ISCTE ◈ IUL

Instituto Universitário de Lisboa

ISCTE Business School

Department of Marketing, Operations and Management

Internet user behavior change – an evaluation under three dimensions: scholars, professionals, and users.

Ricardo Filipe Carreira Ramos

Thesis specially presented for the fulfilment of the degree of

Doctor in Management, specialization in Marketing

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August 2018

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"There's no use trying," said Alice,

"one can't believe impossible things."

"I daresay you haven't had much practice"

said the Queen.

— Lewis Carroll, Alice's Adventures in Wonderland

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Abstract

Little is known regarding the change of users' behavior towards websites, influenced by the use of Social Media (SM) and Mobile Applications (MA). Statistical evidence reveal that SM and MA are gaining relevance in the Internet and the access is increasingly being made through these channels, taking Websites to a secondary place. The goal of this study is to understand the shift on the Internet user behavior by conducting a usability literature review in the three dimensions (website, SM and MA), and understand the perspective of Internet professionals and users in this context. Data was analyzed through text mining (TM) technique for a comprehensive understanding and search for hidden information and patterns. Result outcome reveals that the research in the usability of website, SM and MA contexts, indicate a gap in the literature in the areas of nutrition and marketing and the study of MA is undeveloped. Internet professionals' reveal resilience on setting SM in the center of the online strategy, revealing trust that users will continue to use search engines that will lead them to their website, and that relevance and quality of content will determine the continued use of websites. Users under 31 years old have more propensity to use SM and MA instead of websites to search for a product or service, implying that in the future, these platforms will overcome the use of websites.

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Resumo

Pouco se sabe sobre a mudança de comportamento dos utilizadores em relação aos websites, influenciados pelo uso das Redes Sociais (SM) e Aplicações Móveis (MA). Evidencias estatísticas revelam que as SM e as MA estão a ganhar relevância na Internet e o acesso está sendo feito de forma crescente através desses canais, relegando os Websites a um papel secundário. O objetivo deste projeto é compreender a mudança no comportamento do utilizador na Internet, realizando uma revisão de literatura e compreender a perspetiva dos profissionais e utilizadores da Internet neste contexto. Os dados foram analisados através da técnica de mineração de texto (TM) para uma compreensão exaustiva, e encontrar informação e padrões escondidos nos dados recolhidos. Os resultados revelam que o estudo da usabilidade nas três dimensões indica uma lacuna na literatura nas áreas de nutrição e marketing, para além de que o estudo nas MA está subdesenvolvida. Profissionais da Internet revelam resiliência em colocar as SM no centro da estratégia online, revelando confiança de que os utilizadores continuarão a usar os motores de busca que os levarão ao website e que a relevância e a qualidade do conteúdo determinarão o uso contínuo dos websites. Os utilizadores com idade inferior a 31 anos têm mais propensão a usar as SM e as MA em detrimento de websites para pesquisar um produto ou serviço, o que implica que, no futuro, essas plataformas superarão o uso de websites.

Palavras-chave: comportamento; website; aplicação móvel; redes sociais.

JEL Classification System:

- M31 Marketing
- O35 Social Innovation
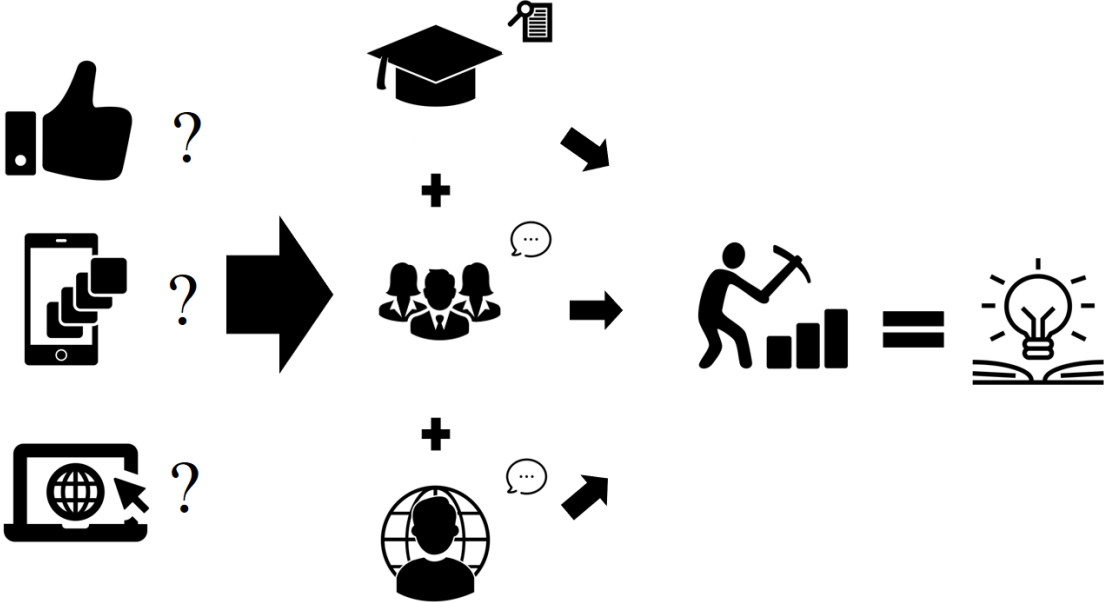- L86 Information and Internet Sciences – Computer Software

Graphical Abstract

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List of Abbreviations

DTM – Document-term Matrix

E-commerce – Electronic Commerce

IS – Information System

IW – Institutional Website

LDA – Latent Dirichlet Allocation

MA – Mobile Application

SEO – Search Engine Optimization

SM – Social Media

TM – Text Mining

Chapter 1: Introduction

Technology is a reality of human everyday life. The Internet is a technological innovation that has produced innumerous impacts all over the world. It is undeniable that it is present in the daily routine activities, such as recreation and fun, up until the work routine. In this scenario, the Internet is becoming a fundamental tool for those who want to be constantly update at the distance of a click. Many digital tools have urged and disseminated among users and companies. Although the history of Internet is recent, it has revealed itself as a great factor of communication, social integration, all types of information storage and product globalization (Fosdick, 2012). Alone, it has brought a profound behavioral change in our society (Anandarajan, Simmers, & Igbaria, 2000; DiMaggio, Hargittai, Newman, & Robinson, 2001). Nowadays, there is no separation between real life and virtual life, and the Internet has become so present that is already taken for granted. One out of four U.S. adults are constantly connected to the Internet, and the tendency is for these numbers to grow (Figure 1). There are few who question the power of influence that the Internet has in people's lives.
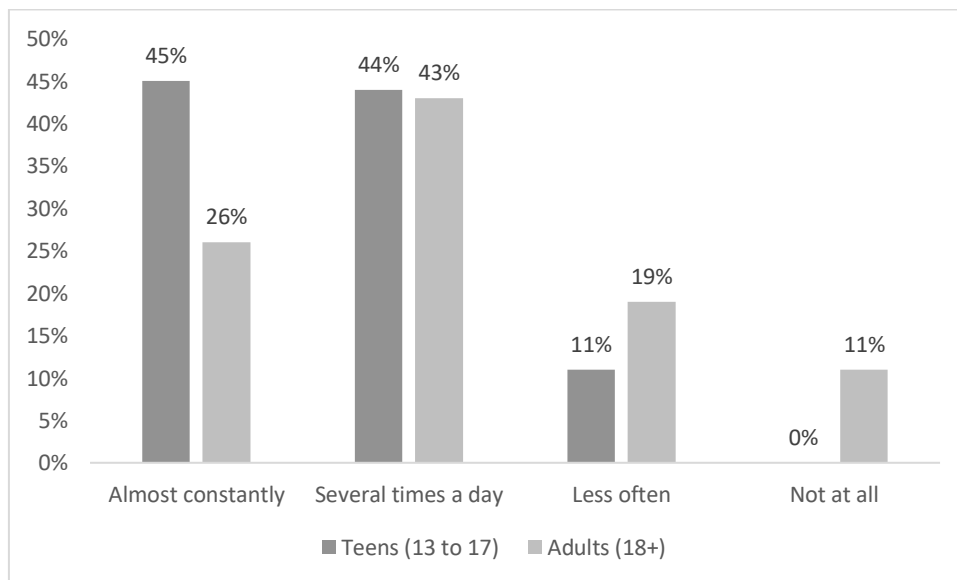
Figure 1 - Relative frequency of U.S. adults and teens accessing Internet (2018).

Source: https://www.statista.com/chart/14088/frequency-of-internet-usage-in-the-united-states/

The Internet leveraged many business models and made possible the growth and expansion of many small companies (Bocconcelli, Cioppi, & Pagano, 2017; Ramayah,

Ling, Taghizadeh, & Rahman, 2016). New firms live exclusively of business based on the Internet, such as Uber or Airbnb, and the use of Internet from the companies' point of view is mandatory. It has revolutionized the way we work with computers, that are not only machines to save and process information, but to be used as communication tool. The computers on network became a mechanism of information dissemination, collaboration and interaction, regardless the geographic location (Powers, Advincula, Austin, Graiko, & Snyder, 2012). The Internet, among the associated technologies, gave body and soul to a totally connected world.

Before the emergence of web 2.0, websites were the only portal to the Internet. They were places with static content and low interactivity. Fundamentally, the websites consisted in an information and content vehicle where the user was a passive element in the construction and evolution of content. Nowadays, websites have evolved their layout, design, usability, and revealed a new paradigm in terms of transactions (Wagner, Hassanein, & Head, 2014). On the e-business setting, two types of websites stand out. The institutional website has the purpose of presenting the company or organization, serving as a business card and point of contact in the virtual world and to provide information about products or services (Rekik & Kallel, 2011), while the retail website is used for promotion and product distribution, allowing online transactions (McDowell, Wilson, & Kile, 2016). Electronic-commerce (e-commerce) has revolutionized businesses and, due to its differentiated characteristics, has been gaining more strength and been seen as a trustworthy and profitable business model capable of offering many opportunities (Fulgoni, 2014). E-commerce has changed the fundamental preposition of value to the customer.

With the advent of web 2.0, a substantial change occurred over the Internet. Instead of a passive element, the user became an active player with the possibility of co-creating content and interacting with the website, involving the user in a new way of communication. Websites are no longer static, and the content, layout, and usability are focused on the user. It started the era where the user could create, share, interact and participate with others, i.e. the Internet bilateral communication. This type of communication took place in blogs, wikis, forums, among others, offering the possibility to the user to communicate on a one-to-one or one-to-many format. From this stand point, the SM platforms were born focusing on the content created by the user, meaning the user generated content, and where each user has an individual profile and connection with

other users (Powers et al., 2012). This led to a new type of commerce, social commerce. Social commerce is an e-business model that gathered features of web 2.0 (Hajli, 2015), revealing itself as a subset of e-commerce, and is empowered by the use of SM with the aim of engaging with the companies' target, increasing the degree of social presences in the online environment, and conducting transactions through the SM platforms, shifting the control from the company to the client (Zhang & Benyoucef, 2016).

The technological evolution of mobile devices, such as smartphones and tablets, gave birth to a new technological segment, Mobile Applications (MA). MA are becoming increasing popular among Internet users over the recent years. The releasing of the first iPhone in 2007 with default applications, and the launch of App Store and iPhone 3G in 2008, where the starting point for the phenomenon that MA are nowadays (Apple, 2007). Fluid and guided, MA are intuitive, provide a profound feedback that satisfy the user and to get back to (Sultan, 2014).

MA have different specifications. There are MA to provide information and content in a simple and agile way, such as weather, traffic or navigation, commercial MA allow access to updated content in real time, such as shopping guides, promotions, product information and transactions (Petrova, 2010), communication MA that are used to connect people, like Skype or to access SM platforms (Cahyani, Rahman, Glisson, & Choo, 2017), and gamming MA that are destined for mobile games and fun (Yang, 2013). Through this innovation, a young virtual business model has been identified, In-App purchase, that is characterized by the transaction of products and services directly from the MA. Features such as Location-Based services (Kang, Mun, & Johnson, 2015), interaction in real-time (Shirazi et al., 2011), or augmented reality (Balduini et al., 2012), improved the user experience and productivity.

Companies, understanding the impact that the Internet has on people's lives, have been going through profound changes, and adapting as time goes by, innovating and differentiating in a way to become a reference in their area of expertise. In a globalized and highly competitive market, it is important that companies seek to find technological tools to obtain competitive advantages and stand out among others, offering a highly aggregated value to their target.

However, there is the perception that SM and MA have been under the preference of users when it turns to accessing the Internet, making of websites, that once were the center of

the Internet, an almost irrelevant choice. SM and MA have been revealing characteristics that replace the traditional website (Nah & Saxton, 2013). Social Commerce reveals how retail websites are becoming insufficient, unsatisfactory and inefficient for users (Huang & Benyoucef, 2015; Li & Ku, 2018). Users have been preferring to use a MA instead of web browsing (Kang et al., 2015), and MA have exceeded the role of websites on sales influence (He & Liu, 2017), suggesting that websites are no longer used as they were before, revealing a new Internet paradigm. Since until now this phenomenon has not yet been clarified in academia, the reasons for what is forcing this behavioral change and the impact that this change has on websites are not obvious.

This research study aims to examine the shift in users' behavior when it turns to Internet access through the point of view of Scholars, Internet professionals and Internet Users. This research gap in the literature reveals a gap in the scientific and professional knowledge towards the understanding of the use of SM and MA in prejudice of websites. To uncover such goal, a literature review was conducted in the context of usability to understand the positioning of scholars, and the opinions of both Internet professionals and Internet users were collected to assess their perspective towards the identified behavioral shift, to align if these three stakeholders are working in the same direction with respect to Internet access.

1.1. Research context

Statistical data has been revealing the increasing use of SM platforms and MA, showing that the access to the Internet has been made through these solutions, that implicitly end up by influencing the use of Websites.

SM is taking over the Internet experience and the way people decide to navigate on the Internet. In top online destinations ranking, SM platforms outperform at number one (Hodis et al., 2015), and five of the twelve most visited sites on the Internet are SM platforms (Alexa, 2018).

If we take into consideration that the world's population is 7.6 Billion, 4 Billion are Internet users. The relevance of SM in the world can be seen in Figure 2.
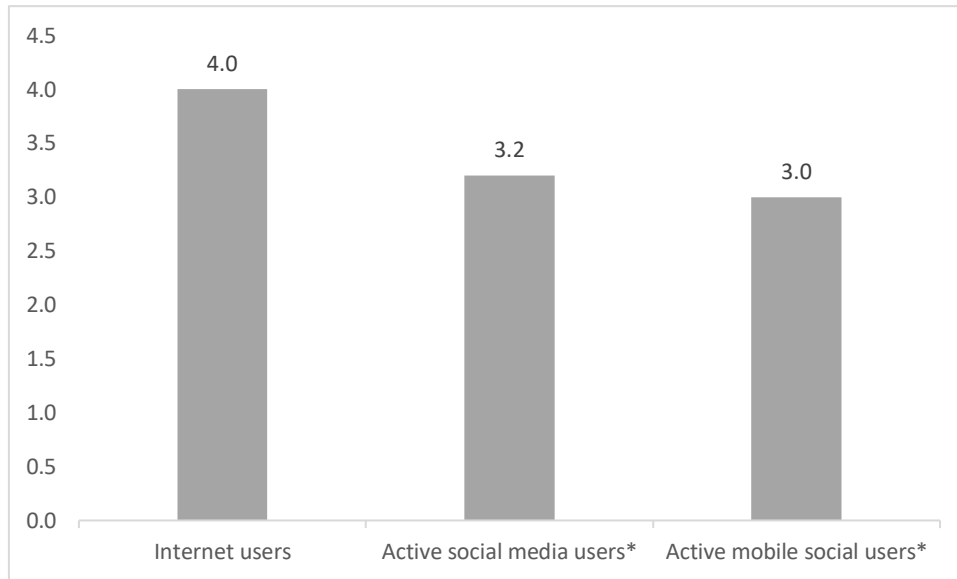
Figure 2 - World's social media monthly active users (in Billions) (2018)

Source: https://www.statista.com/chart/13138/worlds-population-in-relation-to-mobile-internet-and-social-media-users/

About forty-two percent of the global population are active SM users. Facebook alone has over 2 Billion active users (Stats, 2018a). Social commerce has already an important share in the U.S. market. 18.2% of U.S. Internet users have made purchases directly from the SM platform (Statista, 2018d), and worldwide, the trend is continuously growing (Figure 3).
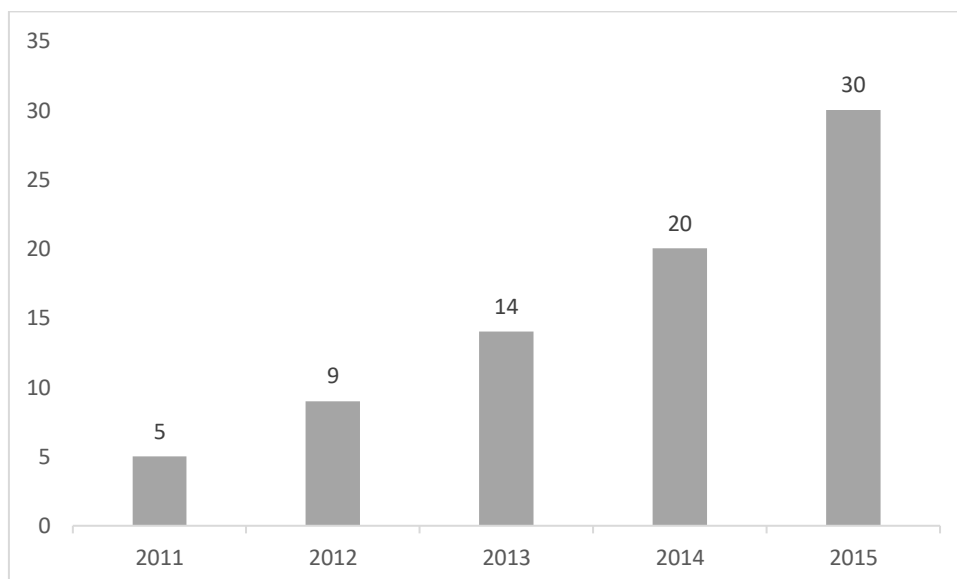
Figure 3 - Social commerce revenue (in Billions of U.S. dollars) (2014)

Source: https://www.statista.com/statistics/251391/worldwide-social-commerce-revenue-forecast/

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Regarding MA, there has been a proliferation of these applications among mobile devices.

