demonstrate that the most valued online-offline shopping characteristics enunciated in the hypotheses, with generally more than 75% of the respondents considering "useful" or "extremely useful" are very low search costs, multichannel digital information obtainment, similar or complementary product information obtainment, personalized shopping experience, avoid waiting on queues and dynamic price comparison. The other online-offline shopping characteristic valued, but generically with a range of 50% to 75% of the respondents considering them "useful" or "extremely useful", are the possibility of performing mobile payments to pay for the

goods bought and the possibility of using augment reality to enhance their shopping experience. The only characteristic that was found as "not useful" or "not useful at all" by the majority of the respondents (range between 50% and 75%) is the possibility of engaging in social shopping in traditional retail stores. Therefore, the results indicate that customers seem to value the online-offline shopping characteristics meaning that there is a customer demand to engage in this new more informed, personalized and intuitive retail shopping experience that incorporates and enhances the benefits of online and offline shopping. Actually, if this shopping process is considered valuable by customers it should be approached by retail companies in order to respond properly to this new demand. Moreover, it becomes relevant to understand whether or not the online-offline shopping process is strategic to retail companies, meaning knowing whether or not it is capable of generating any source of sustainable competitive advantage, as Resource-based View theory indicates.

As far as the second subsidiary research question is concerned, it makes use of permission marketing theory combined with empirical results in order to test the hypothesis 10 (customers are willing to permit the recording of their personal data generated through the online-offline shopping process to benefit from a contextual personalized shopping experience) which supports the answering of the second subsidiary research question. The survey results demonstrate that the majority of respondents (67,74% - range between 50% and 75%) are willing to permit recording their shopping related searches, choices and preferences so that they are able to experience a contextual personalized shopping experience. These results indicate that customers seem to be willing to trade their shopping privacy for a contextual personalized shopping service, meaning they really value that online-offline characteristic. Obtaining a contextual personalized shopping experience involves being able of acquiring, analyzing and managing customer information in order to transform it into customer knowledge that is essential for a more desirable contextual personalization. In fact, the smartphone shopping scenario possesses the means to capture and treat customer information and knowledge and, because the answer to the second subsidiary question is positive it becomes relevant to determine whether or not contextual personalization can provide any source of sustainable competitive advantage.

The third subsidiary question combines Resource-based View theory, contextual personalization and customer relationship management theory in order to identify a source of sustainable competitive advantage in the online-offline shopping process so that it becomes possible to state that this process has the potential of being strategic to companies. Having the referred theory in mind, it is plausible to assume that a strategy based on contextual personalization might generate a source of sustainable competitive

advantage for two reasons. Firstly, contextual personalization is valuable because customers seem to be willing to trade their shopping privacy so that they can benefit from it and, secondly because it is necessary high quality customer knowledge (argued to be a firm resource capable of generating sustainable competitive advantage) in order to provide a superior contextual personalization experience. In fact, customer knowledge appears to have all the properties necessary to be considered a firm resource capable of generating sustainable competitive advantage as it seems to be valuable, rare, imperfect imitable and non-substitutable. Therefore, the third subsidiary research question is positively answered since the online-offline shopping process has the potential of being able of generating customer knowledge resource which was argued to be a firm resource capable of generating sustainable competitive advantage. This customer knowledge is vital to create a winning strategy based on contextual personalization.

With all the three subsidiary research questions positively answered, there are conditions to formulate the dissertation statement: **customers are willing to have a shopping behavior in traditional retail stores similar to the one they have when they shop online and the online-offline shopping process has the potential of being strategic to retail companies.**

The added value the online-offline shopping process represents to customers when it comes to enhance their offline shopping experience represents a motivation to engage in an online-offline shopping behavior, creating a demand for it. For this reason, retail companies should adapt their stores with technology which enable the online-offline shopping process so that they can respond properly to this new demand. Moreover, retail companies should improve constantly the positive characteristics of the referred shopping process to be competitive as well as they should leverage the key aspects that are strategic for them, namely, betting on a strategy based on superior contextual personalization which relies deeply on dynamic capabilities to perform a superior customer knowledge resource management that, as argued, if used properly, has the potential of being able to generate a sustainable competitive advantage.

7.1. Limitations

The main limitations of this study are divided in two groups: sample constraints and budget constraints.

There are several sample constraints that need to be considered:

- The sample is not representative of the whole population defined. Nevertheless, it is able to present a general idea of the central tendency in every answer as well as it presents relevant insights to draw conclusions;

- The majority of the respondents are Portuguese and, for this reason, they are specifically affected by the Portuguese culture and generally affected by the occidental culture which might produce specific perceptions regarding several aspects of the attributes evaluated in the survey questions, for instance, privacy issues.

As far as budget constraints are concerned, it is necessary to state that with a higher budget it would have been possible to deepen further the research by building the smartphone shopping scenario and test the hypothesis based on a real experience as well as it would have been possible to have a representative pool with answers collected from a sample of respondents of every other continent of the world.

7.2. Future Research

Since the online-offline shopping is such a vast concept full of different relevant aspects that might influence consumer shopping behavior and the profitability of retail companies, there are plenty of topics which can be explored.

Actually, it would be interesting to develop a study with focus groups to improve the smartphone shopping scenario to better respond to customer needs. Thereafter, it would be relevant to build a smartphone shopping scenario, test it and collect the answers based on a real online-offline shopping experience.

Another aspect that could be tested is related with understanding which products are more suitable to be sold by engaging in an online-offline shopping behavior.

It would also be desirable to develop a research based on understanding the way customers culture influence the online-offline shopping behavior, as well as understand whether different cultures value or not the same online-offline shopping characteristics and purpose adaptations, if needed, to the smartphone shopping scenario according to each culture.

As far as economic issues are concerned, it would be relevant to understand the profitability impact the online-offline shopping process would have when contrasting it regular offline retail shopping. Moreover, it would be important to determine an average return on the investment made to adapt stores to the online-offline shopping process.

One more possibility of future research is related with price discrimination strategies to capture more value to companies. In fact, it would be relevant to understand whether personalized discounts, coupons

and offers are well accepted by online-offline customers and discover how profitability can increase by creating specific price discrimination strategies in the context of the online-offline shopping scenario.

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Annexes

Annex 1 – Electronic retailing

Nowadays, there is an overwhelming diversity of merchandise that is available for online purchases. Nevertheless, as the following figure suggests, there are product types that due to its characteristics are more suited to be sold online.
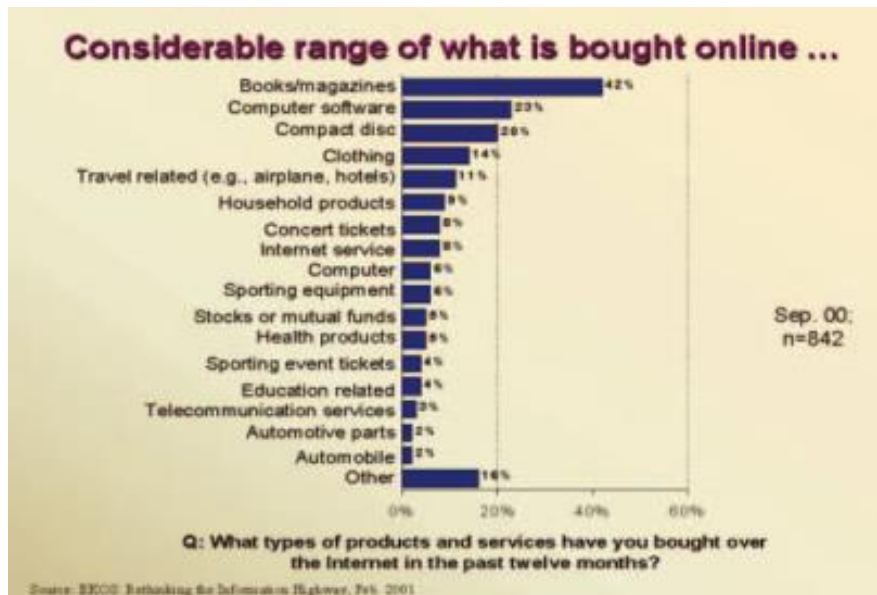
Considerable range of what is bought online (Extracted from Huang & He, 2011)

However, e-tailing still faces some barriers which prevent consumers to purchase online. In fact, credit card security concerns and privacy concerns are still considered two negative aspects that make some people uncomfortable to shop online. Moreover, the fact of not touching and feeling the product is an obstacle that prevents the purchasing of several specific products. Actually, some of the high touch products like apparel face difficulties of being sold online since a large number of consumers prefer to try them before buying. Other barriers like high shipping costs and taxes affect e-tailing negatively (Huang & He, 2011).

For example, books and magazines as well as computer software are very accepted items since they represent standard merchandises that do not require personal touch and examination when customers purchase them. Buying music online is also very popular because the downloading process enables that the payment and delivery of the products are both achieved in real time (Huang & He, 2011).

(Huang & He, 2011) classifies e-tailers in two types according to the type of distribution channels used. Those are pure play e-tailers (retailers with no physical stores which all their business transactions and processes are performed online e.g. Amazon) and multi-channel e-tailors or click-mortar retailers (retailers with physical store presence and online shopping service e.g. Walmart). Multi-channel e-tailers benefit

from several advantages over pure play e-tailers, namely strong brand image and established brand awareness as well as customer loyalty.