In the two major MA stores, Google Play and Apple App Store, there are more than two million MA (Figure 4), giving the feeling of there-is-an-app-for-that (Xu, Manuel, Fleisch, & Ilic, 2016), and only ninety percent of mobile time is spent on MA and ten percent browsing (Alliance, 2017).
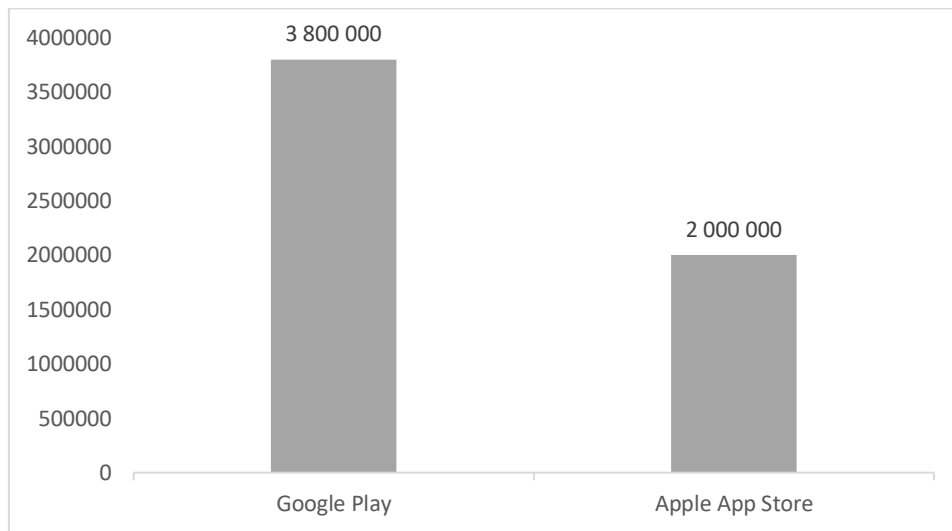
Figure 4 - MA available in Major App Stores on the first quarter of 2018 (2018)

Source: https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/

The average number of apps installed on a smartphone is 35 (Google, 2018), it is the fastest growing segment of downloadable software market (G. Lee & Raghu, 2014) and it is predicted that in 2022 there will be 258.2 Billion downloads worldwide (Figure 5). This data suggests that this market is growing and turning MA an indispensable part of a user routine (Shen, 2015). In January of 2018, the most downloaded non-gaming apps from Google Play Store were Facebook, WhatsApp and Google (Statista, 2018c).
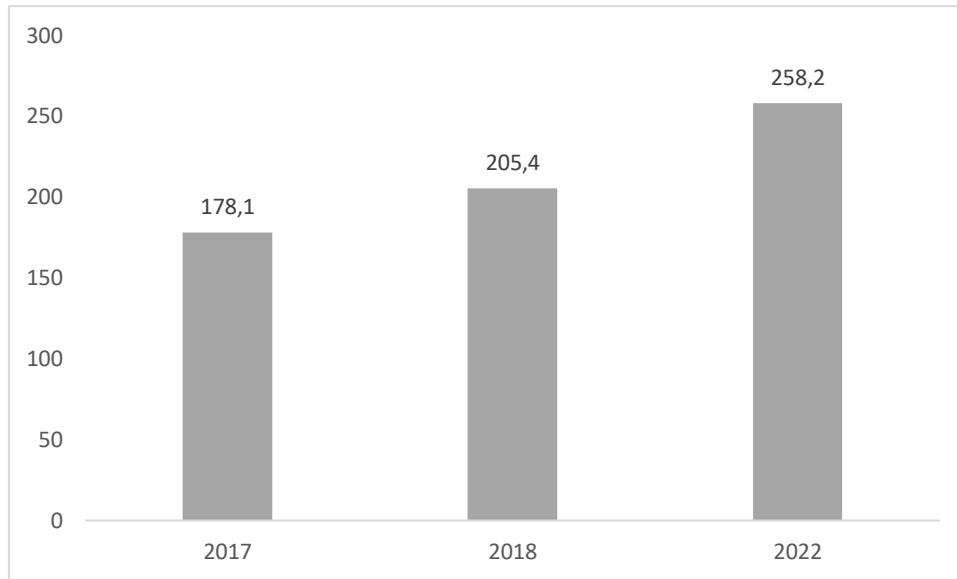
Figure 5 - Number of MA downloads worldwide (in Billions) (2017)

Source: https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/

In this context, users have been changing their behavior, shifting the access to the Internet by a myriad of technological platforms.

To outline this behavior change, consider the following scenario:

On my Facebook news feed, I find a post from a friend about his vacations in London, and while reading wonderful comments from other friends who had been there before, I feel compelled to visit London. Since I live in continental Europe, I started to take care of all the necessary arrangements for my stay. To find a place to rent, I use Airbnb MA. To find the best deal to fly and make the respective flight reservation, I use Hopper MA, and the air transportation MA allows me to make the check-in on the previous day of departure. In London, I use Uber´s MA or Spinster SM platform to move around the city. To find the best and closest places to eat, and read others' opinion, I use TripAdvisor SM platform, and to know where the best places to visit are and to purchase the tickets I use London Pocket Guide MA.

This hypothetical, but perfectly real, scenario reveals the plausibility of Internet users to choose SM platforms and MA in their daily lives to access the Internet, rather than using a website.

To understand this phenomenon, this research project aimed to examine the shift in users' behavior when it turns to Internet access, by understanding the academia, professionals', and users' viewpoint. So far, academia has not provided any research to understand this phenomenon occurring in the Internet.

To achieve this goal, data was collected through a literature analysis to understand academia perspective, and unstructured interviews to explain professionals and user's point of view. For the academia perspective, Scopus database was the source to find the most relevant articles to support the literature review, while to understand professionals' perspective, unstructured questionnaires were conducted through LinkedIn professionals' SM platform. Users were contacted straightforwardly via email to comprehend their point of view. Collected data was be analyzed through a Text Mining approach for a comprehensive analysis and search for hidden information or patterns (Moro, Cortez, & Rita, 2015).

1.2. Objectives

To uncover the aim of this project, we divided it in three stages with the following specific objectives:

- **Scholars**: Summarize the fields where usability research has been focusing their efforts in the dimensions of Institutional Websites, SM and MA, and suggest promising directions for future studies
- **Professionals**: Understand the professionals' point of view towards the use of retail websites, SM and commercial MA in their online strategy, and what is influencing the increasing use of SM and commercial MA instead of retail websites
- **Users**: uncover what Internet communication channel consumer prefer, within the options retail website or Social media / social mobile application, and why do they prefer such platform.

1.3. Methodology and data analysis

To undertake this study, the following methodology was used. Data was collected though a literature analysis, informal unstructured interviews were applied through LinkedIn SM platform to Internet professionals, and the collection of data of Internet users was also made by the application of an informal unstructured questionnaire conducted through email.

For data analysis, the "*R*" statistical software (https://cran.r-project.org/) was used to apply the TM technique. TM can be referred as the search for hidden information or patterns on large amounts of textual data (Ngai et al., 2009). "R" is a free software to perform statistical computation and graphic construction. It provides a myriad of packages for data analysis and is supported by a vast online community (Cortez, 2014)

1.3.1.First stage: Academia perspective

The aim of this stage was to summarize the fields where usability research has been focusing their efforts in the dimensions of IW, SM and MA, suggesting promising directions for future research. Data was collected through Scopus database using peer-reviewed articles from 1994 to 2018, related to SM, MA, and Websites Usability. The final result were 302 articles from Q1 (WoS) that were analyzed through a TM approach for a comprehensive analysis and search for hidden information or patterns (Moro et al., 2015). This technique analyzed the articles and crossed the information with a previously created and validated dictionary of terms related to SM, MA and IW, reducing the terms of the dictionaries to a common term and generate the document-term matrix (DTM). The dictionary allowed to have some organization of the produced information, maintaining the scope of the study. The DTM provided each terms' frequency and the number of articles in which they appear, in order to produce a categorization which can help to build a body of knowledge (Moro et al., 2015). Afterwards, the use of topic modeling allowed to discover a set of topics that often appear together on a document or a large set of documents (Hu et al., 2014; Wang & Blei, 2011). Topic Modeling used the matrix as its input and provided conclusions through grouping articles into the most relevant topics and presenting research directions (Moro et al., 2015) (Figure 6).
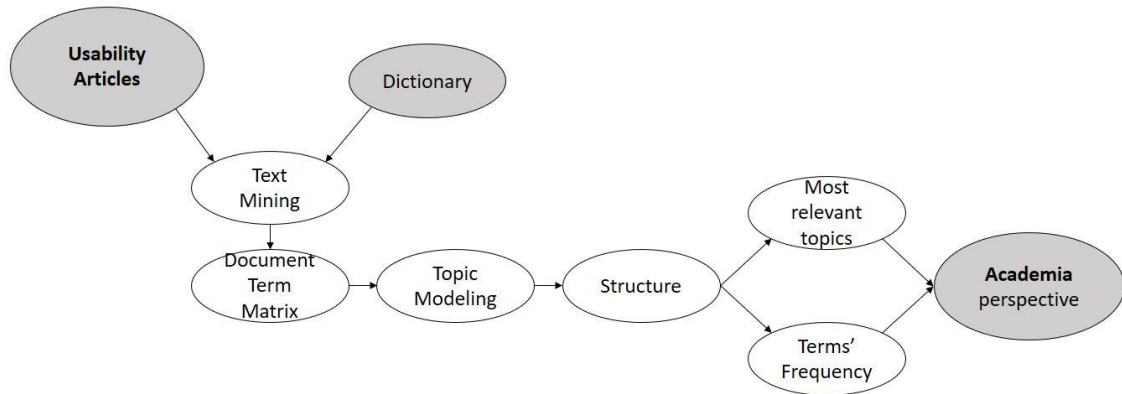
Figure 6 - Stage one method

1.3.2. Second stage: Internet professionals' perspective

On the second stage, the aim was to understand the professionals' point of view towards the use of retail websites, SM and commercial MA in their online strategy, and what is influencing the increasing use of SM and commercial MA instead of retail websites.

Having the aim set, informal unstructured interviews were applied to Internet professionals. 127 professionals answered the informal unstructured interview and a substantial amount of data was collected. Data was analyzed through the TM technique, as it was on stage one, but in this case, no dictionary was used (Figure 7). The interviews were applied in the professional SM platform LinkedIn in specialized Internet groups (e.g. the group Digital Marketing: Social Media, Search, Mobile & More, with more than 231.000 subscribers).
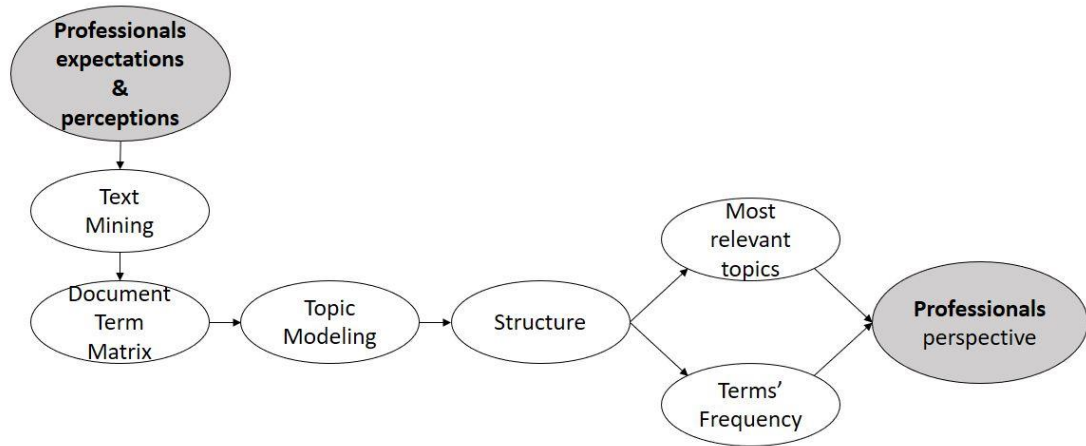
Figure 7 - Stage two method

1.3.3. Third stage: Internet users' perspective

For the third stage, the aim of this paper was to uncover what Internet communication channel consumers prefer, within the options retail website or social MA / SM platform, and what are the reasons for their choice.

To uncover the defined aim, informal unstructured interviews were conducted to Internet users. The informal unstructured interviews were conducted through email to Internet users and 770 users provided their perspective towards the use of retail websites, SM and MA. The same method of stage 2 was used to analyze the collected data (Figure 8).
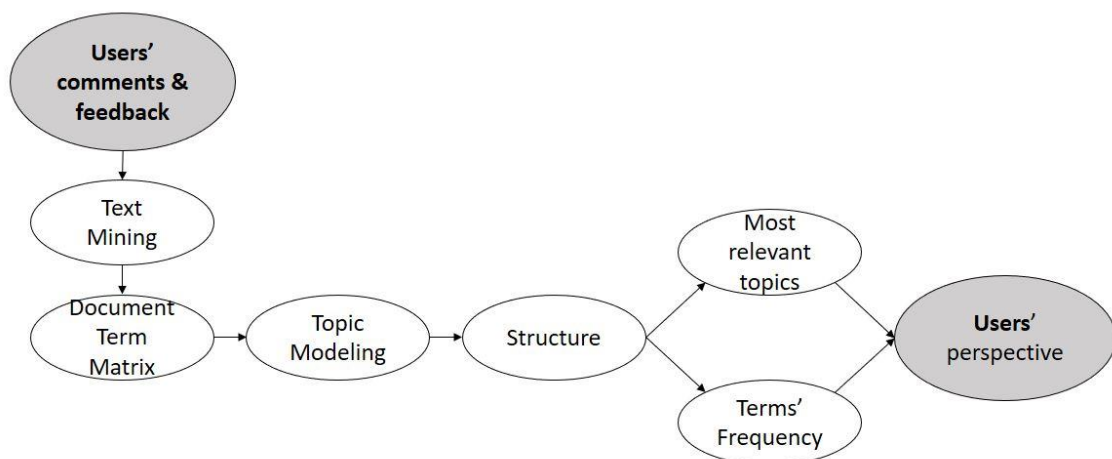
Figure 8 - Stage three method

1.4. Contributions

The three stages resulted in an important conceptual contribution about academia, professionals and users' points of view. Through the momentum associated with such recent and ever evolving technologies, we have contributed with recommendations on how to align researchers and professionals toward meeting user experience, and a description, summary, critical evaluation and current state of the knowledge regarding the actual changes in the Web. The execution of an intensive review of identified articles to reveal the researchers focus, and the perspective of professionals and users towards the use of websites, SM and MA, can be used as an immediate reference for other researchers in this area. Overall, the contributions are significant. A summary of contributions is shown in figure 9.

Scholars
- Gap in Marketing and Nutrition;
- Trend on the usability technology of SM;
- Health and medical fields reveal a major development;

Contributions

Theoretical
- Impact of the behavioral change on Websites
- State of the art concerning the use of Website, SM and MA;

Managerial
- Strategies must be readapted according to the age of the company's target
- SM is used to access to ratings, reviews, and recommendations;

Professionals
- Website will maintain its prevalence;
- Resilience to set SM in the center of the online strategy;
- Content quality will influence the use of Website;

Users
- Younger generations prefer SM and MA;
- On the long run, SM and MA will prevail;
- Utilitarian characteristics influence the use of MA;

Figure 9 - Contributions

1.5. Thesis outline

This thesis is organized in five chapters. Chapters two, three and four include the independent research conducted to find the general conclusions of this study, which were submitted to indexed journals. The summary of each chapter is as follows:

Chapter 1 - Introduction

In this chapter, it is introduced the relevance and importance of the Internet worldwide in a general way, revealing characteristics that made Internet fundamental, how it has penetrated in the everyday life of users and companies and changed the behavior of those who use it. A brief introduction to websites, SM and MA and how they evolved over time. The rationale for the research context is provided as it is the research problem. In the end of the chapter, the methodology and data analysis of the study is revealed.

Chapter 2 – First stage: From institutional websites to social media and mobile applications: a usability perspective

This chapter presents and discusses a literature analysis to uncover the convergent points of the state of the art usability studies between the dimensions Institutional website, SM and MA, and unveiled gaps and trends according to the identified behavioral change.

Chapter 3 – Second stage: Is this the beginning of the end for retail websites? A professional perspective.

The second study, presented in chapter 3, reveals the use of retail websites, SM and commercial MA in an online strategy, the place and relevance of each platform in such strategy, and their opinion concerning the behavioral change in the point of view of Internet professionals

Chapter 4 – Third stage: Could social media and their mobile applications be killing retail websites?

In this chapter, the third study is presented. The opinion of Internet users concerning their options regarding the use of retail websites, SM and social MA to search for a product or service is discussed.

Chapter 5 - Conclusions

Finally, general conclusions are discussed in Chapter 5, highlighting recommendations of how to align academia and Internet professionals toward meeting the user expectations, theoretical contributions, managerial contributions, future research, and finishing with bibliography used as support for this thesis.

Chapter 2: From institutional websites to social media and mobile applications: a usability perspective

2.1. Introduction

Empowered by the Web 2.0, the Internet is the main communication medium which provides a bidirectional correspondence, allowing interactivity between the user and the object of its attention, and providing control to the user. Forums, newsgroups, discussion lists, or simply the exploration of a website, enable constant bidirectional relations, even if asynchronous.

Twenty-four hours per day, year after year, smartphones, Internet, SM and MA are changing our behavior considerably. New behavioral patterns are emerging based on the intensity of information channels which surround us. SM platforms, such as Facebook and Twitter, have supplanted the traditional website (Nah & Saxton, 2013), and consumers prefer to share their thoughts and experiences through SM instead of using websites (Yan et al., 2016). There are more than one MA for every occurrence of our life (Xu et al., 2016) and MA have exceeded the role of websites on sales (He & Liu, 2017). Beyond facts, statistical evidence reinforces a paradigm change. About forty percent of the worlds' population are SM active users (Statista, 2018e), SM platforms outperform being at the top online destinations (Hodis et al., 2015), five of the twelve most visited websites on the Internet are SM platforms (Alexa, 2018), ninety percent of the time spent on a smartphone is using a MA (Alliance, 2017), and by 2020 it is predicted that there will be 258.2 Billion MA downloads worldwide (Statista, 2018a), revealing how indispensable SM and MA are on the users' daily life (Shen, 2015). These evidences suggest that users, confronted with the possibility of choosing between an IW or a SM / MA, tend to choose the latter option.

Usability is a human computer interaction pivotal concept and emerged as a key domain in Information Systems (IS) research due to its potential to offer different points of view and aptitudes   (Wagner et al., 2014). According to the International Standards

Organization, usability is defined as the "*effectiveness, efficiency, and satisfaction with which specified users can achieve goals in particular environments*" (Chow, Bridges, Commander, & Figley, 2014). Usability is the ease of use and learnability of a human-made object such as a tool or device. It is the degree to which a software can be used by specified consumers to achieve quantified objectives with effectiveness, efficiency, and satisfaction in a quantified context of use (Lewis, 2014).

Usability research has developed efforts to understand the influence of several characteristics that influence usability of technology and design (Table 1). Technology refers to stability and performance of the IS, while design creates an environment that allows the user to positively interact with the IS (Koehler & Mishra, 2005).