The same authors list the critical success factors that a company should possess in order to achieve success in e-tailing. Those are effective strategic and marketing plans, strong brand name and image, user-friendly shopping platform, efficient distribution, complementary merchandises and services like customer reviews and also, customer knowledge in order to provide a personalized service that increases customer loyalty.

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Annex 2 – Mobile commerce

When compared with e-commerce practiced in traditional computers and laptops, m-commerce presents several unique characteristics which provide customers with benefits and added value. In fact, these features include the possibility of shopping anywhere with Internet access in a flexible and easy mode. Moreover, the localization-based systems enable a better adequacy of the shopping experience to the place where the shopper is located (Siau et al., 2004). Generically, Anckar & D'Incau (2002) refer that m-commerce has the advantage of providing a hyper connectivity between markets and consumers which is deeper than the one of traditional e-commerce.

According to Hsieh (2007) m-commerce is responsible for driving fundamental changes in many different industries because of the following reasons:

- Nowadays, there are more mobile terminals available than PC user base, and this tendency is bound to continue;
- User's intimacy with the terminals is higher, representing a more convenient and personalized solution;
- It is accessible anytime anywhere;
- M-commerce eliminates many time-consuming tasks.

As far as m-commerce value chain is concerned, Hsieh (2007) group m-commerce players into three categories, which are:

- Technology developers – this group includes technology platform developers and vendors, infrastructure equipment developers and vendors as well as handset developers and vendors;
- Technology application developers – this is group composed by application platform developers and application developers;
- Service providers – This group includes content providers, content aggregators, mobile portals, mobile network operators and mobile service providers.

Finally, Hsieh (2007) considers that m-commerce alongside with m-internet have the potential of driving fundamental changes in people lifestyles. This is m-commerce and m-internet enable people to be always online without place constraints reaching a point in which people exploit optimally their time and satisfy more needs while they are on the move. Actually, this recent environment places many challenges and opportunities for companies to market their products in a mobile, convenient and personalized way.

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Annex 3 – Online shopping characteristics in a customer perspective

A3 – 1. Ubiquity

Online stores are generally available twenty four hours a day in every place reached by the internet as long as the person uses a device with internet connection. In fact, Watson et al. (2002) suggest that ubiquity in e-commerce is not only a consequence of omnipresence of computer chips in different gadgets (*"not only that they are everywhere, but also they are in a sense, nowhere, for they become invisible as we no longer notice them"*) but also a consequence of the existence of an ubiquitous network (plethora of networks that range from physical such as transportation networks to electronic networks such as the internet, cellular phone systems and Global Positioning networks). In fact, the phenomenon of the appearance of the *"networks of networks"* means that there is an interaction between all of the networks which makes possible the existence of a deep personalized experience for the users.

Actually, Watson et al. (2002) presents a definition of the concept of U-commerce (U stands for ubiquitous, universal, unique and unison) which is: *"the use of ubiquitous networks to support personalized and uninterrupted communications and transactions between a firm and its various stakeholders to provide a level of value over, above, and beyond traditional commerce"*. Moreover, Watson et al. (2002) refers an evolution of markets from marketplace to marketspace to U-space. The following table, adapted from the article of the same authors describes in a clear way this evolution.

Markets evolution (adapted from Watson et al., 2002)

Market	Definition	Theme	Market-driving technologies
Marketplace	Traditional physical marketplace	Exchange of goods and services via face-to-face human interaction where value is extracted from a physical location	Constructions and mechanical devices: vehicles, trains, airplanes, ships, etc.
Marketspace	Informational marketplace	Exchange of goods and services via computer interaction, where value is extracted from information	Computers
U-space	Transcension and integration of marketplace and marketspace	Physical and informational are globally integrated to provide value through amplification, attenuation, context, and transcension; value is extracted through networks	Ubiquitous networks

The phenomenon of U-commerce was accelerated with the appearance of smartphones and tablets. In fact, with the explosive growth of mobile device use such as smartphones and tablets, consumers demand

a wide range of mobile services that can be accessed anytime and anywhere and shopping services were no exception (Kleijnen, et al. 2007).

A3 – 2. Low search costs

Bettman (1973) as well as Srinivasan & Ratchford (1991) state that consumers tend to search for information before making a purchase in order to handle the perceived risk that results from the purchase decision. By doing so, they incur in search costs. Therefore, "*search costs are the costs incurred by a consumer in identifying a firm's product and price, regardless of whether the consumer then buys the product from the searched firm or not*" (Wilson, 2012).

According to Brynjolfsson & Smith (2004), low consumer search costs are one of the aspects of online markets that are mostly discussed both in academic literature and popular press.

The same authors claim that low consumer search costs have a profound impact in lowering product prices. In fact, Stigler (1961) refers "*Price dispersion is a manifestation – and indeed it is a measure – of ignorance in the market*" meaning that price dispersion arises when individuals are not perfectly informed about the prices or qualities of what is being sold. In consequence, Butters (1977) mentions that since information is usually costly to gather, a consumer will end her search for better deals when the anticipated price reduction falls short of her cost of search. Given that, according to Sorensen the result that arises from economic models in which consumer's propensity to search increases (e.g. due to decrease in search costs) is a constraining in prices, lowering them and making them less dispersed.

Nevertheless, Brynjolfsson & Smith (2004) discovered that prices on the internet are generally very disperse. In fact, these authors justify that the existence of price dispersion in the internet is not related with search costs but rather because of market immaturity and the fact of the existence of differentiated retailer services (shipping service, product availability, return policies, retailer reputation, etc.).

Another aspect described by Brynjolfsson et. al (2011) is that low search costs increase the market share of niche products. In other words, before the internet era, niche products were much harder to find and buy given that a traditional brick and mortar store has much less product availability than an online store.

Knowing that low search costs have a clear impact on the markets, why does internet usage reduces search cost for consumers to almost zero, as Bakus (1997) argue? The same author claims that internet based information systems can serve as very efficient intermediaries between buyers and sellers that deeply

reduces the cost of acquiring information related to firms, products and prices. Actually, multimedia internet capabilities enable the transmission of high resolution images, videos, three dimensional virtual environments as well as customer product reviews and other product and price related information. In conclusion, internet based information systems makes consumer search easy, quick, reliable and very cheap.

A3 – 3. Richness in the content of information provided from multiple digital sources

One of the major benefits of shopping online is the ability to access and utilize information in order to engage in more conscious and efficient purchases. In fact, the Internet possesses a powerful capacity for searching, organizing, sharing and disseminating shopping related information, as well as it has the ability of supporting and facilitating several forms of interaction including one-to-one, one-to-many, many-to-one and many-to-many which can also be human-to-human, human-to-machine, machine-to-human and machine-to-machine. In addition to this, the Internet is able to provide sensory data. Therefore, in our present days, the Internet has a major impact on consumer information search behavior (Peterson & Merino, 2003).

In fact, according to Jepsen (2007) the internet is a very popular mean of conducting pre-purchase information search because it offers several benefits. Those benefits include providing large amounts of information available which is free from contact with sales staff.

A3 – 4. Customized/personalized shopping experience

Customization is described by Davis (1987) as the process of tailoring products according to the individual needs and preferences of consumers. Moreover, Tam & Ho (2005) suggests that customization implies the ability to sense and respond to the unique needs and wants of individual customers by providing "*the right content, in the right format, to the right person, at the right time*".

Hagen et. al. (1999) refers that there are technologies available today which allows e-tailers to offer a customized online purchasing experience to individuals on the basis of knowledge about their preferences and behavior. Those are called personalization technologies (Adomavicius & Tuzhilin, 2005) because they are able to "*build customer loyalty by building a meaningful one-to-one relationship, by understanding the needs of each individual and satisfy a goal that efficiently and knowledgeably addresses each individual's needs in a certain context*" (Riecken, 2000). Moreover, McAfee & Brynjolfsson (2010) suggests that Big Data is a relevant tool that enables personalization technologies to help companies to understand deeply

their customers. Actually, the same author refers that companies are now capable of tracking "*not only what customers bought, but also what else they looked at; how they navigated; how much they were influenced by promotions, reviews, page layouts and similarities across individuals and groups*".

As Schafer et al. (1999) affirm, recommender systems are used in e-commerce to provide customers a personalized shopping experience. In fact, recommender systems are designed to use personalization to convert browsers into buyers. Actually, if recommendations are good, the average order size tends to increase. Moreover, recommender systems improve loyalty by creating a value-added relationship between the site and the customer. Additionally, these systems utilize personalization to increase cross-sell.

According to Thirumalai & Sinha (2011) customization highly affects the purchase process in e-tailing. In fact, these authors identify the two sub-processes of online purchase process customization, on a customer perspective:

- Decision-making sub process – identification of the need and the right product that can satisfy the customer need, which according to Maes et. al. (1999) involves the steps of "*need identification*" (where the customer, motivated through product information, realizes an unmet need), "*product brokering*" (where the customer evaluates information on product-alternatives to arrive at a consideration set of products that satisfy the need) and "*merchant brokering*" (where the customer evaluates who to buy the products from, based on criteria such as price, warranty, availability, delivery time, payment options, and merchant reputation);
- Transaction sub-process – execution of the product purchase activities, which as Maes et. al. (1999) refer includes the steps of *"purchase and delivery"* and "product service and evaluation," where the customer executes the purchase and conducts customer service interactions related to the purchase.