Table 1 - Technology and Design usability characteristics

Usability	Characteristic	Article
Technology	Consistency	Ku, Chen, and Zhang (2013)
	Minimal download delay, response time	Palmer (2002)
	Speed, error recovery, reliability, control, error prevention	Huang and Benyoucef (2013)
	Performance, screen resolution	Zhou (Zhou, 2011)
	Efficiency	Alnawas and Aburub (2016)
	Productivity	Hsu and Lin (2016)
	Connectivity, consumption rates, error rate, memorability	Harrison, Flood and Duce (2013)
Design	Clarity, ease of reading, arrangement of information, layout	Ku et al. (2013)
	Simplicity, appearance, aesthetic	Huang and Benyoucef (2013)
	Navigation	Cuddihy and Spyridakis (2012)
	Graphics and colors, interface	Hernández, Jiménez, and Martin (2009)
	Interactivity	Yu and Kong (2016)
	Visual appeal	Chen, Huang and Davison (2017)

Source: Own Elaboration

The most important factors that influence consumer decisions to reject an IS are lack of usability of those technologies (Khasawneh & Kornreich, 2015), making users to feel frustrated with the absence of usability principles. The principles that enhance usability have influenced users towards a different path when it turns to Internet access (Kortum & Bangor, 2013). IW, SM and MA are IS that users tend to use to find relevant information about products and services (Huang & Benyoucef, 2015; Hudson & Thal, 2013; McDowell et al., 2016), and are used as a business card and point of contact in the virtual world (Rekik & Kallel, 2011). From this stand point, it is possible to infer that usability is a key concept that influences the user, and the achievement of a higher efficiency, efficacy and satisfaction of the SM and MA led to the identified behavioral

change, revealing the propensity of users to choose these platforms instead of IW to find relevant information, turning IW less relevant in the online context.

Considering the impact that usability has on the acceptance of IS, the aim of this paper is to summarize the fields where usability research has been focusing their efforts in the dimensions of IW, SM and MA, and to suggest promising directions for future studies. There are various factors highlighting the significance and convenience of such review of the literature. First, the field of usability applied in the dimensions of IW, SM and MA has seen a growing number of publications, yet a careful review of existing work is absent. The progress of a determined field depends largely on review articles. Literature reviews are fundamental to create a sustainable evolution in a field study (Webster & Watson, 2002). Second, a literature analysis allows researchers to align their studies towards the identified trends and gaps, and highlight areas where a plethora of research in a determined field reveals itself saturated (Webster & Watson, 2002). Finally, research so far did not consider the identified behavioral change to clarify an alternative research point of view (Rowe, 2014), and lacks a roadmap in terms of usability. Evaluating existing literature can prompt to a better understanding of the state of the art of the three dimensions, but it additionally distinguishes patterns in the development of the areas themselves. This literature review presents the analysis of 302 full-text scientific papers (153 articles from IW usability from 1994 to 2018, 80 articles from SM usability from 2002 to 2018, and 69 articles from MA usability from 2007 to 2018) through TM to offer the current research trends in IW, SM, MA usability contexts, find patterns of information from the collected data, and translate them into valuable knowledge to uncover opportunities for further research and future applications.

2.2. Framework

In this section, we present the state-of-the-art of the IW, SM and MA usability context research.

2.2.1. Institutional Website usability

An IW can be defined as the sum of related web pages under a single Internet domain under the control of the company manager (Aksakalli, 2012). The global performance of

an IW relies on a set of features and elements. Albeit several trials to develop a Website evaluation method, there is not yet an approach or standard which evaluates an IW. The evaluation always depends on its nature and objectives (Salavati & Hashim, 2015). Its quality is influenced by the dimensions system quality, information quality and service quality (Lin, 2007; Zhou, 2011). IW interactivity, informativeness, security, responsiveness, trust and perceived usefulness have the most statistically significant effects on user satisfaction and intention to use (Herrero & San Martín, 2012; Lin, 2007). Researchers suggest several approaches to evaluate IW based on quality, content, customer acceptance and satisfaction (Salavati & Hashim, 2015).

A long line of research exists that examines the understanding of IW usability. Previous studies examined the characteristics that enhanced IW usability (Table 2) in contexts such as business, demography, education, health and marketing, enhancing substantially the understanding of website usability. Papers such as the ones by Gregory, Meade, and Thompson (2013) and Eveleth, Baker-Eveleth, and Stone (2015) in the e-recruitment context found that usability plays also an important role in forecasting positive attitudes toward an organization. The effect of age on IW usability is also discussed by Wagner et al. (2014), concluding that age has impact on performance and satisfaction. From the education IW usability perspective, academia has developed know-how concerning the interaction techniques (Oh, Robinson, & Lee, 2013), and motivations for the use of web-based learning resources (Mohammadi, Abrizah, Nazari, & Attaran, 2015).

Table 2 - Sample of Institutional Website usability studies in diverse contexts

Context	Specific context	Article
Business	Loyalty	Casaló, Flavián, and Guinalíu (2008)
	e-recruitment	Gregory, et al. (2013); Eveleth, et al. (2015)
	B2C	Éthier, Hadaya, Talbot, and Cadieux (2008)
	Internet banking	Yoon and Steege (2013)
	Trust	Pengnate and Sarathy (2017)
Demography	Older users	Chattaraman, Dwon, and Gilbert (2012)
	Age impact	Wagner, et al. (2014)
	Generation Y	Bilgihan (2016)
Education	Interaction technique	Oh, Robinson and Lee (2013)
	Classroom instruction	Mohammadi, et al. (2015)
	Web-based education	Choi and Bakken (2010)
Health	eHealth accessibility	Martins, Gonçalves, and Branco (2017)
	Electronic health record	Fritz, Balhorn, Riek, Breil, and Dugas (2012)
	Disease management	Davis and Jiang (2016)
Marketing	Advertise	Bittner and Zondervan (2015)

Source: Own Elaboration

2.2.2.Social Media usability

SM can be defined as a technological platform founded under the Web 2.0 principles, where users have the power to change its dynamic by introducing user-generated content (Chung, Andreev, Benyoucef, Duane, & O'Reilly, 2017; Grange, 2018a). The participation on SM platforms involve social communication, building reputation, building career opportunities and generating monetary revenue, thus providing several benefits (Ngai, Tao, & Moon, 2015). SM has been used for accessing shops, search for a place (e.g. TripAdvisor, Foursquare), to be updated (e.g. BBC news, Facebook page), look for a rating of a product (e.g. Amazon), search for an answer, question or advice (e.g. Quora), educational content (e.g. Wikipedia), listen to music (e.g. Spotify), watch videos (e.g. YouTube), share photos (e.g. Instagram), follow interests (e.g. Pinterest, Tumblr), find friends (e.g. Facebook), chat with friends (e.g. Twitter, WhatsApp), professional purposes (e.g. LinkedIn), among other interests.

Previous SM usability research has identified several contexts in which it has been subject of analysis (Table 3). From a business perspective, social support leads to higher job search efficacy (Fieseler, Meckel, & Müller, 2014), utilitarian value has a positive effect on purchase intention (Shang, Wu, & Sie, 2017), and perceived value has a positive correlation on information search (Chung & Koo, 2015). Within the demography context, teenagers' user experience influence their decision to purchase in a social virtual world (Mäntymäki & Salo, 2015), while perceived usefulness has more impact on grandchildren than on grandparents on SM for communication family purposes (Tsai, Chang, & Ho, 2016).

Table 3 - Sample of Social Media usability studies in diverse contexts

Context	Specific context	Reference
Business	Purchase Intention	Shang, et al. (2017)
	Relational outcomes	Risius and Beck (2015)
	Social support	Fieseler, et al. (2014)
Demography	Digital natives	Mäntymäki and Salo (2015); Kim, et al. (2017)
	Family communication	Tsai, et al. (2016)
Education	Digital literacy	Choi and Behm-Morawitz (2017)
	eLearning	Sandars and Goh (2016)
Health	Victimization	Sorenson, Shi, Zhang, and Xue (2014)
	Information exchange	Lin and Chang (2018)
	Interactive technologies	Shoup et al. (2015)
	Mindfulness	Laurie and Blandford (2016); Hong, Tsai, Fran-Chiang, and Hwang (2016)
	Surveillance	Mandl et al. (2014)
Marketing	Brand community	Kaur, Dhir, and Rajala (2016)
Nutrition	Weight management	Laranjo, Lau, Martin, Tong, and Coiera (2017)
Physical Activity	Increase physical activity	Caperchione et al. (2014)

Source: Own Elaboration

2.2.3. Mobile Application usability

MA is a software that can be downloaded by and run on mobile devices, such as tablets or smartphones, with a native language of a specific platform (Franko & Tirrell, 2012). MA came with the first iPhone, preloaded as default applications (Apple, 2007), and when App Store was launched MA became very popular among Internet users. With the progress of mobile technology, namely smartphones and tablets, the adoption of MA changed the way we work and interact (Gurtner, Reinhardt, & Soyez, 2014; Hsiao, Chang, & Tang, 2016) and its increasing use is supported by statistical evidence (Statista, 2017a, 2017b).

The application of usability guidelines from other technologies on MA are fruitless given their characteristics differ from others, but a less probability of failure can be achieved by developing a MA that is user-friendly, easy to learn and more effective on the task performance (Kortum & Sorber, 2015; Nayebi, Desharnais, & Abran, 2012).

The diversity of research on MA usability dimension has provided insights concerning its use in several contexts (Table 4). Within the Education environment, contextual technical aspects influence the choice of MA for learning purposes (Sarrab, Elbasir, & Alnaeli, 2016), and the perception of enjoyment influences the use of gamification for education purposes (Fitz-Walter, Johnson, Wyeth, Tjondronegoro, & Scott-Parker, 2017). Within the Physical Activity context, usability plays a relevant role to the MA increasing usage

and influences the maintenance of health behavior change (Casey et al., 2014; Kirwan, Duncan, Vandelanotte, & Kerry Mummery, 2012). From the demography research perspective, usability stimulates older users to use MA (Gao, Zhou, Liu, Wang, & Bowers, 2017).

Table 4 - Sample of Mobile Application usability studies in diverse contexts

Context	Specific context	Article
Business	User experience	Cuadrado and Dueñas (2012)
	Productivity	Schooley, Walczak, Hikmet, and Patel (2016)
Demography	Older adults	Gao et al. (2017)
Education	Learning services	Sarrab, et al. (2016)
	Gamification	Fitz-Walter, et al., (2017)
	Student satisfaction	Rueda, Benitez, and Braojos (2017)
Health	Monitoring systems	Kolar, Burger, Hammerle, and Jenetzky (2014); Triantafyllidis et al. (2015); Passardi et al. (2017)
	Electronic health records	Vedanthan et al. (2015)
	Patient guide	Yoo et al. (2016)
	Disease management	Lamprinos et al. (2016)
Nutrition	Weight management	Matthews et al. (2017)
	Food measurement	Liu et al. (2016)
Physical Activity	Increase workout	Casey et al. (2014)
	Monitoring	Kirwan, Duncan, Vandelanotte, and Mummery (2013)

Source: Own Elaboration

Usability characteristics have been playing an important role towards the use of IS, influencing users to choose one platform over the other. This research aims to resume the stand point in the IW, SM and MA usability fields where researchers have been setting their efforts to find trends and gaps and suggest directions for future research.

2.3. Materials and methods

For this study, a set of criteria was defined to find the most-peer review journals from IW, SM and MA usability domains, and to collect the data. The approach used encompassed journal selection, article selection, TM, and classification of topics.

2.3.1. Journal selection

To select the relevant publications, the emphasis was set on finding the most influential peer-reviewed journals (Q1 Web of Science - WoS) on the researched dimensions. Scopus was chosen to find relevant literature about the relationship of IW, SM and MA, since it

is one of the most widely accepted bibliographic databases where relevant publications are indexed. The keywords used to create the three queries were collected from the literature (Table 5) to eliminate the inherent subjectivity associated to a query.

Table 5 - Search queries

Scope	Query	Source (adapted from)
Institutional Website	("website" OR "web site" OR "web browser" OR "internet site" OR "web page") AND	Fernandez, Insfran, and Abrahão (2011)
Social Media	(social media" OR "social network site" OR "online communities" OR "social computing" OR "virtual communities" OR "web 2.0) AND	Ngai, et al. (2015)
Mobile Application	("mobile app" OR "mobile application" OR "mobile phone app" OR "mobile phone application" OR "smartphone application" OR "smartphone app" OR "smart phone application" OR "smart phone app" OR "mobile device application" OR "mobile device app" OR "tablet application" OR "tablet app") AND	Zapata, Fernández-alemán, Idri, and Toval (2015)
Usability	("usab*" OR "understandab*" OR "learnab*" OR "operab*" OR "attractiv*" OR "user experience")	Zapata, et al. (2015)

The queries consisted of a Boolean expression using AND/OR between the dimension and usability keywords, implying that any article should contain at least one dimension keyword and one usability keyword. Search was performed in January of 2018. The search steps and results can be observed in Figure 10. On the first step, keywords associated with "literature review" were added to find literature reviews from each domain. On the second step, a search refinement was applied, providing 142 IW usability literature reviews, 75 usability SM literature reviews, and 52 MA literature reviews. After the analysis of each literature review, were selected only literature reviews that provided the list of articles that supported the review (stage three), revealing two literature reviews for each dimension. From the list of articles that supported the six literature reviews were selected the Q1 Web of Science journals (fourth stage), revealing the most influential peer-reviewed journals. The final list comprised 14 journals for IW usability, 81 journals for SM usability, and 54 for MA usability, which were established as the sources for this study.
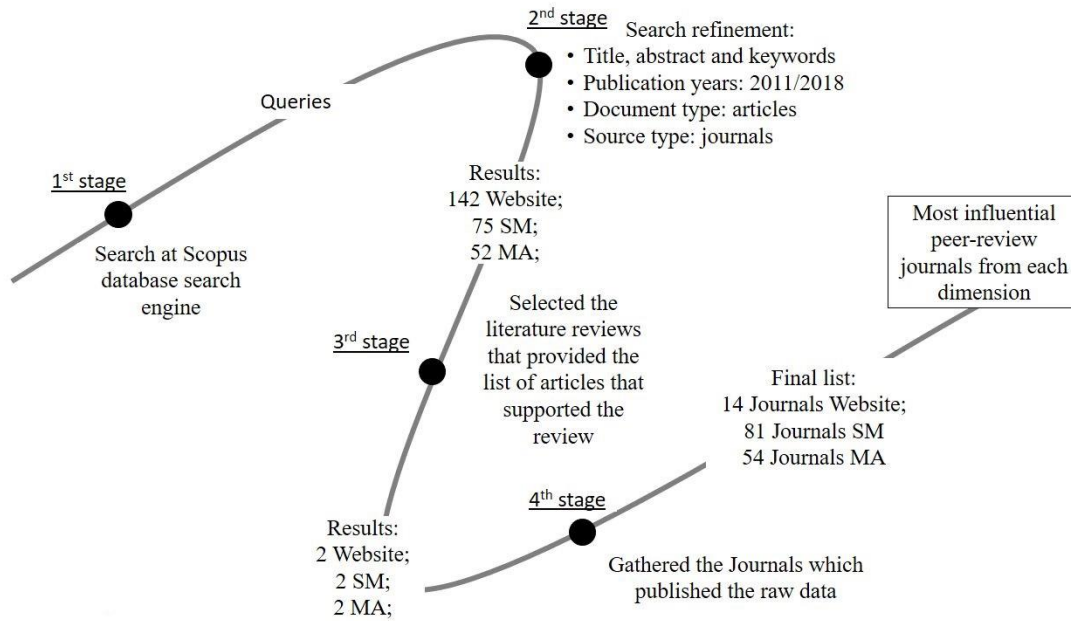
Figure 10 - Steps to find the most-peer review journals

To find the corpus for this study, the search query was again applied, but without the literature review keywords, and restricted to the most influential peer-reviewed list of journals. The outcomes provided an aggregate of 309 articles (156 for IW, 83 for SM, and 70 for MA). A manual analysis detected duplicates that were eliminated and led to a final dataset of 302 articles (153 for IW, 80 for SM, and 69 for MA) from 18 journals. Table 6 provides the number of articles per journal.

Table 6 - Search results

Institutional Website		Social Media		Mobile Application	
Journal	Articles	Journal	Articles	Journal	Articles
Journal of Medical Internet Research	71	Journal of Medical Internet Research	28	Journal of Medical Internet Research	26
Computers in Human Behavior	44	Computers in Human Behavior	24	International Journal of Medical Informatics	13
International Journal of Medical Informatics	14	Plos One	12	Plos One	7
IEEE Internet Computing	12	International Journal of Information Management	4	BMJ Open	4
Electronic Commerce Research and Applications	4	Decision Support Systems	3	Computers in Human Behavior	4
Journal of Systems and Software	4	BMJ Open	2	Journal of Biomedical Informatics	4
Journal of Biomedical Informatics	3	Journal of the American Informatics Association	2	IEEE Pervasive Computing	3
ACM Computing Surveys	1	American Journal of Public Health	1	Communications of the ACM	2
		Electronic Commerce Research and Applications	1	IEEE Communications Magazine	2
		International Journal of Medical Informatics	1	British Journal of General Practice	1
		Health Education and Behavior	1	Frontiers in Psychology	1
		Medical Teacher	1	Health Education and Behavior	1
				IEEE Journal of Biomedical and Health Informatics	1
Total	153	Total	80	Total	69

Journal of Medical Internet Research and Computers in Human Behavior where the major data sources for this research, uncovering their overwhelming position for each dimension. Through the analysis of Table 6 most journals are narrowly focused on health and medical area, suggesting major developments within these areas.

2.3.2. Text mining for literature review

To have some organization of the produced information and to maintain the scope within a manageable list of terms, three dictionaries were defined, one for each dimension (IW, SM, and MA), integrating a list of terms of one or more words (n-grams). By contemplating n-grams (Moro & Rita, 2018), the system can introduce some setting through the blend of a set of words (e.g., "social media"). The criteria to assemble and validate the dictionaries, reducing the inherent subjectivity, were as follows:

- The 302 scientific articles' keywords provided the list of relevant terms.
- The keywords were grouped in clusters to reduce similar concepts into a common term.
- With the possibility of adding or deleting terms, a panel of 11 independent multidisciplinary experts (Table 7 and 8) analyzed the produced dictionaries, validating them.