Therefore, According to Lin and Wu (2002), customization does not only affect consumer online behavior itself but it also represents a critical dimension of e-service quality. In fact, Thirumalai & Sinha (2011) state that customization may serve to decrease the information overload that customers face in online searches as well as it increases the ease with which customers identify the right product that matches their need from a wide variety of choices they are faced with, resulting in higher consumer satisfaction. Additionally, the same authors indicate that customization enables an easier execution of the various purchase activities at a retailer's website like billing, shipping and customer-service interactions. In fact, improving customer's

overall purchase experience with the e-tailor is vital to the development of long-term relationships with the customer (Shankar et al., 2003).

A3 – 5. Digital social interaction

Social networks have revolutionized the communication among different agents, improving it deeply in terms of velocity and content. Moreover, social networks caused several changes in communication behavior which deeply affect the maintenance and growth of relationships (Xiong & Lv, 2013).

For this reason, companies begun to strategically use social networks for commercial reasons, giving birth to the term social-commerce (s-commerce).

S-commerce is a form of e-commerce mediated by social media involving convergence between the online and the off-line environments (Zhang & Wang, 2012). It involves the use of internet based media "*that allow people to participate in the marketing, selling, comparing, curating, buying and sharing of products and services in both onine and offline markets and in communities*" (Zhou et al., 2013).

Zhang and Wang (2012) developed a model to analyze s-commerce based on four dimensions:

- People – In the people dimension, these authors argue that s-commerce evolved from a more general emotion-based experience of social-gathering nature to a deeper rationale-based reasoning on the impetus of shoppers to seek recommendations and share ideas from/with others. Actually, there is an evolution from the fun side of e-commerce to the utility side of it, focusing more on maximizing efficiency and cost saving through social saving (e.g. group buying);
- Management – In what business strategies and models are concerned, s-commerce evolved from long-tail thinking and finding niche products and branded social networks (branded communities) to a more strategic perspective where a clear decision about the positioning of companies in s-commerce platforms was previously made (s-commerce for branding or for transactions?). Based on that, the last few years assisted to the trends in which companies, instead of focusing in just one big social network, started to converge social networks online and offline as well as converging online social networks with offline high street retailers, and co-creating messages with the customers;

- Technology – In this dimension, there was a movement from IT platforms with links between blogs and e-commerce sites to the startup of social-commerce sites. This is, there was an evolution from e-commerce sites/search engines providing social-networking function to the link between online and offline social-network channels. Among the different social networking platforms, Facebook is, at the moment, the more profitable platform of s-commerce.

- Information – Regarding to information dimension, s-commerce started a result of the concept of user-generated content enabled by Web 2.0 technologies. Nevertheless, in order to leverage the user generated content, it advanced to crowdsourced content to the communities of users as well as co-created content between consumers and marketers and also globalized or localized crowdsourced content.

S-commerce has introduced new variables in e-commerce since distant consumers can interact in real time with each other and with the companies by exchanging information on products and services (Kim & Park, 2013). Consequently, Leitner & Grechenig (2009) admit that s-commerce allows businesses to reach global consumers more efficiently than traditional retail outlets because integrating user generated content in the storefront represent a more trustworthy source of quality information regarding products and services. Therefore, clients are in better position to perform more informed and accurate purchase decisions. As a result, social technologies improve the shopping experience by forging relationships and influencing buying behavior. In fact, Marsden (2010) affirms that shoppers do not arrive at a site alone but bring their entire social network with them.

A3 – 6. No queue effect

In traditional retail stores, the length of the waiting line affects the customer's perception about the waiting time until he/she is served. For this reason, the queue length is considered a relevant factor in client's decisions to join the queue and, hence, to make a purchase. Consequently, the perceptions of the waiting time formed based on the observed queue length affects the customer purchasing behavior (Lu et al., 2012)

Moreover, in Lu et al. (2012) empirical study regarding the effect of queues on customer purchases in retail stores, these authors claim that customer's sensitivity to waiting is heterogeneous and negatively correlated with price sensitivity.

Jiang et al. (2012) makes a distinction about online and offline shopping convenience. These authors claim that clients tend to prefer offline stores with no queues which provide a fast and simple service. In fact, Berry et al. (2002) clarifies that service convenience is related with the value of time since these authors claim that the greater the time costs associated with a service, the lower the degree of consumer perceived service convenience.

Therefore, purchasing online through convenient online shopping platforms presents a reliable solution against the commercial negative effects caused by waiting in a queue (Jiang et al., 2012).

A3 – 7. Flexible e-payment methods

According to Krueger (2001), payment involves direct or indirect exchange of monetary values between parties. The appearance of the internet revolutionized the payment methods between individuals and companies, since it led to the development of electronic-payment (e-payment) systems. E-payment is a form of financial exchange that takes place between the buyer and seller facilitated by means of electronic communication, namely the internet (Kalakota & Whinston, 1997). In fact, when compared with traditional payment methods, e-payment technics have several favorable characteristics, including reliability, privacy, scalability, anonymity, security, acceptability, efficiency, and convenience (Chou et al. 2004, Stroborn et al., 2004 ; Tsiakis et. al., 2005 ; Linck et al., 2006 ; Cotteleer et al., 2007; Kousaridas et al., 2008).

Actually, Kim et al. (2010) claims that e-commerce is built on e-payment systems. Moreover, the same author states that as e-commerce gradually becomes a major component of business operations, e-payment has become one of the most critical issues for a successful business, especially in retail companies. For that reason, Yu et al. (2002) clarifies that when companies enter in B2C electronic markets, they tend to choose e-payment systems that are popular, safe and adapted to the way the company runs its business.

In Sumanjeet (2009) state of the art article about e-payment systems, this author uses Anderson (1998) classification of the referred systems, suggesting that e-payment systems can be broadly divided into four categories:

- Online credit card payment system – This system extends the functionalities of existing credit cards (Herzberg, 2003) for use as online shopping payment tools. In fact, when making a purchase, clients only need to send their credit card details to the service provider involved and the credit card organization will handle the payment like any other. Several advantages arise related to the use of

this payment system, such as, privacy, integrity, anonymity, good transaction efficiency, compatibility acceptability, convenience, mobility, and low financial risk. Nevertheless there are consumers who perceive online credit card payment system as one with some limitations: lack of authentication, repudiation of charges and credit card frauds. Even so, this payment system is, by far, the most accepted and popular among consumers and merchants around the world, especially in retail markets (Sumanjeet, 2009).

- Electronic cheque (e-cheque) Payment System – According to Juang (2007) *"Electronic cheque also known as e-cheque and I-cheque are used to make electronic payment between two parties through an intermediary and they are not very much different from the traditional or current cheque processing system. Electronic cheques are generated and exchanged online. The intermediary will debit the customer account and credit the merchant account"*. In fact, E-cheque payment system was designed to extend the functionalities of existing chequing accounts for use as e-commerce payment tools. Sumanjeet (2009) synthesizes the advantages and disadvantages of this e-payment system. The advantages are: (1) consumers are not required to reveal account information to other individuals when making an auction; (2) consumers do not need to be continually sending sensitive financial information over the web; (3) e-cheques are less expensive than credit cards and (4) e-cheques are a tool which is much faster than paper based traditional cheques. However, the disadvantages are the fact that they are limited to use in virtual world, they cannot protect the user's anonymity and they have relatively high fixed costs. Due to the referred disadvantages the same author claims that this e-payment system is not particularly suited for retail transactions;

- Electronic Cash (e-cash) payment system – According to the European Commission, e-cash is defined as a *digital equivalent of cash, stored on an electronic device or remotely at a server*. Actually, the Sans Institute refers that e-cash can be classified as identified (traceable) or anonymous (untraceable) whether the transaction needs verification and validation from a third party (egg: bank) or it is completely anonymous like traditional coins and notes. This anonymity is achieved by using blind/digital signature meaning that the transaction message is encrypted and sent to the bank but the bank does not know who sent it. The major characteristics of e-cash are monetary value, interoperability, security storability and irretrievability. In fact, this e-payment system offers several advantages: good acceptability, privacy, low transactions cost, convenience and good anonymity. As far as its disadvantages are concerned, e-cash has a poor transaction efficiency and high financial risk since people are solely responsible for the lost or stolen (Sumanjeet, 2009);

- Smart cards – Chakrabarti and Kardile (2002) describe smart cards as credit card sized plastic cards with memory chips and in some cases, with microprocessors embedded in them so as to serve as storage devices for much greater information than credit cards with inbuilt transaction processing capability. Those cards contain an encrypted key which can be compared to a secret key contained on the user's processor and, some of them, even possess a provision that allows users to enter a personal identification number (PIN) code. The major advantages that this system presents are anonymity, transfer payment between individual parties, and low transactional handling cost of files, as well as better protection from misuse than conventional credit cards because the smart card information is encrypted. This e-payment system is increasingly being accepted as an appropriate method to execute e-commerce transactions given the fact that they offer a great level of security when compared to credit cards. (Sumanjeet, 2009).