Table 7 - Panel of experts - Researchers

Researchers	Expertise
Fisher, C. (PhD student), Uppsala University	Management Control, Business Intelligence, Social Media
Fortes, N. (PhD), Instituto Politécnico de Coimbra	E-commerce, Marketing, Management, Education
Guerreiro, J. (PhD), ISCTE-IUL	Marketing, Education
Moro, S. (PhD), ISCTE-IUL	Business Intelligence, Data and Text Mining, Education
Rita, P. (PhD), ISCTE-IUL	Digital Marketing, Consumer Behavior, Tourism
Santos, T. (PhD), Faculdade Motricidade Humana	Sports, Management

Table 8 - Panel of experts - Professionals

Professionals	Expertise
Abílio Vales, Chão do Prado Clinic	Medicine - General Practitioner
Bruno Ribeiro, Almafit	Sports – Personal Trainer
Christian Fisher, Econnects GmbH	Social Media Manager
Fernando Gonçalves, Montepio Bank	Software Project Management
Pedro Oliveira, Brand Gallery	Design
Rita Morais, CMPOH Clinic	Nutrition

TM can be alluded as the search for shrouded information, patterns or trends, on large amounts of data (He, Zha, & Li, 2013; Ngai, Xiu, & Chau, 2009). Full-text, excluding the reference section to guarantee that no term was captured from any publication title cited in the article, was analyzed permitting a full text evaluation of term frequencies. TM includes several steps of work over the collected raw text, such as converting all words in lower case, ensure that stemming is applied, i.e. reducing similar words into a common term (e.g., "web site" and "websites" are reduced to "website") according to the dictionary (Moro et al., 2015).

"R" statistical software was used to conduct the TM technique. The R tool provides an open source platform for conducting data analysis through a myriad of packages developed by an enthusiastic community (Cortez, 2014). Specifically, for the tasks underlined in this study, two packages were adopted, the "tm" for extracting terms into the document term matrix, and the "topicmodels" for producing the topics summarizing the findings.

Table 9 presents the validated dictionaries for IW, SM, and MA domains (some of the similar terms were omitted to save space).

Table 9 - Dictionaries for the three dimensions

| Reduced term | Similar terms or from the same domain | | |
	Institutional Website	Social Media	Mobile Application
business	internet recruiting, internet recruitment, e-commerce, electronic banking	business implications, business model, business value, social commerce	N/A
communication	multimedia, eWOM	communication, C2C communication, mass media, television	N/A
demography	adolescent, aging, baby boomer, demographics	older adults, teenager, gender, gender differences	adolescent, adolescents, aging characteristic factors, children
design	designers, interface design, inclusive design, clarity, navigation, arrangement of information, appearance	design, user-centered design, simplicity, interface, interactivity, visual appeal, layout, aesthetic	user centered design, design science, participatory design, ease of reading, graphics, colors
education	bereavement education, classroom instruction, continuing medical education	academic performance, education, education technology, higher education	digital literacy, education, formative evaluation, mobile learning
health	alzheimers disease, amyotrophic lateral sclerosis, asthma	cognitive deficits, cognitive training, case management, asthma, clinical	visual impairment, basic life support, bls, cancer prevention, cpr
innovation	automated testing, natural language processing, test-driven development	absorptive capacity, natural language processing, open innovation	N/A
marketing	postmarketing, online marketing, e-marketing, emarketing	internet marketing, advertising, advertising value, brand awareness	N/A
mobile device	cellular phone, iOS, smartphone, mobile development platforms	cellular phone, smartphone, mobile devices, mobile phone, iOS	cellular phone, mobile device, mobile computing, mobile phone, smartphone, iOS
nutrition	macronutrients, micronutrients, hypertension, salt intake, sugar, celiac disease	obesity, overweight, hypertension, salt intake, sugar, celiac disease	dietary intake, nutrition, obesity, overweight, diet, nutritionist
physical activity	exercises, motor activities, physical activities, workout, fitness	training, sport, formal physical activity, informal physical activity, sports	exercise, motor activity, physical activity, physical fitness
technology	computer security, biobanking, bioinformatics, information system, consistency, error prevention	digital music, gps location, information technology, podcasting, download delay, resolution, error rate	automatic capture, communication technology, computers, gamification, performance, control

2.3.3. Classification of topics

To accomplish a format that allows a deeper analysis, topic modeling was applied. Topic modeling provides a structure that gathers articles in order to allow profound scrutiny and discover terms that often appear together in a document or in a large set of documents (Guerreiro, Rita, & Trigueiros, 2016; Santos, Rita, & Guerreiro, 2018) For modeling purposes, the latent Dirichlet allocation (LDA) algorithm was chosen, as it is the most popular topic modeling technique. By supplying as input the document term matrix, it provides an integrated overview of the body of knowledge by grouping articles on the most relevant topics (Amado, Cortez, Rita, & Moro, 2018; Moro & Rita, 2018). Such model empowers to break down the relative pertinence of each term utilizing the beta (β) distribution value, which depicts the relationship between the theme and the given term (Calheiros, Moro, & Rita, 2017). This structure can help recognize which topics are catching more consideration from researchers and discover gaps for future research. The LDA product is a tridimensional table incorporating topics, terms, and articles distributed through the defined time-frame. Thus, for each topic it is conceivable to acquire a measure of its connection to one of the word reference terms through the β distribution. Likewise, for each article it is conceivable to check which topic it suits better (Calheiros et al., 2017; Canito, Ramos, Moro, & Rita, 2018). The LDA model is considered one of the most important probabilistic models in widespread use today (Moro et al., 2015). The three most critical terms for portraying every topic as stated in the β distribution were considered.

2.4. Results

The analysis involved the study of the topics obtained by running LDA through the gathered data. For each topic, there is always a dominant term, with a β value that matches it to closeness to that topic. A β closer to zero indicates a stronger connection between the term and the topic. The terms "Technology" and "Design" from Table 9 were included to contextualize the focus of research in each domain.

2.4.1.Institutional Website usability results

Table 10 presents the correlation between the most relevant topics for IW usability. The results for the number of articles published between 1994 and 1996 were zero and these columns were excluded for space enhancement purposes. Beginning in 1997, four time-frames were created.

Table 10 - Relevant topics for Institutional Website usability

Topic	#	1st term		2nd term		3rd term		1997 / 2002	2003 / 2008	2009 / 2013	2014 / 2018
		term	*β*	*term*	*β*	*term*	*β*				
1.	8	Communication	0.65	Marketing	1.50	Design	2.16	0	1	1	6
2.	29	Design	0.38	Mobile Device	1.35	Technology	3.31	2	6	7	14
3.	11	Physical activity	0.64	Technology	1.64	Nutrition	2.55	0	0	5	6
4.	14	Business	0.22	Technology	1.97	Design	3.65	0	3	6	5
5.	64	Health	0.08	Technology	3.13	Communication	4.69	10	12	23	19
6.	27	Technology	0.54	Education	1.49	Design	2.75	4	3	10	10
							Total	16	25	52	60

On the first topic, "Communication", "Marketing", and "Design" are matched with 8 articles. "Communication" and "Marketing" have a significant low β value, 0.65 and 1.50, respectively. "Design" has a high β value (2.16). These results provide evidence that the relation between the terms communication and marketing with the topic are strong, and that the usability characteristics of design is under the focus of communication and marketing.

Topic number two provides consistent β values between the three terms meaning its solid connection. "Design" has a significant low β value (0.38), followed by "Mobile Device" (1.35) and "Technology" (3.31), revealing that both design and technology usability characteristics are relevant within the research of the mobile device context to optimize IW satisfaction, efficacy and efficiency.

The third topic provides a significant low β value for the dominant term, "Physical Activity" (0.64), and a close affinity with the second and third terms, "Technology" (1.64), and "Nutrition" (2.55). The technology usability characteristics are understood as relevant for the domains of physical activity and nutrition.

There is a strong correlation between the terms of topics one, three and six, considering their β values. Besides "Technology" and "Design", that are part of usability concept, "Communication" is the most represented term in Table 10, with two matches revealing the importance of usability principles for researchers in the IW technology and design knowledge development to enhance communication, such as electronic word of mouth and online reviews (Chen, Nguyen, Klaus, & Wu, 2015). A total of seven out of ten areas have findings on the technology characteristics of IW usability, although four areas revealed interest of researchers in the design characteristics of usability. "Demography" and "Innovation" do not have representativeness within the most relevant topics.

The topic most represented by means of published articles, with 64 papers, was topic 5. The distribution along the years of topic 5 had a continuous growth of published papers since 1997 with a peak in the time-frame 2009/2013, with 23 articles.

In general, a trend has started in 1997 with the growing interest of researchers for the characteristics that highlighted the usability principles of IW in assorted contexts. The highest period with the most papers published was in 2014/2018, with 60 articles published. In fact, there are almost three times the number of articles published in comparison with the first time-frame.

2.4.2.Social Media usability results

The correlation between the most relevant topics, is presented in Table 11.

Following the approach of Moro et al. (2015), to assist the visualization of this table, time-frames were created.

Table 11 - Relevant topics for Social Media usability

Topic	#	1st term		2nd term		3rd term		2004 / 2008	2009 / 2013	2014 / 2018
		term	*β*	*term*	*β*	*term*	*β*			
1.	8	Business	0.43	Technology	1.78	Innovation	1.88	0	3	5
2.	3	Physical Activity	0.31	Technology	1.99	Business	2.94	0	2	1
3.	6	Marketing	0.09	Communication	2.94	Business	4.06	0	1	5
4.	8	Demography	0.06	Design	4.22	Technology	4.31	0	2	6
5.	29	Health	0.08	Technology	3.57	Education	4.43	0	9	20
6.	8	Design	1.19	Mobile Device	1.44	Technology	1.71	0	1	7
7.	8	Technology	0.94	Communication	1.10	Education	1.52	1	1	16
							Total	1	19	60

On the first topic, with 5 matching articles, "Business" has a significant low β value (0.43). "Technology" and "Innovation" terms have low β value, 1.78 and 1.88 respectively, implying that there is a close relation between the terms and the topic, acknowledging the development and findings in the usability technology setting of business and innovation fields.

Topic number five, with 29 matching articles, has "Health", as the term with the closest relation with the topic. This term has a significantly low β value (0.08), albeit second and third terms, "Technology" (3.57) and "Education" (4.43), had a significant higher β value, distancing the relation between these two terms and the topic, providing evidence of the technology usability principles in the fields of health and education.

The topic with most matching articles is number five, with 29 articles. "Health" (0.08) has a strong correlation with the topic, albeit the second and third terms, "Technology" (3.57) and "Education" (4.43), have a significant higher β value, distancing their relationship with the topic. The topic with the highest correlation between the terms and the topic is number seven. The terms "Technology", "Communication" and "Education" have a significant low β value showing a strong correlation.

Excluding "Technology" and "Design", that belong to the usability context, the most referenced term is "Business", with 3 matches, suggesting the research of usability in the business contexts, namely at social commerce (Moore, Raymond, & Hopkins, 2015). Seven out of nine areas have developments in the SM usability in the context of technology. Demography and Mobile Device have significant breakthroughs on the usability characteristics of design. From the list of terms of Table 9, "Nutrition" do not show evidence of having relation with any of the most relevant topics.

The time-frame 2014/2018 provided the highest contribution to the results of Table 11 with 60 articles. The interest for this topic has highly increased after 2014.

In general, the interest in SM satisfaction, efficiency and efficacy aspects have been considerably growing. From one article in the time-frame 2004/2008, there was an abrupt growth to the time-frame 2009/2013, and another to 2014/2018. This interest might be connected to the boom and widespread of SM platforms, promoted by the development of Web 2.0 technologies who allowed the increasing speed of the Internet, higher broadband, ease of use of web applications and social commerce (Zhou, Zhang, & Zimmermann, 2013).

2.4.3. Mobile Application results

The correlation between the most relevant topics and the corresponding terms that best characterize them is presented in Table 12. To assist the visualization of this table, three time-frames were created (i.e., 2010/2012, 2013/2015 and 2016/2018).

Table 12 - Relevant topics for Mobile Application usability

Topic	#	1st term		2nd term		3rd term		2010 / 2012	2013 / 2015	2016 / 2018
		term	*β*	*term*	*β*	*term*	*β*			
1.	4	Demography	0.46	Design	2.22	Health	2.28	0	2	2
2.	13	Technology	1.01	Design	1.31	Physical Activity	1.40	2	7	4
3.	38	Health	0.12	Technology	3.16	Mobile Device	3.24	2	17	19
4.	14	Mobile Device	0.18	Technology	2.40	Education	3.22	4	5	5
							Total	8	31	30

The first topic, with 4 matching articles, provides evidence that "Demography" (0.46), "Design" (2.22), and "Health" (2.28) have a positive correlation with MA usability studies. This is the topic with the most consistent β values between the three topics, meaning a robust correlation between the terms and the topic, revealing developments on the health and demography fields to understand which design characteristics have influence on the MA usability.

Topic number three, with 38 matching articles, has "Health" as the dominant term with a significant low value (0.12). "Technology" (3.16) and "Mobile Device" (3.24) have high β values, providing evidence that their connection to the topic is not so strong. This is the topic with the most matching articles, revealing breakthroughs in the fields of health and mobile device in terms of technology characteristics that influence MA usability.

In the MA research, usability characteristics of technology has been researched in a great variety of contexts, since it is the core and most referred term within the four topics. Design characteristics of MA usability have been under the focus of researchers in the areas of demography and health. Physical activity has been under the scrutiny of researchers on the design and technology characteristics of MA usability. From the list of terms of Table 9, there is no evidence of any developed efforts from the researchers to evaluate usability aspects of MA in the "Nutrition" context.

Considering the number of articles per time-frame, topic 4 provides evidence of a trend. This is the topic most represented by means of published articles with 38 papers, and the distribution along the years shows a prominent growth between the first and second time-frames. The time-frame 2016/2018 has already overcome the number of papers of the previous period. However, it needs to be highlighted that the application of the query was in January of 2018. This data confirms the increasing interest and a trend around this topic.

In general, a trend started in 2010 with the growing interest of researchers for MA usability. The time-frame with most papers published was in the second time-frame, with 31 articles, but again it is important to highlight that the search query was applied on January of 2018. Comparing the number of articles published on the three time-frames, there are three times more articles published in the last time-frame than on the first.

2.5. Discussion

Through the analysis of the Venn diagram presented on Figure 11, it is observable that Education, Health, Mobile Device and Physical Activity have received attention from the three studied dimensions, providing valuable knowledge in these domains.
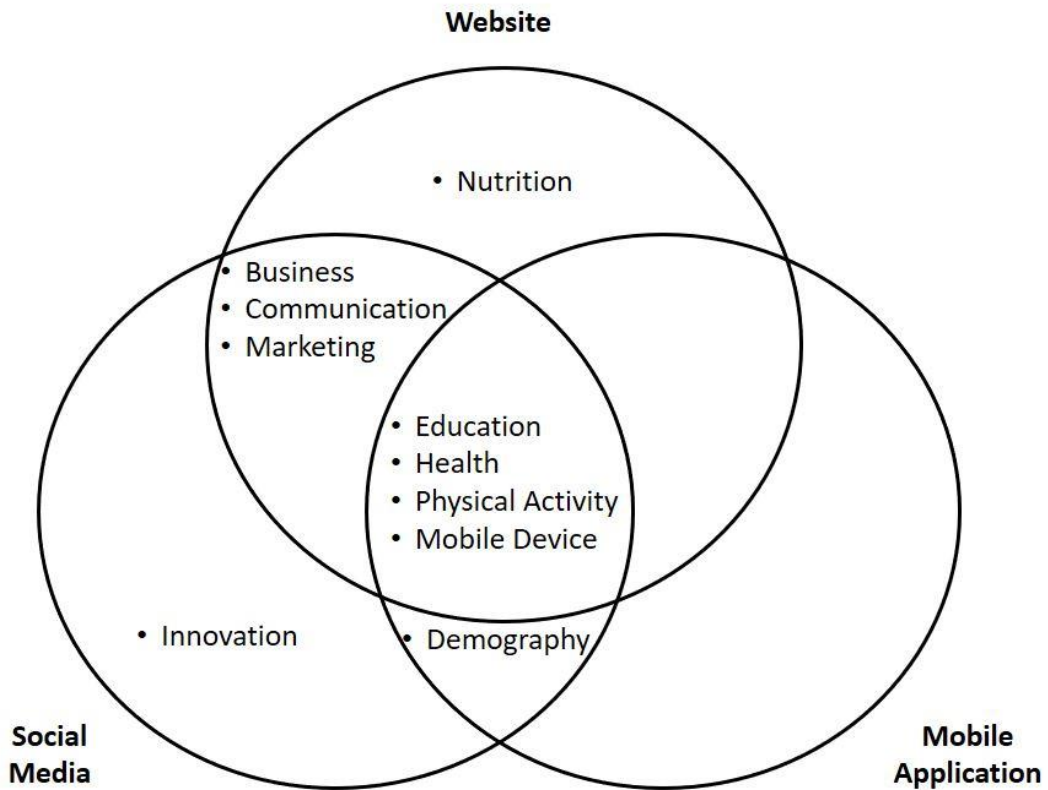

Figure 11 - Website, Social Media, and Mobile Application usability dominant fields

A deeper analysis of the tables 10, 11 and 12, provided detailed results concerning technology and design settings in each context (Table 13).

Table 13 - IW, SM, and MA literature trends and gaps

	Institutional Website		Social Media		Mobile Application	
	Technology	Design	Technology	Design	Technology	Design
Business			TREND	GAP	GAP	GAP
Communication		TREND	TREND	GAP	GAP	GAP
Demography	GAP	GAP	TREND	TREND	GAP	
Education	TREND	TREND	TREND	GAP	TREND	GAP
Health		GAP	TREND	GAP	GAP	
Innovation	GAP	GAP	TREND	GAP	GAP	GAP
Marketing	GAP	TREND	GAP	GAP	GAP	GAP
Mobile Device	TREND	TREND	TREND	TREND	TREND	GAP
Nutrition	TREND	GAP	GAP	GAP	GAP	GAP
Physical Activity	TREND	GAP		GAP		

Within the IW usability research, this literature analysis has shown that the core topic of this dimension is "communication", demonstrating that academia has been focusing its knowledge concerning IW usability on the articulation and balance between technology and design of the IW for communication purposes. An IW has been used as a privileged channel to contact the audience or target (Taddeo & Barnes, 2016). However, a careful analysis revealed that recently the focus of the academia has been in the design usability characteristics setting, unveiling a trend in the areas of communication, education, marketing and mobile device, with research gaps in the areas of demography, health, innovation and nutrition. Research of IW technology usability setting has been considered in several contexts beyond communication, namely, business, education, health, marketing, mobile device, nutrition and physical activity. The areas of education and mobile device are those that reveal a trend in the technology and design settings. In general, in the research in IW, usability started between 1997 and 2001 with 16 articles, but throughout the years the interest has been increasing, revealing a trend, with sixty articles published between the years 2014 and 2018.

Regarding SM usability research, results show that there are major developments in the technology setting. There are seven trends out of nine technology research areas, and seven gaps out of nine design research areas. The demography and mobile device areas are considered trends in both technology and design settings. However, for marketing and nutrition, both are underdeveloped in the considered research settings (technology and design). Marketing through SM platforms can promote consistent interactions between business and their target, building stronger relationships (Sashi, 2012), so that the understanding of usability principles in the technology and design settings can improve those relations by transforming the message via arranging the information in a clearer and

easier way to read (Ku et al., 2013). In general, SM usability has revealed to be a trend. From 2009 to 2013 nineteen articles were published, however, from 2014 to 2018, there were sixty papers published in peer review journals.

Within MA usability studies, there are two trends in the technology setting (education and mobile device) and zero in the design setting. The application of a user-centered design is strongly recommended (Holzinger & Errath, 2007), and the research of the usability principles of design can result in the creation of a suitable user interface that can meet the consumers' needs. It is understandable that the areas of business, communication, innovation and marketing expose gaps in the literature since the collected keywords from the 69 articles used to build the MA dictionary (Table 9) have not provided any keywords in the designated areas. Nowadays, having the possibility of making commerce through MA, namely in-app transactions (Hsu & Lin, 2016), it is crucial to understand what characteristics can augment the efficiency, efficacy and satisfaction for commerce purposes. Also, the absence of research on the aspects that improve usability in marketing through MA, suggests a gap in the literature. Therefore, it is essential to uncover usability of advertising in MA to understand their impact on companies for a sustainable and profitable future, especially on business models that depend solely on ads (Vallina-Rodriguez et al., 2012). In the technology setting, the analysis points to gaps in the literature of research of demography and health. It is relevant to find the usability technological characteristics that enhance the use of MA to mitigate the difference of adaption that different generations find when they are confronted with the use of mobile technologies (Gao et al., 2017; Zhang, Lu, & Kizildag, 2017). Moreover, in the design setting, the areas of education and mobile device also reveal gaps in the literature. To help the issue of learning by using MA, the understanding of design usability principles can become fundamental to make easier and satisfying for students the recording of lessons learned (Fitz-Walter et al., 2017; Rueda et al., 2017). A gap in the technology and design setting is found in the field of nutrition. Consumer health and nutrition technologies are important drivers to manage health of patients and reduce costs (LeRouge, Van Slyke, Seale, & Wright, 2014). A general analysis highlights a gap in the technology and design setting in several fields of research in the MA dimension. This gap should have to do with the fact that the interest of researchers started from 2013 forward, suggesting a recent focus of research and the beginning of a trend.

From a field analysis perspective, it is important to highlight that marketing and nutrition have not been under the radar of researchers in terms of usability on SM and MA dimensions. The use of SM and MA for nutrition purposes need to be further studied to provide knowledge to academia and nutrition professionals to use these platforms to reach their audience and provide efficiency, efficacy and satisfaction, and in the end, better results (Tobey & Manore, 2014). Usability research on marketing will reveal knowledge that can create a positive environment to amplify brand communities (Kaur et al., 2016).

2.6. Conclusions

This paper reviewed an extensive amount of existing IW, SM, MA usability studies and outlined roadmaps for future research in ten specific research fields. Figure 2 and Table 13 details each research area outcomes revealed by performing this literature review.

Based on these findings, there are three aspects that should be emphasized. First, two critical themes to study are the usability areas of Marketing and Nutrition that revealed themselves underdeveloped in terms of research in the three dimensions (e.g., IW, SM and MA). It seems that researchers are not giving the deserved attention towards these two areas considering their relevance in the mentioned dimensions (Brug, Oenema, Kroeze, & Raat, 2005; Tsai & Cheng, 2012). Second, the results of this research highlighted that the amount of papers associated to the health and medical fields suggest a major development in these areas, and researchers have revealed a growing interest on the usability technology of SM, while usability of technology and design of MA is less focused. By mentioning these deficiencies in the literature, researchers can redirect their work by opening new paths of research. Third, it is recommended that researchers take in consideration the new behavioral change that is occurring on the Internet to assure that the relevance of their work meets the identified behavior path and the user experience.

From a future research point of view, it would be useful for the research community to map the efforts of the IW, SM, MA usability to provide a thorough analysis on each researched field.

This review has limitations that need to be stated: the search scope was restrained to Scopus database and Quartile 1 ISI Web of Knowledge; regardless of the use of 11

multidisciplinary experts for dictionary validation purposes, there will always be an inherent subjectivity at the dictionary definition.

This intensive review of identified articles makes an important conceptual addition to academia, by revealing the research focus, trends and literature gaps in IW, SM and MA usability research and suggesting the future path for academics. Researchers can use this valuable knowledge as an immediate reference from where to develop their work.

Chapter 3: Is this the beginning of the end for retail websites? A professional perspective.

3.1. Introduction

The world is becoming more digital and interconnected. It is undeniable that technologies have become more present in all aspects of human life – social, professional, personal – affecting the society, culture, and way of life. This revolution is leading us to the so called fourth industrial revolution (Bloem et al., 2014), such is the impact in all dimensions of everyday life, in a worldwide scale. Through the Internet, we can find a virtual world that becomes more real. The access to the Internet has changed how individuals think, react and behave (Gurtner et al., 2014). Furthermore, it will keep on changing behaviors and patterns when aggregated with the evolution of new Internet based technologies (Anderson & Rainie, 2012; Chen, 2012). Worldwide, over 3 billion people have Internet access (Mashable, 2017) and more than 2 billion people own a smartphone (Statista, 2017d). In one minute, there are 900 thousand Facebook logins, 342 thousand MA installed in smartphones, and more than 750 thousand dollars spent online (Capitalist, 2017).

The Internet is a place balanced by the variety of intentions of those who make use of it, changing according to users' desires and trends, transforming it into a living organism. A new behavioral pattern has been observed on users influenced by the increasing use of SM and MA. Ninety percent of mobile time is spent on MA and ten percent browsing (Alliance, 2017). Forty percent of the global population have an account on a SM platform, where Facebook alone corresponds to over 2 billion monthly active users (Mashable, 2017), revealing a new trend and the fact that websites are no longer the place where most Internet experience happens. Companies have acknowledged these changes that are taking place over the Internet and took measures to follow consumer interests (Aral, Dellarocas, & Godes, 2013; Go & You, 2016). There are companies that have set

SM, such as obsessee.com, or a MA, like Uber, on the center of their online strategy. These companies understood this behavioral change and put all their efforts to be where consumers are and meet their needs and interests, eliminating from the start the possibility of working through a website, or have set the website as a secondary place. A paradigmatic situation is happening with the MA WeChat from Tecent Holdings, the Chinese Internet giant that has a market capitalization of more than 500 billion dollars. WeChat is an ecosystem that acts like a hub gathering other platforms, permitting the access to a set of services such as booking a doctor appointment, pay traffic fines, or call a cab directly from the MA, making unnecessary to leave the MA to perform different tasks. However, there are others who continue to set their retail website as the center of their online strategy.

This study aims to understand the professionals' point of view towards the use of retail websites, SM and commercial MA in their online strategy, and what is influencing the increasing use of SM and commercial MA instead of retail websites. To achieve this goal, 127 Internet professionals were interviewed through the LinkedIn SM platform, which provided the data for this paper. Data was analyzed using a Text Mining (TM) approach for a comprehensive assessment and search for hidden information and patterns (Moro et al., 2015). Through the created knowledge, this paper intents to unveil the positioning of professionals toward the identified behavioral change so that academia and other Internet professionals can understand what is influencing the users' behavioral change that is taking place and that is shaping the current use of the Internet.

3.2. Framework

The literature review, following the main objectives of this paper, is clustered into the topics of Retail Website, Social Media and Commercial Mobile Applications.

3.2.1.Retail Website

A retail website can be used for business communication, perform online transactions, and as a potential client contact. It can be defined as the sum of web pages under an Internet domain that is used to communicate with stakeholders and conduct business

transactions (Aksakalli, 2012), where the manager has the power to control the platform and the content. Worldwide, there are 1,8 billion websites (Stats, 2018b), that have the potential of changing the nature of the business itself by providing access and information to any customer 24 hours/day. A retail website facilitates the access to markets previously considered out of reach, it is a place where visitors find themselves comfortable to interact with the company, and it is usually powerful for online sales. The better the company website, the greater are the chances of success in the world wide web (Hernández et al., 2009).

A retail website is the online front entrance of a company that, if properly designed and conducted by its manager, can spread useful information, decrease operating costs and increase competitive advantage, representing a place that strengthens the bonds with suppliers, retailers and distributors. For these reasons, the main objective of a company by creating a retail website is to improve organizational operations, reduce operational costs, and create benefits through the enhancement of the customer service quality (Hung, Chang, Lin, & Hsiao, 2014).

A retail website plays a crucial role by promoting and developing information exchange (e.g., price related information, pictures, and online customer service), creating and stimulating relationships, business transaction guidance, marketing purposes, promote brand image, and supporting various kinds of electronic business transactions. Therefore, improving the interactivity of the website and managing the information adequately is decisive.

Website quality affects the perceptions, attitudes and behaviors of consumers, and one of the constructs of the website quality is information quality (Hameed, 2017). The credibility of information determines the content quality, and to augment content quality, attributes such as accuracy, informativeness, consistency, orthography, syntax, updated and relevance to consumers, need to be considered and evaluated (Rocha, 2012; Yoon & Occeña, 2015). In the end, content quality enhances customer trust (Seckler, Heinz, Forde, Tuch, & Opwis, 2015). Moreover, content has an important role in the retail website transaction process and to develop a content strategy is fundamental to determine the retail website success. Related to content, there are marketing strategies associated to a retail website, such as inbound marketing, that consists in creating strategies to attract consumers with relevant content (video, stories, image) to reach and convert consumers into long lasting relationships (Bleoju, Capatina, Rancati, & Lesca, 2016), and content

marketing, that dwells in creating relevant and valuable content with the purpose of creating a positive perception towards the brand (Holliman & Rowley, 2014). Retail websites have been shown to be a great support for most marketing activities and considered to be one of the great motivations for a company to launch a retail website (Hung, Ku, McQueen, & Chang, 2012).

Quality of content contributes to brand awareness, when a company is trying to differentiate the brand on the customers' minds, increases awareness, perception and brand differentiation (Hutter, Hautz, Dennhardt, & Füller, 2013).

Although a retail website is used mainly to shop, it also permits to achieve business strategic objectives, and increases competitive advantage (Huang & Benyoucef, 2015). Nevertheless, to enhance the retail website visibility and exposure, it needs to be indexed at an online search engine (e.g., Google, Yahoo), and follow the best practices to be placed on the first search results according to the search engine optimization algorithm (Killoran, 2013), to increase traffic and engagement (Shih, Chen, & Chen, 2013). Another option to place the retail website on the top of the search result page is by investing on search engine marketing (Nabout & Skiera, 2012).

3.2.2. Social Media & Commercial Mobile Applications

The rapid dispersion of SM is leading to new opportunities for organizations to communicate and connect with customers and redefine commerce leading from a product oriented environment to a social and customer-centered one (Huang & Benyoucef, 2013). The participation of users is the core aspect that defines SM. It influences the frequency of customer visits and is empowered when there are high levels of activity on the SM page (Hong, Huang, Lin, & Chiu, 2014). Interaction among users is allowed through the features of communication and sharing services, while the creation of communities is the consequence of the interaction between users (Laroche, Habibi, Richard, & Sankaranarayanan, 2012). The visualization of the characteristics such as photos, interests, dating preferences, friends and networks by other users increases engagement (Halpern & Gibbs, 2013). SM is an innovative tool that surpass and exceed the role of traditional website (Nah & Saxton, 2013).

Given the widespread dissemination of SM, any organization may adopt SM to take advantage of the opportunities that emerge using such technology (Parveen, Jaafar, & Ainin, 2014). Taking the example of Facebook, business pages are free, offer a set of tools for data analysis, are optimized for the Internet, and are as easy to set up as a simple user profile page. The online investment from companies has been increasing over the years, with the aim of establishing relationships and interacting with their targets (De Vries, Gensler, & Leeflang, 2012). SM can be a persuasive marketing tool since customers tend to trust more on comments from other users than traditional marketing strategies (Dutta & Bhat, 2016). The use of SM for marketing purposes, enhances brand loyalty, that in turn leads to a customer higher level of identification with the brand (Erdoğmuş & Çiçek, 2012; Moro, Rita, & Vala, 2016), and increases engagement between the two parties (Sashi, 2012; Yoshida, Gordon, Nakazawa, & Biscaia, 2014). The collection of users' comments and engagement through SM can lead to changes on a company strategy, services or products, promotions, prices, communication channels, and predict market trends (Lepkowska-White & Imboden, 2013; Woodcock, Green, & Starkey, 2011).

The determinants that influence organizations to adopt SM are the existence of competitive pressures, to gain competitive advantages, the alignment of the SM plan with the business plan, and the relevance given by top managers (Martins, Gonçalves, Oliveira, Cota, & Branco, 2016). In small businesses, the factors that affect the adoption are the adopters SM perception and personal characteristics, social influence from peers and/or media, current business performance, and business purposes (W. He, Wang, Chen, & Zha, 2017).

At a business level, assorted qualities at low cost can be associated to SM (Table 14).

Table 14 – Advantages associated to SM

SM advantages	Reference
Access to new customers, build relationships, increase customer loyalty, increase word of mouth	Needles and Thompson (2013)
Educate, empower people, inform	Thackeray et al. (2012)
Collect clients and competitors' data, build and manage reputation, engage with customers	Verdeguer et al. (2014)
Implement marketing campaigns, create brand awareness, increase customer satisfaction, increase sales and revenues	He et al. (2017)

Source: Own Elaboration

SM also enable the existence of social commerce. Social commerce is an evolution of e-commerce, aiming to engage with customers through such platforms (Lin, Li, & Wang, 2017), and integrates B2B and B2C business models to the SM format, taking advantage of its characteristics to enhance customer participation, promote customer and business relationships, increase revenues and influence customers to shop through the social channel (Huang & Benyoucef, 2013; Lu, Fan, & Zhou, 2016).

From the technological stand point, MA contribute significantly to the way people communicate, keep informed, entertained, and consume, permitting information to flow with great efficiency, security and accuracy (Hsiao et al., 2016). This is especially interesting because it is possible to find a MA for every moment of our lives (Xu et al., 2016).

The way for a company to capitalize the investment on a commercial MA is through free, paid or freemium revenue models (Roma & Ragaglia, 2016). Within the free model, ads are the most popular way of creating revenue, while on the paid model, users need to pay to unlock content provided by the MA. At freemium revenue model, users must pay to have access to the MA full content or features, buy products, temporary subscriptions, content or services, eliminate the exhibited ads, or purchase extra lives, coins, and food in games (Hsu & Lin, 2016). At Google Play, paid and free models are equivalent in terms of revenue, whereas the freemium model is considered less effective (Roma & Ragaglia, 2016).

Its technological improvement has created new market segments, having Uber as the top example, changed business models, made possible to companies to approach their customers anytime and anywhere, and it has exceeded the role of websites on sales (He & Liu, 2017). In 2020, revenues via app stores and in-app advertising are expected to generate 188.9 billion U.S. dollars (Statista, 2017e).

A commercial MA is a smartphone downloadable software, written in a native language (Franko & Tirrell, 2012), developed particularly for an organization. It takes the best of the native characteristics of the smartphone operating system and equipment (GPS, camera, geolocation, etc.), with the possibility to integrate wearables, allowing to add characteristics such as 3D or augmented reality. Moreover, the commercial MA is downloaded to the smartphone, which translates to reserve an own space in the device, permitting a better access and to be independent of Internet connection. The possibility

of being synchronized with SM, improves the content diffusion and brand exposure. However, the aim of a company to develop a commercial MA is varied (Table 15).

Table 15 - Advantages associated to MA

MA advantages	References
Brand engagement, communicate brand values, influence customer satisfaction, improve brand image and awareness, marketing research, product innovation	Alnawas and Aburub (2016)
Accessibility, available in an app store, increase sales	He and Liu (He & Liu, 2017)
Access to millennials market, creates revenue opportunities, enhance customer loyalty, increase user engagement, improve operating efficiency, provide control over customer experience, reduce distribution costs	Qin et al. (2017)

Source: Own Elaboration

A commercial MA is designed to collect information about the user behavior, such as access schedules, preferences, recommendations or comments, and with this knowledge it is possible to develop specific campaigns for each user through push-notifications, increasing sales results.

3.2.3. Text Mining

TM is a multidisciplinary field with the aim of extracting information from a significant portion of non-structured textual data, eliminating irrelevant text to find pertinent information, uncovering patterns and hidden data (Moro et al., 2015). TM tools are well suited to automate, refine, and transform business intelligence activities that are traditionally conducted by means of intensive work of manual literature revision in the search for patterns among the data. TM has been used in competitive intelligence, customer management, research, among others. A large amount of studies has used TM to analyze unstructured textual data. For instance, Lee, Jung, and Park (2017) applied TM techniques specifically to sentiment classification analysis in order to understand the relationship between the entropy of review text sentiment and the online word of mouth effects. Guerreiro, Rita, and Trigueiros (2016) analyzed 246 articles using Correlated Topic Model to conduct a literature analysis on cause-related marketing aiming to uncover and summarize the most discussed topics. A total of 11,505 news published on

Google news was analyzed by TM and topic modeling by Canito, et al. (2018) to uncover the differences in alignment between IT companies in terms of big data technologies.

Many published research based on SM feedback used TM to conduct their analysis. An example is the study by Elgesem, Feinerer, and Steskal (2016) that applied topic modeling of the textual data collected from 15,000 blog posts with the aim of understanding how the Snowden affair was discussed online. Another example is the paper written by Guerreiro and Moro (2017) that analyzed Yelp's tips using a support vector machine algorithm to predict the number of fans in the future.

Therefore, the use of TM to conduct unstructured textual analysis has emerged as a powerful tool to draw insightful knowledge on a wide spectrum of problems.

3.3. Method

3.3.1. Data collection

LinkedIn is considered the biggest SM Platform focused on professional and business relationships with over 546 Million users' in 200 countries (LinkedIn, 2018). It has been under the scrutiny of researchers in recent years (Caers & Castelyns, 2011; Dijck, 2013; Zide, Elman, & Shahani-denning, 2014) and users use this platform to maintain a list of professional contacts and share their professional skills on their LinkedIn profile (Papacharissi, 2009). After the characterization of the problem, following commonly procedures used in social sciences, a convenience sample was employed (Gravetter & Forzano, 2016). Data collected from this sample was used as an input to be modeled through TM to provide the searched knowledge. The sample was based on Internet professionals' (Table 16), and this non-probabilistic sample (Zikmund & Babin, 2012) was contacted straightforwardly via the LinkedIn Professional platform to obtain their perspective towards the relevance of websites, commercial MA and SM platforms in their online strategy, and what are the aspects that make users to choose one platform over the other.