Since the decision of which e-payment system(s) to adopt is critical to e-businesses, Yu et al. (2002) follows a five dimension framework to analyze and compare different types of e-payment systems. This author states that when companies make the decision about what e-payment systems to implement, they need to consider the following dimensions:

- Technological – this dimension access the system's ability to adapt to users' changing needs, the effectiveness and security of each transaction, the degree of compatibility among other payment systems, and the complexity in adapting to the system;
- Economic – related with the assessment of the cost of transactions, atomic exchange, user range, value mobility and financial risk;
- Social – in the social dimension the criteria to be accessed are privacy of consumer data, degree of acceptability and mobility;
- Institutional and law aspects (2 dimensions) – the payment system must be approved by governmental regulations and law which are specific to the different countries or regions. Therefore, several concerns associated with law include digital signatures, digital transfers and the legality of payments, electronic commerce contracts, technical standards, collection of rental taxes, and international transactions;

As mobile devices and m-commerce gained relevance in the market, efficient mobile payment (m-payment) methods became a central aspect of concern for retail companies. In fact, an m-commerce transaction refers to an electronic transaction that is conducted using a mobile terminal and a wireless

access network such as Wireless LAN, 3G telecom network, Bluetooth connection or an Infrared connection (Veijalainen et al., 2006).

According to Kemp (2013) m-payments are generating a new ecosystem of market participants constituted by card schemes, mobile operators, retailers, device suppliers, service suppliers and a growing overlay category of TSMs (trusted service managers).

By bringing mobility to e-payment systems, m-payment systems are critical to the performance of transactions in the so-called "*niche-time*" in which customers are on the move (Veijalainen et al., 2006).
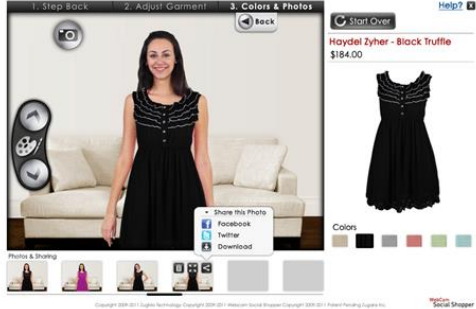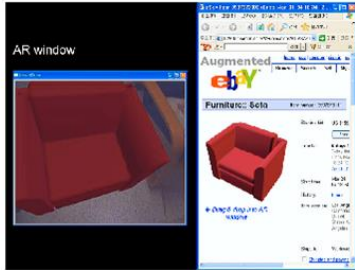
A3 – 8. Possibility of using augmented reality to improve the online shopping experience

Augmented reality enables to overlap computer generated virtual objects with real world physical scenarios, providing the feeling of immersion (Lu & Smith, 2007; Park & Lee, 2004). According to Jimeno-Morenilla et al. (2013) *augmented reality can be described as phase between absolute reality and absolute virtually, which has the following properties: (a) it combines real and virtual or augmented objects; (b) it runs interactively and in real time; and (c) it aligns real and augmented objects with each other*. Because traditional e-commerce technologies do not provide enough information concerning the physical dimension, material, color and tactile impression of the products, augmented reality in e-commerce can be used to add these extra dimensions, enhancing customers' online shopping experience (Park & Lee, 2004).

Although the majority of current e-commerce technologies are not prepared to make use of the benefits of augmented reality technology, there is a growing number of e-commerce systems which are integrating augmented reality to improve the customer's online shopping experience. Some examples of these technologies are ARIS (Augmented Reality Image Synthesis), Magic Mirror, Webcam Social Shopper, Cimagine and IBM augmented reality shopping assistant (Park & Lee, 2004; Mottura et al., 2003; PrestaShop, 2015; Cimagine, 2015, Augmented Reality Trends, 2014).

The following table describes several ways of implementing augmented realty in e-commerce to improve customers' online shopping experience.

Several augmented reality applications in e-commerce

Principal benefits of AR in e-commerce	Illustration
Trial of clothes, shoes and accessories without having to actually try the physic ones (Nicolás, 2012)	 (available at: http://www.smh.com.au/technology/technology-news/another-blow-to-retailers-virtual-dressing-rooms-20110809-1ijxa.html)
Possibility of fitting virtual furniture and home/office/... decorations in the real physical places without effort, enabling to have an immediate visual perception of the decorated place (Lu and Smith, 2008)	 (taken from: Yu & Smith, 2008)
Personalization of products followed by an immediate 3D visual picture that enables an accurate perception of what the product looks like in the respective place to be put in (Nicolás, 2012)	 (taken from: Park & Lee, 2004)

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Annex 4 – Online consumer behavior

After progressing from a state of felt privation (problem recognition) to the search for information on possible solutions, the consumer gathers information from internal sources (e.g. memory) and/ or external sources. Actually, the internet offers plenty of external sources for information that supports the decision making. Instead of the traditional pamphlets, TV commercials, discussions and other means of offline information gathering, the internet is rich and abundant in terms of content. Discussion forums, websites, social networks, e-word-of-mouth, sensory information (videos, images, virtual and augmented reality) are just some examples of precious information that was inaccessible before the emergence and development of the internet. Moreover, the emergence of new push technologies means that communications can now be sent routinely to target recipients who are known to be interested parties by virtue of their early visits to the website, their queries and their general internet and browsing behavior. Since the information is practically free (the costs of accessing the internet are negligible) marketers need to offer the best-designed information package in order to generate a competitive advantage (Butler & Peppard, 1998). However, in the phase of information search, consumers may face the problem of information overload which according to Wilkie (1994) is related to the excess of existing information and occurs when consumers learn more about the alternatives available to them turning the search psychologically costly which result in the creation of specific heuristics to simplify the problem. Therefore, not only do marketers need to understand those heuristics but they also have to embrace technologies that customize the information search step (Butler & Peppard, 1998).

When the information search step is completed, the consumer feels that he/ she has already sufficient and relevant information to use to evaluate alternatives in order to make the purchase decision. The traditional sources of information for the evaluative search include past experience, marketing-sponsored communications, word-of-mouth, consumer groups and research institutions. However, the internet provides more evaluative criteria to be used, for instance intelligent shopping agents that enable direct product comparisons, social-networking interaction and other consumers' reviews (Butler & Peppard, 1998). Moreover, Hagel & Armstrong (1997) refers that virtual communities (example: Mums Online) are a source of critical decision making information because it is highly perceived as trustworthy. Bechina & Hustad (2011) state consumers are exploiting the concept of collective intelligence that the internet offers in order to make better decisions about products and services.

The purchase stage of the consumer behavior process involves decisions on where and how to buy. In fact, in traditional physic shopping, personal shopping motives include diversion from daily routines, learning

about new trends, physical activity, self-gratification, communicating with others with similar interests as well as pleasure involved in bargaining and haggling. Nevertheless, when it comes to shopping online, the decision of where to buy is related with what digital platform to use in order to perform an effective, efficient and safe purchase. Therefore, competition on the web is driven by sellers which attempt to build more exciting and interesting sites than their competitors in order to attract the right customers, provide superior shopping experiences to induce purchase. In fact, as far as online transactions are concerned, customers look for ease of ordering, payment with flexible methods and ease of delivery. This is, customers look for straightforward routines with minimum complexity and maximum compatibility with e-commerce marketplace patterns. The perceived safety of the purchase is also a critical factor when choosing the digital platform to buy from. Therefore, in this stage, marketers should make appropriate decisions in order to make the buyer feel comfortable with the decisions of where and how to buy (Butler & Peppard, 1998).

Since it is vital to understand totally the consumer behavior, the post purchase behavior stage is included in the model. Actually, given the emphasis in marketing on the development of ongoing relationships with customers, the actual sales should be perceived as a starting point instead of an end. The dimensions of product delivery, how the product is used, quality of the service dimensions, satisfaction degree as well as customers' complaints and suggestions are critical both for traditional consumer behavior and for online consumer behavior. In fact, while traditional retailers emphasize the characteristics of "high touch" (involving face-to-face attention) and full sensory perception of products, e-tailers in virtual markets emphasizes "*high tech*". "*High tech*" here is understood as being more reliant on the power of information and communication technologies to anticipate and satisfy customers' needs with the consequence of forging continue business relationships. Once again, personalization technologies are crucial in this phase as the internet affords opportunities for post-purchase relationship development via mass customization. Additionally, marketers should be concerned in communicate effectively to online consumer groups given their power of communication. Actually, the ability to draw customers into a conversation in real time confers great power on the sellers, requiring a proactive approach to after sales relationship. Post-purchase activity involves consumers returning to the sellers site with queries, for new information, and to repurchase. Such buyers demand to be treated to new information at every visit. (Butler & Peppard, 1998).

In conclusion, as Butler & Peppard (1998) suggest, although the online consumer behavior has the same stages of the traditional consumer behavior, the internet has changed irreversibly the way consumers behave in each one of those stages, creating new challenges for marketers.