Table 16 - Professionals background

Professionals background	Frequency
Online marketing	19
Digital manager	15
Web designer	15
Digital marketing strategist	12
Web developer	10
CEO	8
Online consultant	8
Technology journalist	8
Copywriter	6
Software engineer	6
Lead generation consultant	5
Online business expert	5
Others	10
Total	127

LinkedIn groups were considered the best option to contact Internet professionals', since they gather a community of specialized members from the same line of work, making them easy to find and expecting that they would be willing to discuss subjects related to their expertise. Unstructured interviews were conducted with professionals' who posted articles related to the three dimensions of this study (website, SM and MA) in LinkedIn specialized groups (Table 17). Group members discuss general themes regarding Internet developments, such as hints, strategic plans, techniques, general questions, or digital marketing subjects. After a contextualization, providing statistical evidence of the increasing use of SM and commercial MA instead of retail websites, questions were asked concerning the professional use of such technologies and what do professionals consider to be the main characteristics that motivate consumers to choose one platform over the other. According to their response, further questions were made to maintain the dialogue with the purpose of getting a more detailed opinion.

Table 17 - LinkedIn Groups

Group	Number of followers
Digital Marketing: Social Media, Search, Mobile & More	379,601
Social Media Marketing	1,756,062
Social Media Marketing 2.1	181,098
Search Engine Land	79,066
Social Media Centre of Expertise	605
Mobile Application Community	9,171

A total of 127 Internet professionals provided their opinion towards the use of retail websites, SM and commercial MA in an online strategy, and what is influencing the identified behavioral change. The collection of extensive and detailed opinions provided

a meaningful amount of data, justifying the use of TM for the analysis, in detriment of a manual analysis, and eliminating the subjectivity associated to the latter analysis (Milovic & Milovic, 2012).

3.3.2. Data analysis

Data was analyzed using TM approach that enables analyzing large amounts of data by searching for hidden information, patterns or trends (Ngai et al., 2009). The experiments were conducted through the "R" statistical software (https://cran.r-project.org/). This open source platform provides a solution with packages for data analysis and has the contribution of a vast online community used for support (Cortez, 2014).

The data collected from the 127 Internet professionals provided the corpus for analysis. From the corpus, several steps were conducted, namely, reducing all terms into lower case, removing extra white spaces, applying the stemming technique, meaning reducing all words to their root (e.g., "customized" to "custom"), and eliminating "stopwords" (prepositions, common words, etc.). The final data set provided a total of 4,274 different terms, which aggregated, revealed a total of 20,311 terms.

Afterwards, a document-term matrix (DTM) was created. DTM provides the frequency of a term and the number of opinions in that appeared (Moro et al., 2015). In order to reduce the number of outliers, sparsity was conducted (Guerreiro & Moro, 2017).

From the package of the R software, the topic modeling package, specifically the latent Dirichlet allocation (LDA) was applied to find a set of terms that often appear together on the collected data. Topic modeling provided a structure that organizes the collected data and permits a profound and deeper analysis, finding abstract topics that occur within the text of the interviews (Hu et al., 2014; Wang & Blei, 2011).

Having the document term matrix as input, LDA gathers data on the most relevant topics (Moro & Rita, 2018). LDA has been widely used and considered one of the most important probabilistic tools (Moro et al., 2015). Using beta (β) distribution from each terms of a specific topic, it creates a structure that includes the topics and terms that define each topic (Calheiros et al., 2017). From this structure, it is possible to understand what topics professionals are giving more attention to. This structure encompasses topics, terms and the number of interviews used as sources of a given topic. The correlation

between each topic and the respective term is observed by the β distribution (Calheiros et al., 2017). For a more accurate analysis, the eight most critical terms that represent each topic are presented.

3.4. Results

For the analysis of the interviews, two levels of analysis were conducted. For the first level, the recurrence of terms is exhibited in Figure 12, and for supplementary analysis of the results, packed bubbles (Figure 13) were created to make a visual interpretation of the results.
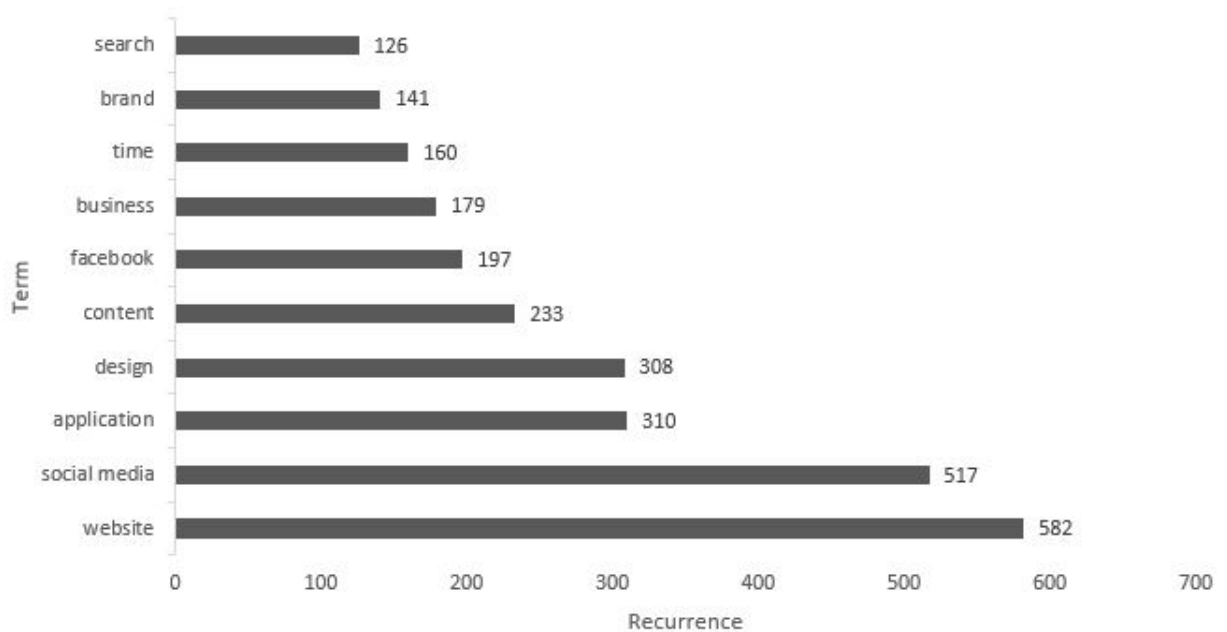
Figure 12 - Most pertinent term recurrence

The data analysis of the 127 respondents provided 4,274 different terms. The aggregated frequency of the 4,274 terms corresponded to 20,311 terms. Figure 11 details the absolute frequency of the 10 most pertinent terms. Through the analysis of this figure, "website" is the most referred term with 582 matches, followed by "Social Media" with 517. In third place comes "application" term with 310 matches. Combined, the 3 top terms aggregate 6.94% of the total. In the following positions are "Design" (308) and "Content" (233). From the sixth to tenth positions are "Facebook" (197), "Business" (179), "Time" (160), "Brand" (141) and "Search" (126). Combined, these last five positions correspond to 3.95% of the total.

The respective packed bubbles (Figure 13) provide an interesting visualization of the results. Clearly, "Website" and "Social Media" stand out from the others, and "Facebook" reveals its importance in the world of SM.
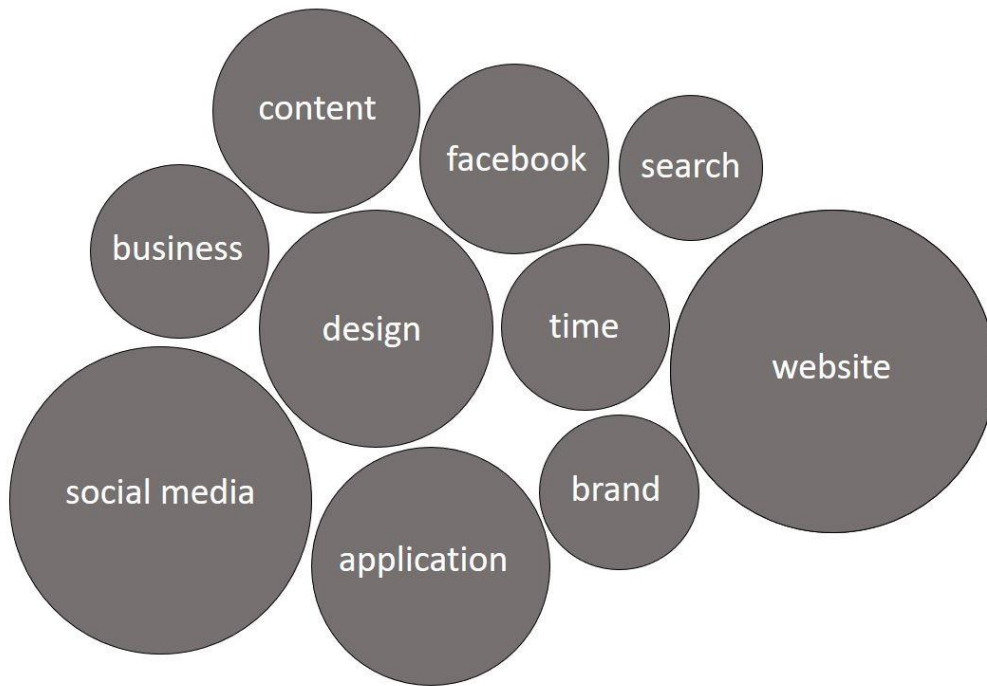
Figure 13 - Packed bubbles for professionals' perspective

In the second level of analysis, the LDA outcome was scrutinized (Table 21). For each topic, a dominant term was revealed and the β value shows how close the term is to the topic. A strong correlation between the topic is reflected by a β value closer to zero.

From Table 18 it is possible to visualize the outcome from the LDA analysis. The number of topics was defined to nine, and the eight terms with greater correlation with the topic were considered for the analysis.

Table 18 - Relevant topics

Topic	#	1st term term	β	2nd term term	β	3rd term term	β	4th term term	β	5th term term	B	6th term term	β	7th term term	β	8th term term	β
1.	15	Website	3.10	Business	3.14	Google	3.60	Search	3.76	Engage	4.65	Information	4.87	Social Media	4.89	Strategy	4.98
2.	10	Application	3.28	Social Media	3.52	Service	3.75	Facebook	3.88	Time	3.97	Easy	4.63	Phone	4.85	Content	4.98
3.	16	Website	3.52	Application	3.56	Success	3.95	Design	4.09	Experience	4.23	Business	4.67	Technology	4.86	Brand	4.95
4.	29	Website	3.27	Content	3.70	Channel	3.95	Professional	4.12	Habit	4.30	Share	4.40	Quality	4.51	Update	4.64
5.	16	Social Media	3.00	Website	3.36	Business	4.05	Control	4.15	Continue	4.53	Algorithm	4.55	Owner	4.69	Message	4.86
6.	15	Social Media	3.11	Website	3.78	Post	3.91	Customer	4.81	Interact	4.88	Traffic	5.00	Content	5.00	Engage	5.02
7.	10	Social Media	3.24	Business	3.62	Traffic	3.74	Brand	3.79	Communication	4.21	Online	4.35	Create	4.41	Marketing	4.88
8.	9	Facebook	3.72	Social Media	3.82	Website	3.93	Strategy	4.07	Application	4.31	Homepage	4.48	Business	4.51	Innovate	4.69
9.	7	Website	3.29	Content	4.17	Project	4.20	Social Media	4.21	Share	4.34	Hybrid	4.69	Strategy	4.86	Static	4.93

On the first topic, "Website", "Business", "Google", "Search", "Engage", "Information", "Social Media", and "Strategy" are correlated with 15 Internet professional opinions. "Website" has a low β value (3.10), and "strategy" (4.98) has a high β values. These results provide evidence that the connection between the terms and the topic is strong, suggesting that Internet professionals indicate that from a business perspective, the center of an online strategy is their retail website because users will continue to use google to search for information that, in turn, will lead them to a website. This result is supported by a web designer opinion: "*People still search on Google and they still trust websites that are in the organic search result. (...) Having a website with proper SEO is always a Win-Win situation*".

For topic two, "Application" has a low β value (3.28), and the term with higher β value is "Content" (4.98). This topic reveals that professionals agree that users are increasingly accessing the Internet through SM and MA, due to the technological developments of smartphones. This is validated by a digital manager that stated: "*Smartphones are an answer to change in user's behavior. People are getting comfortable with their phones, so they prefer everything on phone. (...) All thanks to the technology.*" These platforms are considered to provide a service that saves time to users and the access to content is easier.

Analyzing topic number three, "Website" is the term of this topic with the β value (3.52) closer to the topic. From the analysis of the terms of this topic, Internet professionals understand that the success of the retail website and commercial MA in their business strategy is dependent of a user-centered design and a positive user experience. The opinion of a web designer stresses the result of this topic: "*As vital as responsive web design is (not adopting it is committing digital suicide), it only guarantees that your user can view your page in a mobile device*" and that there is "*switch from web design to experience design*". Another professional highlight that if "*you run a business or deliver value just by taking care of the web channel is naïve at best and harmful at worst*" reinforcing that "*the demand for user experience designers is still on the rise*". A commercial MA complements the service provided by the retail website and gives the feeling to customers of being a technology-driven company, increasing the value of the brand.

Topic four has the highest number of professionals' contributions (29). In this topic, "Website", "Content" and "Channel" are the terms with the closer β values to the topic. This topic reveals that professionals have the opinion that users prefer a retail website due to the force of habit and quality of content, that is found to be professional and updated, following the opinion of digital marketing strategist that stated that "*what really matters is not how you arrange things on a page: it's the content, in terms of a specific user need*". When the content is perceived to have quality, users' usually share it through other social channels.

"Social Media" has the closest correlation to topic five (3.00) while "Website" (3.36) and "Business" (4.05) have higher β values. The terms revealed by this topic are in accordance with the opinion of a online business expert: "*The problem, though, with going for a 'social only' strategy is that you're giving up your entire user base under the control of someone or something that you don't have any power over*". Professionals relegate SM to a secondary place for business because their retail website is owned and controlled by them and provide continuity and clarity of message. They have no control over the SM platforms and every time the search algorithm is changed, it has an impact over their projects.

On the sixth topic, "Social Media", "Website", "Post" and "Customer" are the terms with the closest β values to the topic. From the analysis, it is possible to conclude that Internet professionals understand that SM are platforms to help interact quickly with customers and to help drive traffic to the retail website, adding that users on SM often look at a post and move quickly onto the next post, and in this reality, the quality of the content is what influences the customer to open the post and engage with the company. Following this approach, in one of the collected opinions, copywriter highlighted the importance of having a "*team of people to create valuable, relevant and high-quality contents on a consistent basis*". The same professional reinforced by mentioning that the "*content on a website is used to fuel social media and other online profiles*" and "*can then be shared on social media platforms and mobile applications driving traffic to the website*".

Analyzing topic seven, "Social Media" is the term with a lowest β value (3.24), while "Marketing" is the term with the highest β value (4.88). The top eight terms of this topic reveal that SM is a perfect tool for online communication and marketing purposes and business can take the advantage of these tools and redirect the traffic towards their retail

website through the creation of quality content, that they can control and make the brand stronger and visible. An Internet company CEO affirmed that "*you should be on all the relevant social platforms, but in the end, likes don't pay the bills. Sales do. So, you need to convert them into your own ecosystem so you can leverage that relationship on your terms*".

Topic eight, with nine opinions, has "Facebook" as the term with the lowest β value, followed by "Social Media", "Website" and "Strategy". A technology journalist argued that "*Due to the ever-increasing use of social media attention has drifted from websites*". The result of this topic reveals that the Internet professionals indicate that businesses should use SM to innovate their business strategy, such as using Facebook professional page as their homepage, because users do not think about retail websites anymore and will only use them if a company does not have a commercial MA. A digital manager added that "*Apps and social media have a natural way of connecting people in a way that makes life and taking action to seem easy. Relationships are key to develop and maintain if you are looking for someone to take action. From my observation, several research touch points and personal engagements with businesses on their sales/marketing strategies, this is exactly the competitive advantage apps and social media have over websites. Deeper and faster connections and easier actions to take to obtain a result the user needs. Websites are simply a longer process.*" concluding that "*businesses must evolve and adapt to suit buyers' preferred habits or sadly face extinction.*", confirming the results of topic eight.

Topic number nine highlights the terms "Website", "Content", "Project", "Social Media" and "Share". This is the topic with the lowest number of opinions and reveals that Internet professionals consider that a retail website should be the center of the project strategy and all the valuable content must be shared on all SM pages where the company has presence, creating a hybrid-approach between social, dynamic content and static content. "*Not having a website is like not having a physical address to the office. Nobody will be able to trust the brand without a website. (...). Without a website, it will be difficult for the brand to build trust with the customers*". In terms of content, a copywriter revealed that "*social media platforms and mobile applications are always hungry for valuable and relevant content on a consistent basis to stay useful to their users*". Strategically, the use of SM is used to engage with their target, communicate relevant information and redirect

traffic towards the company website (Culnan, Mchugh, Zubillaga, Uarterly, & Xecutive, 2010).

3.5. Discussion and conclusions

In this paper, 127 unstructured interviews were conducted with Internet professionals who provided their perspective on the relevance of retail websites, commercial MA and SM platforms in their online strategy, and what are the aspects that make users to choose one platform over the other. TM and topic modeling were used to conduct the analysis of such data and provided results of their perspective.

From the analyzed data, Internet professionals revealed that SM is being used to communicate and engage with their target, to conduct marketing activities, such as brand awareness, lead generation, customer acquisition and customer retention, and to drive traffic to their website. According to Needles and Thompson (2013), the use of SM for communication purposes, lead to the creation of relationships, increases word of mouth and customer loyalty, while Holliman and Rowley (2014) argue that digital content marketing is an advantageous mechanism to attain a trusted brand status. Within the existent SM platforms, professionals' outline Facebook as the most important of them all. This understanding reveals to be positive for business since users are spending excessive amount of times in this platform (Tang, Chen, Yang, Chung, & Lee, 2016).

Internet professionals try to influence users' in a positive way towards the brand, product or service by using SM for brand awareness and lead generation. Brand awareness is important when a company is trying to correctly differentiate the brand on the customers' minds (Hutter et al., 2013), while lead generation can boost product and service sales (Inversini & Masiero, 2014). Users have been using SM for communication, knowledge sharing, conversation and collaboration (Huang & Benyoucef, 2015), search for ratings and reviews of products or services (Hajli, 2015) and, from this stand point, the attitude of Internet professionals to use SM to communicate and stimulate engagement by sharing videos and promotion contests lead to positive results, according to previous research (De Vries et al., 2012).

A deeper analysis from the nine most relevant terms per topic reveals six topics that show a point of view towards the use of a retail website, SM and commercial MA in an online

strategy (topics 1, 5, 6, 7, 8 and 9), and three topics revealing the opinion of professionals for the behavioral change (topics 2, 3 and 4). Topics number 1, 5, 6, 7 and 9 are characterized by the opinion of professionals that argue that the retail website must the center of the online strategy, while topic 8 conceals otherwise, meaning that the online strategy should be focused on a SM platform. This is an interesting finding, revealing that most of the topics related to the online strategy support the argument favoring the retail website at the center of the strategy.

Facing the statistical evidence that highlight the behavioral change, Internet professionals reveal resilience to set SM as the center of the business because they have no control over the SM platforms, meaning that every time the platforms' algorithm is changed, there is an impact over their business. Four out of nine topics (1, 5, 6, and 7) reveal the resilience of strategically transforming the online strategy by setting another platform than their retail website in the center, leading business from there. They also believe that the use of search engines to search for information will lead users to a website, highlighting their relevance. However, if the search engine optimization (SEO) and search engine marketing strategies are not well delineated, it can fail to provide benefits (Aswani, Kar, Ilavarasan, & Dwivedi, 2018; Shih et al., 2013). As SM platforms have algorithm changes, so do have search engines. SEO implies the use of techniques that influence the ranking of the website on the search engine webpage when an Internet search is conducted (Shih et al., 2013). Taking this into account, one must be aware that social commerce provide features that reveal retail websites no longer sufficient or satisfying for users (Huang & Benyoucef, 2015).

Despite not many having this opinion, only topic eight, corresponding to opinions of nine professionals, there are those who argue that business should innovate their online strategy by evolving and adapting to the identified behavioral change to suit customers' preferred habits, or else, they will face extinction. They consider that MA and SM platforms are here to stay and consider these platforms as a natural way of connecting people in a way that makes life and taking action seem easy. Social commerce has revealed to be a new business model based on online communities by gathering features of web 2.0 technologies into the electronic business model (Hajli, 2015), while MA provide characteristics that create a different dynamic when compared with other media forms, since they are context-aware, universal and ubiquitous (Gerlich, Drumheller,

Babb, & De'Armond, 2015), offer full control over users experience, leverage engagement and develop a positive attitude towards an organization (Qin et al., 2017).

Topics two, three and four reveal the opinion of professionals concerning the behavioral change. In their opinion, smartphones are responsible for the increasing use of SM and commercial MA due to the speed and easiness to access personalized content, instant updates, and to its user-centered design. A user-centered design is strongly recommended (Holzinger & Errath, 2007) since it can lead to an interface that suits the consumers' expectations and to a positive user experience. Besides these characteristics, the commercial MA has the advantage of allowing the possibility of sharing directly with other SM channels. These results are congruent with previous research (Alnawas & Aburub, 2016; Kang, 2014).

Nevertheless, in the professionals' opinion, users' will continue to prefer retail websites due to the quality of content created by professionals. Quality of content, web design and structure influence customer perception and attitude towards the website quality, as well as satisfaction and willingness to use the website, revealing its importance to the companies' long-term success (Hameed, 2017; Yoon & Occeña, 2015). Their opinion reveals to be positive for the companies' strategy.

According to the identified behavioral pattern, recommendations need to be addressed. Professionals should use SM and MA for social commerce and transactions, take advantage of the actual dynamic that is occurring over the Internet to reach their objectives, and need to let go the necessity of being in control by defining the retail website as the center of the online strategy, following the dynamic revealed by users, meeting their demands to achieve success. According to previous research, the most used SM platforms are Facebook, Twitter, YouTube, LinkedIn, Instagram and Trip Advisor (Salem & Čavlek, 2016).

Data also suggest that retail websites will continue to have relevance in the Professionals' opinion. Following this point of view, professionals should consider retail websites as a hub and redirect consumers to where they like to be, meaning SM platforms and MA, or as an alternative, to create conditions on the retail website similar to those that users find on SM and MA, that allows them to interact, collaborate, add value to the process (Huang & Benyoucef, 2015), and that enhance user experience to create a positive dynamic on the retail website, especially if using a smartphone (Yu & Kong, 2016).

Understanding the user dynamics on the Internet, and following their interests, will make companies to be where their target is, increasing sales efficiency, improving product or service, and increasing their awareness and influence.

Overall, the contribution of this paper is expected to be significant. The collection of professionals' opinions toward the place of retail websites, commercial MA and SM platforms in their online strategy and what are the aspects that make users to choose one platform over the other make a conceptual addition to academia. Scholars can use this valuable knowledge as an immediate reference to conduct research, considering the opinion of Internet professionals of the use of technological platforms on their online strategy. In turn, Internet professionals can redirect their strategies toward the identified behavioral change to better target and communicate with their audience and market segments.

As in any research, limitations need be addressed and be taken in consideration. Only Internet professionals from the LinkedIn groups took part of this study. Nonetheless, the revealed limitation does not put in jeopardy the purpose of demonstrating the professionals' opinion toward their online strategy.

For future research, it would be interesting to conduct this study focusing a particular area of business, product or service, adding an objective criterion, and compare results with these findings.

Chapter 4: Could Social Media and their Mobile Applications be killing retail Websites?

4.1. Introduction

The incredible synergy of millions of people using a common means of communication, the Internet, resulted in new paradigms for organizations to reach their target audiences. New knowledge and technologies are created and at the disposal of those who need them, at a rate never seen before (Canito et al., 2018). The existing information is continuously written and rewritten over and over again by people around the world, making it always up-to-date. Due to changes that have been happening in the digital and technological spheres over the last years, many new tools have emerged and have been disseminated among people and organizations. In this context, it can be observed the growth of SM and their MA (Moro, Rita, & Oliveira, 2018; Rita, Oliveira, Estorninho, & Moro, 2018). Although the online interaction is not something new, these technologies make the global and massive online communications accessible to anyone who has an Internet connection, and add a participation element to this type of communications (Moro et al., 2016).

Nowadays, 3.5 billion people have access to the Internet (Statista, 2017c). From these, 3 billion are SM active users, with an estimated growth of 1 million per day (Mashable, 2017), and these platforms have been revealing characteristics that substitute the traditional website (Nah & Saxton, 2013). Moreover, 5 million MA are available at the major App stores (Statista, 2017b), almost a MA for every circumstance of our live (Xu et al., 2016), 197 billion were downloaded in 2017 alone (Statista, 2018b), and have exceeded the role of websites on sales influence (J. He & Liu, 2017). This statistical evidence reveals the growing importance of SM and MA for users and a new dynamic on users when accessing the Internet.

The plethora of new communication channels created by the emergence of SM and their MA allow consumers to interact with one another, discuss brands and details, and interact with organizations in a simple and easy way (Powers et al., 2012). This behavioral

revolution has led to a change on the consumer decision making process when searching for a product or service and evaluate alternatives (Hudson & Thal, 2013).

Within a sales strategy to attract and capture new clients, companies should take into consideration the four steps that defines the consumer decision journey, that involves problem identification/need, search, evaluation of alternatives, purchase decision and post-purchase evaluation. The journey starts at the consider step where consumers consider a set of brands, then go through the evaluate step where the consumer choose the brand according to their interests, and afterwards, when the final decision is taken, the purchase step finishes the transaction. The process ends at the post purchase experience that can lead to loyalty (Edelman & Singer, 2015). On the consider step, companies tend to take consumers from SM to their retail website; however, on the evaluation step, consumers look for online reviews on SM and MA to check the feelings and experiences of others (Hudson & Thal, 2013). Nevertheless, there are those who continue to use retail websites to search and find relevant information concerning the products or services that they are looking for (McDowell et al., 2016). Retail websites are a place where a consumer can search for information about a product or service, and contact with companies to ask for professional opinion or general information, such as organization information, payment process, price or shipping service, increasing consumers knowledge for the final decision (Hernández et al., 2009). Consumers often visit multiple channels to compare the specification, price of products and read consumer comments, before taking the final purchase decision (Park, 2017). The stages associated to this dynamic are information search and evaluation of alternatives (Galan, Lawley, & Clements, 2015). Taking this into consideration, the objective of this paper is to uncover what Internet communication channel consumers prefer, within the options retail website or SM / MA, and why do they prefer such platform. To uncover the aim of this study, 770 Internet consumers were inquired to understand what they would choose between a SM / MA or a retail website to search for a product or service online and evaluate alternatives, and what were the reasons to make such choice. Text Mining (TM) and topic modeling (see also: Santos, Rita, & Guerreiro, 2018) were used to analyze the collected data and provided the outcome with respect to their opinion.

4.2. Literature review

4.2.1. Retail websites

A retail website can be defined as an Internet site with convergent related web pages that share a common Internet domain, managed and controlled by its owner, with the purpose of conducting electronic commerce (e-commerce) (Aksakalli, 2012). Retail websites and online shops are platforms where Internet consumers can access information regarding a product or service (e.g., pictures, descriptions, price related information), to provide content and tools to promote online sales, and are used mainly to shop (Huang & Benyoucef, 2015). In the context of online transactions, consumers expect to find relevant information clearly presented to facilitate their purchases (Belanche, Casaló, & Guinalíu, 2012).

In the search for a product or service, consumers browse the Internet in search for utilitarian and hedonic value. Utilitarian value is associated with heuristics, goal-oriented behavior, risk reduction strategies, and achievement of information search goals, while hedonic value refers to fun, entertainment and enjoyable aspects of shopping, independently of a purchase occurring or not (Park, Kim, Funches, & Foxx, 2012). Perceived usefulness, ease of use, time, price savings and reliability affect consumer satisfaction (Lee & Kozar, 2006), while perceived playfulness plays an important role influencing consumer use of a retail website, impact behavioral intention and is a motivation for consumers to use a virtual store (Hsu, Chang, & Chen, 2012).

Retail websites need to be a place where consumers feel comfortable when they interact with a company. The better the website, the better the chances for success (Hernández et al., 2009). Success depends of the website quality that has impact on consumer acceptance by influencing consumers impression of the company, their perceptions, attitudes (Chen et al., 2017), enhances trust, which, in turn, has impact on the behavioral intention (Hameed, 2017); it is a vital concept in e-commerce by driving consumers' perceptions towards purchase intentions, but also has impact on consumers' perceived playfulness and perceived flow that, in turn, influences satisfaction (Hsu et al., 2012).

Characteristics such as convenience, cost effectiveness, and control over the service are motivations that encourage consumers' to finish a purchase (Ahmad & Khan, 2017). The aesthetic product attributes displayed on a retail website, such as color, design, or style,

have influence whether consumers just browse or search for information (Park, Kim, et al., 2012). Other characteristics appreciated by consumers are displayed on Table 19.

Table 19 – Retail website aspects valued by consumers

Aspects	Source
Convenience, privacy	Ahmad and Khan (2017)
Content, loading speed, graphics and colors, accessibility 24/7, interface design, response time, up-to-date,	Hernández et al. (2009)
Usefulness, security, reliability	Lee and Kozar (2006)
Trust	Seckler, Heinz, Forde, Tuch, and Opwis (2015)
Ease of use, accuracy, information, usability, visual appeal, navigability	Chen et al. (2017)
Interactivity	Yu and Kong (2016)

Source: Own elaboration

System quality, information quality and service quality, comprising both technical and service components are part of the multi-dimensional construct constituted by website quality. The greater the quality of these three constructs, the higher are the expectations and perceptions of the overall website quality (Hsu et al., 2012), and the greater are the chances of maintaining consumer loyalty towards the company (Chen et al., 2017).

System quality refers to the perception of the overall performance reflecting the speed, ease of use, visual appeal and navigation of a retail website, meaning the overall performance and the degree of consumers' friendliness while browsing a website (Hernández et al., 2009). Information quality reflects the perception of the quality of information, referring to the relevance, sufficiency, accuracy and up-to-date of the information that appears on a retail website. To provide information is one of the main objectives of a retail website. The relevance of the information displayed on a retail website is evaluated by the content quality. Quality of the content is valued by consumers and may lead to more consumer engagement and favorable attitudes toward the content, resulting in greater interactivity (Yoshida et al., 2014; Yu & Kong, 2016). Therefore, it is important to manage information adequately. Service quality comprehends the evaluation of the online service delivered by a retail website, including reliability, responsiveness, assurance and personalization, implying the customers' judgment of the quality of the online service delivered (Chen et al., 2017). In influencing customer online satisfaction and purchase intention, service quality is more important than the other two (Hsu et al., 2012; Lee & Kozar, 2006).

4.2.2.Social Media and Social Mobile Applications

SM and social MA have revolutionized how people interact with each other, which has led to a profound change on companies' role when reaching consumers (Kaplan & Haenlein, 2010; Kim, Wang, & Malthouse, 2015; Wang, Malthouse, & Krishnamurthi, 2015). The main goal of SM use is for communication, self-presence knowledge sharing, idea exchange, conversation and collaboration, and in this environment, consumers have been taking advantage of this dynamic to search for information, create valuable and spontaneous content, and using collective intelligence to make their decisions. In the end, their aim is to be part of a real-time participation by solving problems and sharing information (Huang & Benyoucef, 2015). The advent of this communication channel contributed to the evolution of e-commerce towards social commerce (Hajli, 2015; Lu et al., 2016). Social commerce is a subset of e-commerce and is generated by the use of SM to empower customers to interact on the Internet, focusing on online collaborative shopping, leveraging word of mouth and brand loyalty (Lin et al., 2017). Social commerce led to the creation of new business models using SM to transact their assets or to ask their targets to like and share their comments promoting their products or services, with the expectation of accelerating consumer interaction and engagement (Silva, Moro, Rita, & Cortez, 2018). Unlike traditional e-commerce websites, where consumers interact with the company separately and the message and transaction is controlled by the company, social commerce comprehends a two-way interaction between the company and the customer, involving online communities and user generated content, shifting the control from the company to the customer (Zhang & Benyoucef, 2016). Social commerce provides characteristics that make retail websites no longer sufficient or satisfying for customers. What is expected by consumers is to find features where it is possible to find a social, interactive and collaborative environment, where they have the chance to aggregate value to the process and support problem-solving and decision making (Huang & Benyoucef, 2015).

Consumers are highly influenced by others' opinions, and SM permits the access to the opinion of others way beyond their friends and relatives closed circle, expanding the range of people that consumers trust. Ratings and reviews provide comprehensive information about products or services, helping other potential customers to make a final decision concerning their search, and recommendations and referrals minimize the impact

of consumers when to choose a product or service that they cannot touch or experience (Hajli, 2015). Within this dynamism, electronic Word-of-Mouth has become the primary decision-making process resource, transforming SM as an important source of information collection (Black & Kelley, 2009; Chen et al., 2015), which in turn, through these platforms, it made much easier for consumers to perform the search for a product or service in order to take a decision (Fulgoni, 2014). On SM it is possible to find reviews (e.g. TripAdvisor), ratings (e.g., Foursquare), general information (e.g., Facebook), discounts or coupons (e.g., Groupon), search for a question, answer or advice (e.g., Quora), watch videos (e.g., YouTube), or see pictures (e.g., Instagram), capable of influencing the final consumer.

With the intention to engage in the action of purchasing and for information activities, consumers tend to use a social MA. A social MA is defined as a software application that is written in a native language dedicated solely to a particular social media platform (see also: Nave, Rita, & Guerreiro, 2018), taking the consumer straight to the content already perceived as valuable to him/her (Taylor & Levin, 2014), and where it is possible to find the features provided by the original SM platform but optimized to small screens of mobile devices, such as smartphones and tablets.

Perceived usefulness and compatibility are key factors for using a MA while their usage satisfaction and habitual usage is significantly influenced by social aspects, utilitarian and hedonic values, and the continuance usage is influenced by satisfaction, hedonic values and social perspectives. Satisfaction is the most relevant factor that influences the continuance usage of a MA (Hsiao et al., 2016). However, the influence of interacting with others cannot be ignored. Nevertheless, users with higher levels of satisfaction are strongly motivated to use a MA (Bhattacherjee, 2001).

Consumers tend to choose a MA due to a set of key attributes (Table 20) and are used by consumers for both social and professional reasons (Franko & Tirrell, 2012). MA are more dynamic than other media forms, promoting variability and interactivity, unlike traditional media, are context-aware, multimodal, universal, and ubiquitous, meaning always-on and always-connected. MA are capable of anticipating and reacting to the consumers' preferences within a certain context (Gerlich et al., 2015) and, in the context of online transactions, provide the full control over customer experience and enhance the

level of consumer engagement, affecting positively consumer attitude towards a brand (Qin et al., 2017).

Table 20 - Mobile Application attributes

Mobile Application attributes	Source
Accuracy, convenience, efficiency, feedback, innovation, personalization, search item, speed	Alnawas and Aburub (2016)
Satisfaction	Belanche et al. (2012)
Entertainment, perceived value, productivity, product value, social identification, social influences, social norms	Hsu and Lin (2016)
Education, engagement/disengagement, knowledge, pass time	Gerlich et al. (2015)
Design	Kim, Baek, and Choi (2012)
Usefulness	Watson, McCarthy and Rowley (2013)
Perceived price	Wu, Kang, and Yang (2015)
Enjoyment, ease of use	Yang (2013)

Source: Own Elaboration

The use of a MA to search for a product or service (e.g., viewing videos or photos of products, reading products' descriptions and reading other consumers' opinions) is influenced by consumer learning satisfaction, personal integrative benefits and hedonic benefits (Alnawas & Aburub, 2016). Consumers feel more positive towards a MA when they are entertaining and useful (Watson et al., 2013), when they help the consumer to complete an action (Taylor & Levin, 2014), and with an information/user-centered style, focusing on consumer attention (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011).

4.3. Methodology

4.3.1. Data collection

This research was conducted using unstructured interviews. Following a common procedure used in social sciences, a convenience sample was employed (Gravetter & Forzano, 2016). The unstructured interviews were conducted through email and administrated to Internet consumers, and this non-probability convenient sample (Zikmund & Babin, 2012) was contacted to understand consumers opinion concerning the option that they would take to search for a product or service online and evaluate alternatives, in this case, between a social MA / SM platform or a retail website, and the

reasons for their choice. After getting their response, it was asked their age and gender. The use of email to conduct the unstructured interview allows the collection of large sample within a short period of time, assures that users are Internet users, guarantees the contact to a determined target, but may limit the representativeness of the sample (Skonnord et al., 2016). A total of 770 Internet consumers replied and returned the unstructured interviews, providing the dataset of this research. The age of the respondents ranged from 13 to 64 years old (M = 35.25 years; 60.1% were from 13 to 38 years old and 39.87% from 39 to 64 years old), 61.8% were males and 38.2% were females. Table 21 characterizes the sample.