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Annex 5 – *Omnichannel* consumer experience

Due to the emerging reality generated by the *onmichannel* consumer experience, companies need to change their business strategies in order to serve better the new clients' needs. Therefore, Brynjolfsson et al. (2013) lists seven successful strategy lines for *omnichannel* retailing:

- Provide attractive pricing and curated content – retailers should avoid price wars and become merchandise "curators" in order to guarantee that customers do not get lost in a sea of products;

- Harness the power of data and analytics – retailers should collect data from diverse sources: social (egg. likes on Facebook), mobile (egg. searches on websites) and local channels (egg. check-ins at nearby establishments and movement behaviors of customers and employees in the stores). Additionally, retailers should invest in effective tools to analyses the collected data in order to gain customer knowledge and personalize the shopping experience;

- Avoid direct price comparisons – The fact of customers being able to quickly gather and analyze information about product prices is damaging for companies. Therefore, they should focus on strategies that mitigate price competition, such as present distinctive features in products as well as selling exclusive products;

- Learn to sell niche products – retailers should have inventory information online and inside the store, so that clients know they can have what they want *a priori*;

- Emphasize product knowledge – Nowadays clients are able to obtain product information in one channel and make the purchase at a different channel. Therefore, retailers should make an effort to share product knowledge across the entire platform. Actually, by doing so, retailers are facilitating channel integration and attracting shoppers who prefer shopping in multiple channels. For that reason, all the elements that result in confusing and conflicting product information should be minimized in order to avoid customer frustration;

- Establish switching costs – By establishing switching costs, retailers are reducing the amount of competition they face. There are diverse modes of reaching this goal: egg. loyalty programs, subscriptions with special advantages, creating privileges for loyal customers;

- Embrace competition – More information leads to more transparency which means that consumers will identify the transparent retailers and will prefer to do business with them. Therefore, the retailers that try to run business their own way without constantly analyzing and adapting to the competition will not succeed in the long run. In fact, in an *onmichannel* world, there is a premium on learning rapidly from competitors and consumers because it allows companies to cater better the client's needs.

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Annex 6 – CRM

A6 – 1. Key elements of a successful CRM strategy

According to Chen & Popovich (2003) CRM involves an integrated and balanced combination of processes, people and technology that seeks to understand a company's customers. Therefore, CRM requires company-wide, cross-functional and customer-focused business process re-engineering and should not be viewed as a technology-only solution.

For this reason, in the recent years, organizations are adapting their customer offerings and communication strategy according to the different customers. This is happening because companies are recognizing that customers have different economic value to the company. Therefore, organizations are moving from product-centric or brand-centric marketing toward a customer-centric approach (Reinartz et al., 2004).

In order to bring the intended long-term value to the company, companies must take in consideration that CRM is a strategy involving the whole business. Hence, it should be approached at an enterprise level instead of a series of disintegrated departmental projects (Gartner, 2004).

Therefore, Gartner (2004) proposes a framework which clarifies the eight essential aspects that a company must bear in mind when designing a CRM strategy involving the whole business. These aspects are:

1. Vision – a clear mental picture of the desired state of the company when it will reach what is considered to a customer centric enterprise, based on well-defined value propositions;
2. Strategy – involves the creation of a business strategy which is capable of turning the customer base into an asset by delivering customer value propositions;
3. Valued customer experience – involves establishing a methodical set of actions that ensures the collection of customer feedback in order to apply that knowledge into delivering consistently offerings and interactions with added value in order to achieve the desired market position;
4. Organizational collaboration – the organizational culture, structure and behavior must ensure that employees, partners and suppliers cooperate effectively to deliver customer value;
5. Processes – involves redesigning all the processes to make the company more customer centric, including identifying the key processes from the customer perspective, measuring them based on their contribution to customer value and implementing the necessary changes in the back office and front office according to customer inputs.

6. Information – involves the collection of the relevant data and the utilization of efficient channels to route that information smoothly to the appropriate internal recipients.

7. Technology – involves managing data and information, customer-facing applications, IT infrastructure and architecture;

8. Metrics – involves the creation of the right metrics to measure internal and external indications of the CRM strategy performance.

A6 – 2. CRM in the context of knowledge creation

According to Rowley (2002) customer knowledge can be broadly defined as all the knowledge about customers which includes knowledge about customer segments, individual customers and potential customers, as well as the knowledge possessed by the customers themselves. Rollins & Halinen (2005) emphasizes that customer knowledge is very different from customer data and customer information and it can be explicit (e.g. structured customer information in databases) or tacit (e.g. knowledge about customer that is present in the mind of employees).

Moreover, according to Khodakarami & Chan (2013) customer knowledge is possible to be categorized as:

- Knowledge for customers – knowledge provided to customers in order to satisfy their needs for knowledge about products, services and other relevant items;
- Knowledge about customers – knowledge about customer's backgrounds, motivations and preferences
- Knowledge from customers – knowledge which customers possess about products, services and competitors that the company can obtain for interacting with them.

Khodakarami & Chan (2013) clarify that customer knowledge can be obtained through a four stage process of:

- Socialization – sharing tacit knowledge among individuals through social interactions;
- Externalization – transforming tacit knowledge into explicit knowledge that can be shared within an organization;
- Combination – integrating different sources of explicit knowledge to create new knowledge;
- Internalization – understanding explicit knowledge and integrating it into business practices.

Customer Knowledge is an extremely valuable resource for organizations in today's economy. To obtain it, organizations have to possess dynamic capabilities to create, acquire, integrate and use knowledge (Alavi & Leidner, 2001).

Khodakarami & Chan (2013) explored the role of CRM systems in terms of customer knowledge creation. The following table on the next page is adapted from Khodakarami & Chan (2013) study and presents various knowledge creation processes facilitated by CRM systems associating them with the type of customer knowledge created.

Knowledge creation processes facilitated by CRM systems (adapted from Khodakarami & Chan, 2013)

Knowledge creation Process category	Knowledge creation Process sub-category	Knowledge Creation type of Processes	CRM systems	Category of systems	Customer knowledge type
Socialization	Within the company	Web and call conferences between managers	Tele/video/web conferencing	Collaborative	About
	With customers	Customer's calls to get information about products and services	Customer service and support	Operational	About/For
Externalization	Within the company	Knowledge exchange with e-mails and through internal portals	Communication support/ departmental portals	Collaborative	About/From
		Proposing suggestions and ideas through electronic methods	Communication support/ departmental portals	Collaborative	About/From
		Externalization and accessibility of Customer purchase information	Sales force automation	Operational	About
		Publishing customer information experience survey results, customer's suggestions and feedback	Departmental portals	Collaborative	About/From
	Outside the company	Externalization of product information through the organization's websites	Social media	Collaborative	For
		E-mail campaigns and loyalty-based communication with customers	Communication support	Collaborative	For
Combination		Analysis of customer information about customer's purchase pattern	Excel/data warehouse	Analytical	About
		Analysis of customer lifetime value analysis, customer segmentation, etc.	Excel/data warehouse	Analytical	About
		Analysis of customer experience information	Communication support/ departmental portals	Collaborative	About/From
Internalization	For employees	Online courses for various organizational and technological topics	Departmental portals	Collaborative	For/About
		Learning from material on the intranet	Communication support/ departmental portals	Collaborative	About
	For customers	Customer's learning about products, services and repair solutions	Social media	Collaborative	For

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Annex 7 – Smartphone Shopping Scenario

A7 – 1. Enabling technologies

The smartphone shopping scenario assumes that both the customer and the stores are equipped with all the technologies that enable an experience at stores similar to the online shopping experience. In fact, those enabling technologies are presented subsequently.

A7 – 1.1. Smartphone with mobile internet and a shopping application

For the purpose of the smartphone shopping scenario, it is considered that each customer possess a smartphone with connection to mobile internet, Bluetooth receiver and transmitter as well as a smartphone shopping application intended to be the interface between the customer and the store.

A7 – 1.2. Bluetooth

According to Haartsen (1998), "*Bluetooth is a universal radio interface in the 2.45 GHz frequency band that enables portable electronic devices to connect and communicate wirelessly via short-range, ad hoc networks*".

In the smartphone shopping scenario, Bluetooth is used to establish communication between the beacons and the smartphone shopping application as well as it is used to transmit customer knowledge between the company CRM and the smartphone shopping application real-time CRM, through Near Field Communication Systems.

A7 – 1.3. Near Field Communication

According to Mehmood et al. (2014) near field communication (NFC) is a "*contactless technology which enables communication between two devices using electromagnetic fields*". The same authors clarify that NFC has many possible appliances such as data exchange, performing payments and establishing wi-fi connection.

For the purpose of the smartphone shopping scenario, this technology is used to transfer customer data, information and knowledge between the CRM of retailing companies to the real-time CRM of the smartphone shopping application.

A7 – 1.4. Context-aware systems – the case of beacon based technologies

Dey and Abowd (2000) defined context-aware systems by referring that a "*system is context-aware if it uses context to provide relevant information and/or services to the user, where relevancy depends on the user's task*". Alves & Ferreira (2011) state that utilizing the user context in applications (such as time, location and activity) has the potential of enriching the user interaction with it. The same authors claim that context-aware systems may provide presentation of information and services to a user, automatic execution of a service and tagging of context to information for later retrieval.

One example of context-aware systems is beacon-based technologies. According to Estimote (2014), a beacon is a super small computer which uses Bluetooth Low Energy to detect a compatible device within a beacon's vicinity.

According to Apple (2014), beacons allow new location location-aware possibilities for apps. In fact, they can be utilized to establish a region of detection around an object which permits a device like a smartphone to determine when it has entered or left that same region as well as it provides an estimation of proximity to a beacon. Estimote (2014) states that smartphone applications which subscribe to the service can constantly listen for beacons and when the device comes into the beacon's range, the app is notified about it. The same author states that beacons can also broadcast information such as advertising from a local or cloud-based storage. The following figure, adapted from Estimote (2014) represents in a simplified manner the scheme of beacon's operations.
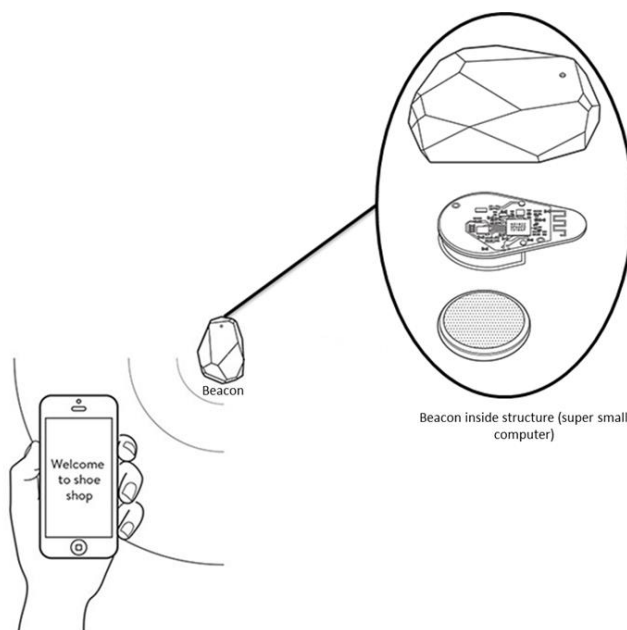
Simple representation of a beacon function (adapted from Estimote, 2014)

There are several beacon-based technologies in the market, such as Datzing, ibeacon and Estimote (Datzing, 2014 & Business Insider, 2014). Moreover, some beacon-based technologies are specifically designed for retailing like Philips' VLC beacon, Motorola MPact and Swarm Portal (ZD Net, 2014).

For the purpose of the smartphone shopping scenario, this technology is used to personalize the customer shopping experience by providing personalized greetings, dynamic couponing, live assistance, automatic way finding in the store and other unique services. In fact, subchapter A7 - 3 describes, in a more detailed manner, the contextual personalization experience offered by beacon-based technology in combination with *wi-fi*.

A7 – 1.5. Real-time CRM

As Chan (2006) states, "*customer relationship management is a critical business strategy in gaining competitive advantage*". Nevertheless, because the internet changed the way businesses are conducted, CRM needs to be adapted to respond to the "always on" phenomenon that generates a real time economy in which customers expect immediate responses and resolutions for their needs. For this reason, "*real-time CRM is becoming increasingly significant to enable the agility of businesses to provide quick, accurate and complete responses to customer needs*" Chan (2006).

As previously referred in the literature review, Khodakarami & Chan (2013) point that there are three types of CRM systems: operational, analytical, and collaborative. In order to be adapted to the real-time economy, Chan (2006) clarifies that these systems must perform their tasks in real-time. For this reason, the same author proposes architecture for real-time CRM that can be used in companies. This architecture is represented on the following figure, taken from Chan (2006).
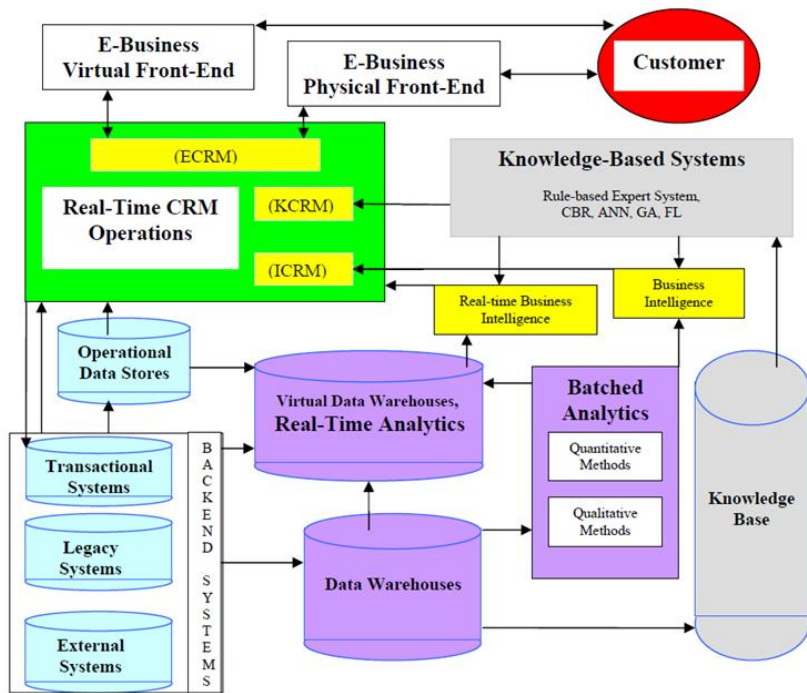
An example of a Real-time CRM architecture (taken from Chan, 2006)

To a better understanding of this architecture, the following table on the next page is designed to resume Chan (2006) framework.

Concepts behind Chan (2006) Real-time CRM architecture

Concept	Explanation
E-business Front-end systems	These systems interact with the customer through computer networks as well as other information technologies and they can be classified in two categories which are the virtual front-end and the physical front-end. Although both of them rely on the usage of the e-business infrastructure, the first one does not have human intervention and the second one does. Front-end systems may include store, call center, email, WAP/wireless, direct mail, phone/IVR, as well as real-time chat and they must be connected to back-end systems in order to integrate the information for practical use.
Back-end systems	*Back-end systems may consist of applications in ERP, CRM, SCM and other transactional and legacy systems. Real-time CRM operations such as marketing, sales, and services are supported by back-end systems and utilize the e-business front-ends to communicate with customers* (Chan, 2006).
Real-time CRM operations	Real-time CRM operations are divided in: • ECRM (real-time CRM operations enabled by e-business); • KCRM (real-time CRM operations enabled by knowledge based systems); • ICRM (real-time CRM operations enabled by business intelligence). (Chan, 2006)
Knowledge-based systems	Knowledge-based systems are designed to support decisions on the basis of quantitative knowledge, including genetic algorithms, artificial neural networks, rule-based expert systems, case-based reasoning, and fuzzy logic. *Knowledge-based systems take inputs from many sources, including data warehouses, results from batched and real-time analytics, and other knowledge sources. Knowledge-based systems can be used in conjunction with real-time analytics to create real-time knowledge-based business intelligence in real-time CRM* (Chan, 2006).
Knowledge base	Consists of a base that stores relevant knowledge to understand, formulate and solve problems. This knowledge is acquired from knowledge acquiring processes from multiple sources, such as textbooks, human experts, databases, multimedia documents, research reports and the Web (Chan, 2006).
Business intelligence and real time business intelligence	Business intelligence is an enabler of decision analysis through access to all relevant information that includes data warehousing, data mining, online analytical processing (OLAP), multidimensionality and visualization. *Real-time analytics utilizing virtual data warehousing create real-time business intelligence for CRM operations* (Chan, 2006).
Data warehouses	Contain all the basic data needed to analytical processes (Chan, 2006).
Virtual Data Warehouses and real-time analytics	*The key to real-time CRM intelligence is the real-time participation of data warehouses with real-time. This constitutes the second part of the analytic processing architecture that consists of the virtual data warehouses with real-time analytics. Virtual data warehousing allows the real-time processing of queries to distributed data sources including transactional data sources, operational data stores, and data warehouses as required by the real-time operations. This emphasizes the active participation of a data warehouse supporting real-time operations. Real-time analytics utilizing virtual data warehousing create real-time business intelligence for CRM operations. Notice that real-time intelligence can be knowledge-based when it combines results of knowledge-based systems in real-time analytics* (Chan, 2006)

Real-time CRM assumes a very important role in the smartphone shopping scenario because it enables a deeper in-store personalization that is explained in the subchapter 3.3.

A7 – 1.6. Quick response code scanner

QR (Quick Response) Code is a type of two-dimensional (2D) matrix which possesses the characteristics of large capacity and high-speed scanning (Denso Wave, 2014).

QR codes can possess a uniform resource locator that leads to a specific web page. A Uniform Resource Locator or URL is a sequence of characters that uniquely identifies the address of a resource on the Internet, such as a document or image (Pescatore, 2010).

There are several mobile applications that are capable of scanning and reading the referred codes such as the Barcode Scanner, Shop Savvy and Shopper (Google Play, 2014).

A QR code scanner is an important tool of the purposed smartphone shopping application because it enables the application to detect specific products and suggest several actions related to them. In fact, the smartphone shopping scenario considers that each product has a specific QR code which can either be located in the surface of its package or next to it. By scanning it, the customers can have access to:

- Product review websites, social shopping networks displaying the product's own page and other additional product information websites;
- Recommendations for similar or complementary products;
- Personalized advertising;
- Coupons, discounts and promotions related to the specific product or similar or complementary product;
- Interactive product price comparison between the store and nearby stores;
- Possibility of adding the product to the online shopping cart.

Subchapter A7 – 3 explains deeper the previous actions enabled by the described technology.

A7 – 1.7. Augmented reality

Carmigniani et al. (2011) define "*Augmented Reality (AR) as a real-time direct or indirect view of a physical real world environment that has been enhanced/augmented by adding virtual computer generated information to it*". The same authors claim AR combines real and virtual objects in an interactive way promoting a continuum that spans between the real and the virtual environment aiming at simplifying the user's life by bringing valuable information of the user surroundings.

There are several AR applications used in retailing to improve the customer experience, such as IBM augmented reality shopping assistant (Augmented Reality Trends, 2014).

For the purpose of the smartphone shopping scenario, AR properties are present in the purposed smartphone shopping application and are used to provide three solutions that may enrich the customer experience:

- Provide ads of some products that exist in the section where the customer is located;
- Provide 3D pictures of items that the store sells but that are currently unavailable;
- Assist the customer's navigation through the store by providing virtual indications about the location of the products that the customer intends to buy.

The following three pictures help understanding the three referred augmented reality solutions in retail shopping.

Illustrations of the three referred augmented reality solutions – taken from: http://www.brandchannel.com/home/post/2011/12/14/Nike-AR-GoldRun-Akoo-Finish-Line-121411.aspx (left); http://www.rippll.co/the-future-of-augmented-realty-retail-apps/ (above); http://augmentedpixels.com/10-ways-augmented-reality-can-assist-retail/ (below)

A7 – 2. Description of the smartphone shopping scenario

The referred enabling technologies along with the customers' motivation to use them allow the performance of several tasks needed to an interaction between consumer and store similar to the one that happens in an online store. Therefore, the next few sub-chapters describe these tasks.

A7 – 2.1. Customer location tracking to enable a contextual experience

Context aware systems like beacons allow the establishment of a contextual interaction between the consumer and the store, improving customers' shopping experience. In fact, stores with beacons can enable the smartphone shopping application to perform specific actions when in proximity to it.

For the purpose of the smartphone shopping scenario, this technology is considered to exist in the stores enabling the vendors to alert consumers for special opportunities, inside a specific region of the store. These special opportunities might be discounts, promotions, offers, coupons, etc. Moreover, companies can put beacons outside the store, either at the entrance or in other places to invite the customer to enter the store.

Beacons in combination with the smartphone shopping application can provide several in-store statistics (egg. regions with best sale performance per m2) which can be sent to the companies' CRM for a deeper analysis.

A7 – 2.2. Additional product information

Sometimes, when a customer is analyzing a product that might satisfy his/her need, he/she may have some doubts about its attributes and quality.

In traditional stores, the customer would generally ask for an expert opinion from the salesman. Nevertheless, the salesman final objective is to persuade the customer to make purchases which is an attitude that might originate an emphasis on the favorable attributes of the product and neglecting the adverse ones. This situation may produce a biased perception about the product and, therefore, the customer may feel deceived after the purchase. Consequently, having a smartphone with internet connection enables the customer to obtain product information from multiple digital sources, including other customer and friends' reviews.

To make this search quicker and more intuitive, it is considered that stores possess QR codes or data matrix or barcodes next to each product that contain a URL leading to a website with additional product information. It is also considered that the purposed smartphone application has a QR code/data matrix/barcode scanner that can detect the URL associated with the code.

Example of a mobile application that presents specialized product information in an interactive way (available at http://tag.microsoft.com/tag-in-action/success-story/t/herbal_essences_tags_product_displays.aspx)

A7 – 2.3. Interactive price comparison

Either if the consumer is dissatisfied with the price of a particular item or if he/she wants to verify if the price charged is adequate, he/she can use the QR code or barcode scanner and orders the application to search for prices in other offline stores nearby and online stores.

Example of an application that allows photographing a product's bar code in order to get more information about it, naming price information, specifically price information (available at http://www.net4tech.net/2013/12/smartphone-scanner-barcode-scanner.html)

Not only does this functionality improves the consumer decision making by comparing prices but also it tracks for promotions offered by other stores for the product searched and even suggests similar products

with better prices. In fact, there are already some applications used for price comparison, such as the RedLaser and the ShopSavvy Barcode (Google Play, 2014).

A7 – 2.4. Filling the physical shopping cart with products at the same time the online shopping cart is filled

When a potential consumer decides upon a certain product that he/she wishes to buy, he/she uses the functionality of the application that enables to scan the product's QR code or barcode and subsequently agree with adding the item to the online shopping cart. Immediately after, the consumer can put it in the physical shopping cart.

When some item is considered to be included in the shopping cart, the application automatically recognizes its price and adds it to the subtotal. If, for some reason, the customer re-evaluates a certain product and decides to exclude it from the online shopping cart, the only thing he/she has to do is to click on the application option to remove the product from the online shopping cart. Afterwards, he/she puts the product back on the shelf.

Example of a mobile application that allows to fill the digital shopping cart at the same time the consumer fills the physical one (available on: http://www.net4tech.net/2013/12/smartphone-scanner-barcode-scanner.html)

A7 – 2.5. Sell non-available products

The product availability existent in online shopping is almost complete. Nevertheless, the same does not happen in traditional stores where sometimes the product the customer intends to buy has ran out of stock.

To overcome this problem, the referred the smartphone application possesses a data base of all the products the store sells, including the non-available ones. If a customer chooses an existent product, the app shows him/her the local where he/she can find it. On the contrary, if the customer chooses a non-available product, the application asks him/her if he/she wants to visualize it in 3D through augmented reality to have a more sensorial perception of it. Afterwards, the customer can buy it or not. If he/she decides to buy the non-available product, it can either be delivered home or it can be picked at the store in a different day.

A7 – 2.6. Augmented Reality to enhance sales and improve the customer experience

The smartphone shopping scenario assumes that the purposed smartphone shopping application makes use of augmented reality technologies in three different situations.

Firstly, the smartphone application utilizes AR and beacons to generate ads in the screen of the smartphone, alerting the customer of special opportunities in the region of the store he/she is located.

Secondly, the smartphone application uses AR and beacons to locate specific products inside the store and give navigation orientations to the customer. For example, before entering the store, the customer can create his/her shopping list and ask for navigation through AR and the application provides the more efficient path to take the product set.

Thirdly, the smartphone shopping application makes use of AR, to help the users buying non-available products, as previously explained.

A7 – 2.7. Social interaction

The consumer has the option to use social networks and chats to communicate directly with friends and other people about the product they intend to buy. In fact, social interaction mediated by the internet

allows the consumer to ask questions to users of the referred good which will give more accurate and impartial information.

To achieve this goal in an efficient manner, customers scan the QR code/ data matrix/ barcode of the product desired and order the application to search for friends and people the customer know that already bought the product and, hence, can give privileged information about it.

Example of social networks which can be used during the offline-online purchasing process (available on http://www.onbile.com/info/social-networks-to-increase-ecommerce-sales/)

A7 – 2.8. Personalization of the shopping experience

Sometimes, either because the salesman does not know the client or because of his/her lack of abilities, the client feels that he/she did not received the personalized help needed. However, personalization technologies, as suggested by Thirumalai & Sinha (2011) may be very effective to support the customer in purchasing decisions.

Personalization in online-offline shopping is achieved by digitally offering personalized product suggestions, promotions and special offers. In fact, the purposed smartphone shopping application incorporates a sophisticated recommender system based on customer knowledge. The manner personalization is achieved is explained in a detailed way in subchapter A7 – 3..

A7 – 2.9. Knowledge interchange between companies and the smartphone shopping application

When a consumer is using the smartphone shopping application, he/she is leaving a track that represent precious data to the company owning the store. For the purpose of the smartphone shopping scenario, the smartphone shopping application has the capability of recording this data, analyzing it and sending it to the company's CRM system through NFC with a touch point at the exit of the store.

After receiving customer data, information and knowledge from the smartphone shopping application, companies have the possibility of submitting it to other analyses (human and computational) as well as they can organize it in the desired manner in order to obtain accurate customer knowledge.

Moreover, the smartphone shopping scenario considers that companies send all the pertinent data (products available, discounts, ads, etc.) and knowledge (i.e. customer knowledge) to the smartphone shopping application through NFC with a touch point at the entrance of the store.

A7 – 2.10. Payment with flexible e-payment systems

Instead of paying at the cash register, the purposed scenario allows the clients to use the smartphone shopping application to perform the payments. In fact, the purposed scenario gives the possibility to pay using a diverse range of e-payment systems. Therefore, clients make the check-out from the store electronically and avoid waiting on queues before paying for the products.

Example of a smartphone paying application (available at http://digest.dx3canada.com/2013/01/21/guide-to-ecommerce-in-canada-paypal/)

A7 – 3. Smartphone shopping application as a tool to obtain customer knowledge and to enable contextual personalization

Superior customer knowledge may be a source of sustainable competitive advantage which enables the creation of several strategic capabilities, namely superior contextual personalization. For this reason, the purposed smartphone shopping application is designed to be a source of customer data generated by the customers as well as a recipient of customer knowledge produced by the application itself and the companies in order to provide a personalized shopping experience which is differentiated from store to store.

The purposed process through which customer knowledge is obtained makes uses of a synergy between the customers, the smartphone shopping application and the retailing companies which possess offline stores. It has the following steps:

- The consumer downloads the purposed smartphone shopping application and creates an account. This account can only be created if the consumer permit the application to record and utilize his/her purchase data;

- When the consumer is near the store, he/she receives a personalized welcoming message inviting the customer to enter the store. This message, which is sent through beacons and processed and presented through the smartphone shopping application, can also contain personalized ads, promotions and other incentives to make the customer enter the store and make purchases;

- After the customer decides to enter the store, he/she passes the smartphone on a NFC touch point. This action permits that the company CRM system sends all the information needed for a contextual personalized experience inside the store to the smartphone shopping application. In fact, besides specific customer knowledge, the company sends other relevant information about the reality of the store at that specific moment (egg. available products, customer specific coupons, etc.). Upon receiving all that information, the smartphone application real time CRM starts to process all the received knowledge and data in order to select what is more adapted to the customer so that a contextual personalized experience can be achieved;

- Inside the store, the consumer uses the smartphone shopping application to support his/her shopping behavior and every operation performed in the smartphone shopping application is recorded and analyzed in real time through the real time CRM of the referred application. Moreover, all the steps the customer takes inside the store are registered, analyzed and recorded by the smartphone shopping application which interacts with beacons that are present in strategic positions to cover the entire store;

- When the customer change from a beacon area to another, the smartphone shopping application receives digital communications that are analyzed by the real-time CRM of the smartphone shopping application enabling that the customer only receives personalized information that interests him/her;

- When the customer scans a barcode or QR code of a product, the smartphone application superior recommendation system suggests similar or complementary products of the brands that the customer likes. Moreover, the smartphone shopping application presents the list of people the customer knows that has bought this product. Therefore, the customer can get more insights about specific products by talking with them through social networks;

- If the customer decides to use augmented reality to enhance his/her shopping experience, the contextual personalized experience is performed as well. In fact, when filming the environment, the smartphone shopping application in combination with beacon based technologies and AR technologies generates personalized ads and special opportunities in the screen that are specific to the region of the store the customer is in;

- After paying, when the customer is leaving the store, he/she passes his/her smartphone on the NFC touch point and all the knowledge, information and data obtained in the previous shopping process is transferred to the company's CRM. This knowledge, data and information collected by the store information system is analyzed by the company. This analysis is performed both by computational processes and by the people of the company, generating customer knowledge. In fact, it this human touch in the information that enables to incorporate tacit knowledge in order to generate customer knowledge. The generated customer knowledge is sent again to the smartphone shopping application by NFC when the customer enters the store again.

To enable a better visualization of the purposed process, the following figure syntheses it.
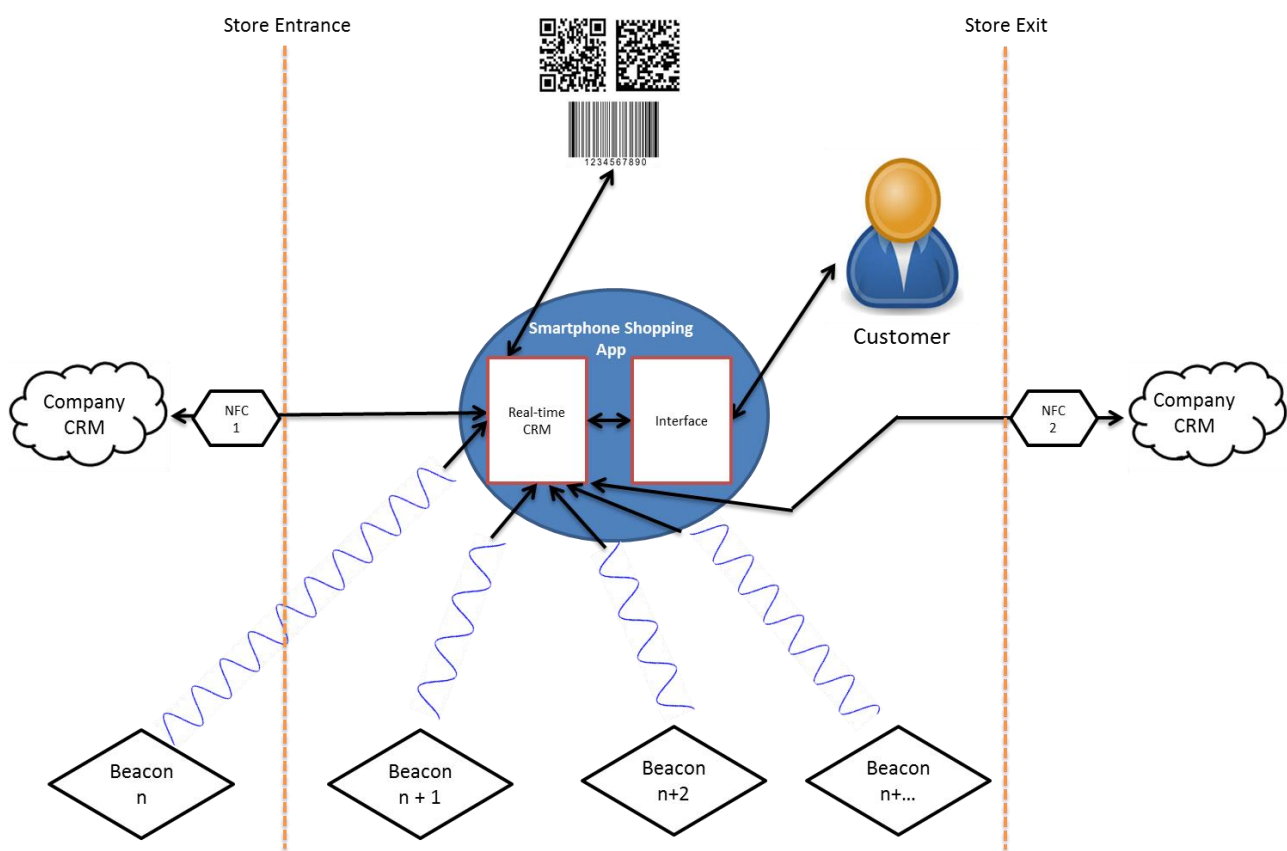
Purposed personalization process

Nevertheless, to make this process work, besides the development of the purposed smartphone shopping application, there are three necessary conditions:

1. Customers must be available to engage in an offline behavior similar to the online behavior;
2. Customers must permit the smartphone shopping application to record and utilize their purchase data;

3. Companies are willing to cooperate with the purpose smartphone shopping application by permitting the interchange of data between them;

The survey, which is explained deeply in the next chapter, is designed to get insights about the first two conditions. The third condition is assumed to occur if the two previous conditions occur because the referred synergetic process is designed to generate value which can be captured by firms in the form of profits.

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Annex 8 – Survey

General Introduction: Dear respondent, I am currently doing a research thesis about consumer behavior. I would very much appreciate if you answered the following questions. There are no right or wrong answers. All the information collected is going to be treated confidentially and is only going to be used for the purpose of the referred research. This questionnaire will not take more than 5 minutes.

Thank you very much for your time.

Page Break

Smartphone shopping scenario introduction: Imagine when you shop in retail stores you are able to use your smartphone to enhance your experience. For this purpose, you make use of a powerful shopping application that enables you to interact efficiently with the stores that are equipped with up to date technology which makes it possible.

This app is able to:

- Track your position inside the store;
- Deliver you a personalized shopping experience (personalized ads, suggestions, discounts, etc.);
- Perform online payments;
- Link to social networks;
- Scan a product's bar code to deliver you multichannel information;
- Indicate the path to a specific product.

Page Break

For the following 7 questions consider a scale ranging from "Not useful at all" to "Extremely useful" in order to indicate the utility the following functionalities would have to you when shopping in a retail store assisted by your smartphone:

Question 1 – Get a location of a nearby store that has available a specific rare product you want to buy instead of visiting several stores with the hope of finding it

Question 2 – Get personalized coupons on products that are meaningful to you

Question 3 – Use the social networks to talk to your friends to get advise on products you consider buying

Question 4 – Having the possibility of paying through your smartphone instead of paying in the cash register

Question 5 – Get product and price information through multiple digital sources (egg. customer review websites, consumer forums, company websites, social networks, etc.)

Question 6 – Get information on the products under discount without having to actively search them on the shelves or asking an employee for discount information

Question 7 – Be only subjected to ads which are related to products of your interest

Page Break

Imagine that by using the smartphone shopping application you are able to scan the product barcode and get specific information of your interest.

For the following 3 questions consider a scale ranging from "Not useful at all" to "Extremely useful" in order to indicate the utility the following information would have to you after scanning a product barcode.

Question 8 – Obtain product and price information about complementary or similar products

Question 9 – Get a list of your friends that have already bought the product so that you talk to them to get advice on it

Question 10 – Get other nearby store prices of the product you are looking which allows you to make price comparisons

Page Break

Imagine the smartphone shopping application makes use of augmented reality to improve your shopping experience. Augmented reality enables you to get extra information of your surroundings by filming it (in this section there are some pictures next to each question so that you can get a better insight of augmented reality appliances).

For the following 3 questions consider a scale ranging from "Not useful at all" to "Extremely useful" in order to indicate the utility the following information would have if you use augmented reality when shopping in retail stores

Question 11 – Get a 3D picture of a product the store sells but that is currently unavailable.

Question 12 – Get the path for the product you are seeking

Question 13 – Get ads and discounts for products present in the area of the store you are located

This shopping method has the potential of enabling personalization within the context of the store. This is, it can provide you selected content that is relevant inside the store environment in which you are shopping.

In order to offer a contextual personalized shopping experience it is necessary to record customer's information regarding their shopping choices and preferences. By allowing recording it, customers have access to personalized content instead of standard information. Moreover, because information is filtered according to your personal tastes, you do not have to be burdened with large amounts of irrelevant information.

Question 14 – Are you willing to permit recording your shopping related choices and preferences so that you are able to experience a contextual personalized shopping experience?

Finally, the last 2 questions are related to your age and gender.

Question 15 – Please indicate your age interval

Under 18 / 18-24 / 25-35 / 36-50 / Above 50

Question 16 – Please indicate your gender

Thank you very much for your time!

Please click on the arrow button so that your answers are recorded.