Table 21 - Sample characterization

	Sample size	Male	Female	Age average
Retail website	463	66.7%	34.3%	37.2
Social MA / SM platform	307	56%	44%	32.3
Total	770	61.8%	38.2%	35.3

4.3.2. Data analysis

A corpus consisting of 770 opinions made by Internet consumers was built and, according to their choice, two groups (retail website and social MA/SM platform) of data were created. From the 770, 60.1% preferred a retail website to search for a product or service and evaluate alternatives, while 39.9% chose a social MA / SM platform as their preferred platform to conduct the search and evaluate alternatives. This corpus was cleaned by removing extra white spaces, converting all words to lower case for direct matching, removing "stopwords" (prepositions, common words, etc.), and stemming, i.e., reducing words to their root (e.g., "cleaned" to "clean").

Based on the written text in users' opinions, a document-term matrix (DTM) was built. The DTM enables to access the frequency of a term and the number of comments in that appear (Moro et al., 2015). Given the large lexica exhibited in users' opinions, to further reduce the matrix, sparse terms were removed, in a procedure similar to what Guerreiro and Moro also followed (2017). The final data set revealed 1,258 different terms and the aggregated frequency corresponded to 3,782.

Afterwards, topic modeling was applied. Specifically, the latent Dirichlet allocation (LDA) was adopted to produce the topics that revealed the findings of this research. Topic

modeling uses the DTM as its input and revealed the final conclusions by gathering the collected data with the most relevant topics (Moro & Rita, 2018).

4.4. Results

4.4.1. Website – consumers' opinion

From the 770 responses, 463 (60.1%) chose a retail website as the preference to search for a product or a service and evaluate alternatives on the Internet. From this sample (463), 66.7% were male and 34.3% female, and the age average was 37.2 years old. Two levels of analysis were applied to analyze the option of using a retail website as the primary choice to conduct a search for a product/service through the Internet. The first level of analysis provided the frequency of the terms captured by the TM analysis (Table 22).

Table 22 - Top 10 terms associated to Website

#	Term	Frequency	
		Number	Percent
1.	Website	154	6.51
2.	Search	140	5.92
3.	Social Media	127	5.37
4.	Inform	104	4.40
5.	Product	88	3.72
6.	Reliable	51	2.16
7.	App	49	2.07
8.	Habit	36	1.52
9.	Facebook	36	1.52
10.	Service	35	1.48
	Total	820	34.67

The analysis of the 463 respondents who chose a retail website as their primary choice to search for a product/service and check alternatives revealed that the top 10 most pertinent terms included "Website" as the most referred term, with 154 matches, followed by "Search" with 140. In third place came "Social Media" term with 127 matches. Combined, these three terms corresponded to 17.8% of the total.

In the second level of analysis, the LDA outcome was analyzed (Table 23). For each topic, the six dominant terms were revealed and the beta (β) value shows the closeness of the term to the topic. A β value closer to zero corresponds to a strong correlation to the topic. From this table it is possible to visualize the outcome of the LDA analysis. The number of topics was defined to eight, and the six terms with greater correlation to each topic were considered for the analysis, and the aggregated information from each topic was segmented by age groups.

On the first topic, "Product", "Website", "Service", "Complete", "Specific", and "Detail" are correlated with fifty Internet consumers' opinions. The highest β value of this topic is 3.58 for the term "Detail", providing evidence of a strong correlation of the terms with the topic. These results show that Internet consumers prefer to use a retail website to search for products or services and check alternatives because they find a retail website more complete, specific and detailed. This highlights the importance of the product or service specification attributes to be available on retail websites since this characterization stimulate web browsing, which in turn leads to impulse buying behavior, and minimizes the impact of the impossibility of touching products in the online context (Park, Kim, et al., 2012).

Table 23 – Retail website LDA outcome

Topic		1st term term	β	2nd term term	β	3rd term term	β	4th term term	β	5th term term	β	6th term term	β	Age groups 13/18	19/24	25/30	31/36	37/42	43/48	49/54	55/60	61/66
1.	50	Product	1.69	Website	1.99	Service	2.67	Complete	3.01	Specific	3.58	Detail	3.58	0	9	3	8	3	7	3	0	0
2.	35	Website	2.36	Opinion	2.78	Practice	2.85	Reliable	3.54	Source	3.54	Knowledge	3.72	5	7	12	10	5	11	9	1	0
3.	90	Fast	2.43	Secure	2.53	Easy	2.64	Credible	2.83	Comprehend	3.27	Result	3.35	3	7	11	13	11	15	13	4	2
4.	44	Search	0.94	Social Media	2.29	Website	3.60	Google	3.67	Engine	3.92	Info	3.93	0	7	12	6	9	8	8	2	0
5.	110	Inform	1.29	Reliable	1.93	Habit	2.28	Website	2.80	Trust	3.12	Work	4.07	1	8	4	9	5	5	12	3	0
6.	37	Facebook	2.16	Product	2.42	Website	2.56	Inform	2.87	Service	3.07	Available	3.20	2	16	8	10	20	13	11	3	0
7.	46	App	1.94	Phone	2.34	Access	2.51	Website	3.17	Social	3.36	Install	3.53	2	12	3	7	12	7	5	3	0
8.	51	Social Media	1.40	Website	2.47	Direct	2.98	Less	3.32	General	3.87	Opinion	3.89	2	4	11	13	4	12	5	7	0
												Total		15	70	64	76	69	78	66	23	2

From the analysis of the second topic, "Website", "Opinion", "Practice", "Reliable", "Source", and "Knowledge", are the terms with most correlation from thirty-five opinions. The highest β value of these topics is 3.72 ("knowledge"). This topic suggests that there are groups of Internet consumers who prefer a retail website as a source to search for the opinion of professionals because they find it more practicable, reliable and a good place to get professional and technical knowledge of the product or service they are looking for.

Analyzing topic three, its terms were "Fast", "Secure", "Easy", "Credible", "Comprehend", and "result". The β values ranged from 2.43 ("Fast") and 3.35 ("Comprehend), showing a strong correlation between the topic and the terms, and a great consistency among the six terms. These results provide evidence that Internet consumers choose a retail website as the primary source to search for a product or service and evaluate alternatives because they consider it faster, secure, easy to use, credible, and comprehensive. Security leads to trust (Hameed, 2017) while message characteristics and structure features increase credibility (Rains & Karmikel, 2009), indicating that firms should put more effort to make the retail website safe, invest in quality content and features, such as privacy policy statements.

The fourth topic aggregated the opinion of forty-four consumers and the terms more referenced were "Search", "Social Media", "Website", "Google", "Engine", and "Inform", and the highest β value was 3.93. Internet consumers mention that instead of using SM, they prefer to search on Google´s search engine for a product or service where the information provided on the search result page, often leads them to a retail website. A retail website, to be placed on the first result page of a search engine and be found, must be perfected in a way that the search page algorithm considers the retail website relevant (Page, Brin, Motwani, & Winograd, 1998).

Topic number five highlights the terms "Inform", "Reliable", "Habit", "Website", "Trust", and "Work". This is the topic with the highest number of opinions (110) and the highest β value corresponds to the term "work" with 4.07. This topic revealed that Internet consumers use a retail website because of the habit acquired by performing searches on the Internet, but also consider that a retail website works everywhere, and the information is reliable and trustworthy.

Topic six corresponds to thirty-seven responses. The terms associated to this topic are "Facebook", "Product", "Website", "Inform", "Service", and "Available". The term with the highest β value is "Available" with 3.07. From the opinion of these consumers, they prefer to choose a retail website to find a product or service, although they use Facebook as a secondary platform to get extra information concerning the product or service that they are looking for. A retail website, in their opinion, has the advantage of providing the availability of the product or service at the moment of the search.

The seventh topic, focuses the terms "App", "Phone", "Access", "Website", "Social Media", and "Install". Forty-six opinions are associated to this topic and the highest β value is 3.53. Consumers do not like to install MA on their smartphone for memory space reasons and consider that the access to the product or service is better on a retail website than on a SM platform.

The terms "Social Media", "Website", "Direct", "Less", "Generic", and "Opinion" are associated to the topic eight. The data provided for this topic was from fifty-one opinions and the highest β value is 3.89. When searching for a product or service, consumers prefer to go directly to a retail website and less to a SM platform because they consider SM more general and used to collect the opinion of others.

In general, the majority of the respondents who chose to use a retail website as a primary source to search for a product or a service came from the age range between 43 to 48, with seventy-eight matches, followed by the interval between 19 to 24 and 31 to 36, with seventy and seventy-six opinions, respectively.

4.4.2. Social Media and Mobile Application – Consumers' opinion

307 (39.87%) of the 770 Internet consumers that replied to the unstructured interview, chose SM and social MA as their primary option to search for a product or a service and evaluate alternatives on the Internet. From the 307 consumers who chose this option, 56% were male and 44% female, and the age average was 32.3 years old. Two levels of data analysis were conducted. On the first analysis, the recurrence of terms was analyzed, and on the second level of analysis, the LDA outcome was dissected.

Table 24 presents the top 10 frequent terms of the data analysis from a universe of 520 different terms. From the analysis of this table, "Easy" and "App" are the most common

terms with 72 matches each. In third place comes "Fast" term with 62 matches. Combined, these three terms correspond to 14.3% of the total of matches.

Table 24 - Top 10 terms associated to Social Media and Mobile Application

#	Term	Frequency	
		Number	Percent
1.	Easy	72	4.98
2.	App	72	4.98
3.	Fast	62	4.29
4.	Access	56	3.87
5.	Product	45	3.11
6.	Website	42	2.90
7.	Practical	41	2.83
8.	Social Media	40	2.77
9.	Phone	37	2.56
10.	Search	37	2.56
	Total	504	34.85

In the following positions, are "Access", "Product", "Website", "Practical", "Social Media", "Phone", and "Search". Combined, the top 10 terms correspond to 34.9% of the total (1,446).

In the second level of analysis, the LDA outcome was scrutinized (Table 25). The quantity of topics was characterized to eight and the six terms with more noteworthy relationship to every topic were considered for the analysis. Age groups were also considered to provide extra information.

Table 25 - Social Media and social Mobile Application LDA outcome

Topic		1st term term		2nd term term		3rd term term		4th term term		5th term term		6th term term		13/18	19/24	25/30	31/36	37/42	43/48	49/54	55/60	61/66
1.	2	Practice	1.29	Website	3.61	Phone	3.83	Review	3.91	Service	3.97	Adapt	4.24	1	17	9	8	6	6	3	2	0
2.	24	Social Media	1.70	Product	1.76	Opinion	2.80	Service	2.81	Inform	2.98	Comment	3.31	6	8	2	2	2	1	3	0	0
3.	49	Fast	1.17	Much	2.57	App	2.89	Habit	3.02	Navigate	3.13	Website	3.39	1	16	11	6	6	5	2	1	1
4.	34	App	1.76	Friend	2.96	Simple	3.08	Inform	3.37	Website	3.48	Open	3.56	2	7	8	9	4	0	4	0	0
5.	32	Search	1.52	Website	2.55	Easy	3.16	Inform	3.37	Opinion	3.39	Comfort	3.75	1	11	4	5	4	5	2	0	0
6.	39	Time	2.46	Practical	2.94	Facilitate	3.23	Feedback	2.39	Direct	3.35	Familiar	3.92	1	9	5	6	8	6	1	3	0
7.	57	Easy	1.44	Access	1.54	Phone	2.04	App	2.39	Website	3.77	Facebook	4.18	2	14	13	7	6	3	6	2	4
8.	20	Convenient	2.36	Service	2.36	Product	2.96	App	3.23	Fast	3.28	Facebook	3.53	1	8	4	0	3	3	1	0	0
													Total	15	90	56	43	39	29	22	8	5

Topic one comprehends fifty-two opinions and this topic is correlated to the terms "Practical", "Website", "Phone", "Review", "Service", and "Adapt". The term with the highest β value was "Adapt" (4.24). Internet consumers who prefer to use a social MA to conduct their search acknowledge that MA are adapted to their smartphones and that looking for service reviews on a social MA is more practical than to conduct the same search on a retail website.

The second topic highlights the terms "Social Media", "Product", "Opinion", "Service", "Inform", and "Comment". Twenty-four consumers contributed to this topic and the highest β value is 3.31, showing a close relation between the terms and the topics. Consumers reveal that when looking for a product or a service, they search for information on SM attempting to find opinions and comments of others who have shared their experience, expecting to find relevant information that could help them to make the final decision.

Topic number three comprehends the answers of forty-nine consumers and revealed the terms "Fast", "Much", "App", "Habit", "Navigate", and "Website" as the closest to the topic, having the highest β value 3.39 among the six terms, revealing that consumers prefer to use a social MA because they are used to it, consider them much faster and navigable than retail websites.

Analyzing topic four, the terms "App", "Friend", "Simple", "Inform", "Website", and "Open", are the terms that set this topic, and the latter term has the highest β value (3.56). These terms reveal that consumers prefer to use a social MA because the MA is user friendly, accessible, simpler to open, and it is more informative than a retail website, confirming previous research findings (Alnawas & Aburub, 2016). The authors confirmed that among the key factors for downloading/using MA are the acquisition of knowledge, while user friendliness, accessibility are key technical attributes that motivates the use of a particular MA.

Topic five, with thirty-two opinions, the terms "Search", "Website", "Easy", "Inform", "Opinion", and "Comfort" have the highest correlation to the topic. These results provide evidence that consumers prefer to search on a social SM platform because they feel more comfortable and find them easier to access and consider reading the opinion of others on SM is more informative than in a retail website. Topics two and five confirm that

electronic word of mouth is perceived as more credible and trustworthy (Reichelt, Sievert, & Jacob, 2014).

The sixth topic, with thirty-nine matching opinions, provides evidence that "Time", "Practical", "Facilitate", "Feedback", "Direct", and "Familiar" have a positive correlation with the choice of using a social MA to search for a product or a service and assess alternatives. Consumers have the opinion that using a social MA is more practical, direct, time saver, facilitates the process to get feedback from others, and feel more familiarized using such platforms. Research has also revealed that smartphone MA have become a social phenomenon among generation Y and that this generation has a positive attitude towards a MA if they find it useful and engaging (Carter & Yeo, 2015). Generation Y comprehends people that were born between 1981 and 1999 (Bolton et al., 2013).

The topic with the most matching answers is topic seven, with fifty-seven matching opinions. "Easy" is the term with the best correlation with the topic, followed by "Access", "Phone", "App", "Website", and "Facebook". The highest β value is 4.18. To access the searched information, consumers acknowledge that through their smartphone it is easier to access their Facebook MA than to search on a retail website.

The eighth topic has twenty matching opinions. This topic revealed "Convenient", "Service", "Product", "App", "Fast", and "Facebook" as the terms with the highest correlation to the topic. The highest β value is 3.53 for the term "Facebook". Consumers have the sentiment that to search for a product or service online, the use of Facebook's MA is more convenient and provide a faster access.

In general, the majority of respondents came between the ages 19 to 24, with ninety matches, followed by the range between 25 to 30, with fifty-six opinions.

4.5. Discussion

After analyzing the 770 collected opinions of Internet consumers regarding their option to choose a retail website or a social MA/SM platform to search for a product or service and assess alternatives, we have reached interesting conclusions.

Figure 14 reveals the visual outcome of retail website term frequency (Table 25). The terms that occupy the greater area are "Website", "Search" and "Social Media", revealing

that search is a highly relevant functionality in retail websites, as well as that users seem to acknowledge the relevance of integrating SM plugins in retail websites. Social buttons such as Facebook Likes, share buttons, or the comments automatically shared on SM platforms through plugins, turn retail websites a part of the SM platform (Gerlitz & Helmond, 2013).

Figure 14 - Retail website proportional area chart (square) outcome

In turn, Figure 15 reveals the proportional area chart from the social MA/SM term frequency (Table 27). The visual interpretation of the results revealed "Easy", "App" and "Fast" as the terms most referenced, providing evidence that users prefer a social MA to conduct their search due to the easiness to use and loading speed, confirming the studies of Alnawas and Aburub (2016) and Yang (2013). This reveals that users highlight technical features as one of the reasons to choose a social MA /SM platform rather than the benefits and features revealed by those who chose the retail website.
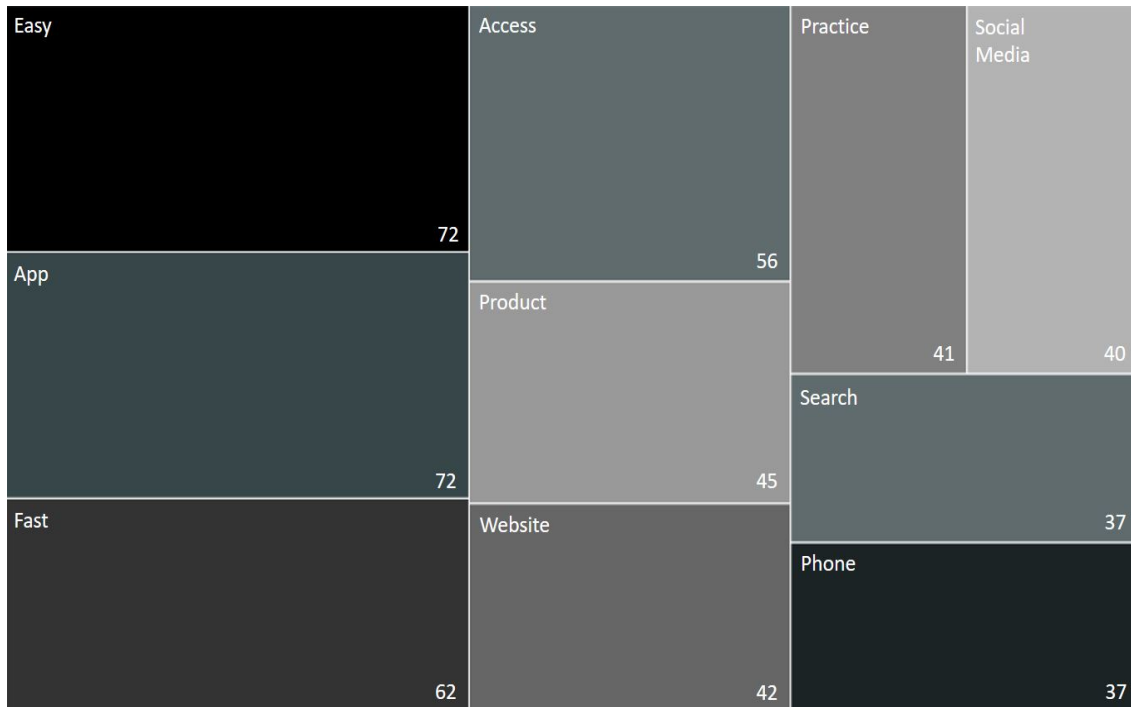
Figure 15 – SM and social MA proportional area chart (square) outcome

LDA outcome revealed that the sample that chose a retail website to conduct their search, revealed that the information on a retail website is more complete, credible, detailed, trustworthy and reliable, confirming the results of Belanche et al. (2012), Hameed (2017) and Seckler et al. (2015), highlighting that their choice is mainly influenced by information quality. The access to the availability of the product or service at the time of the search and speed and ease of use were mentioned as characteristics that influence the consumers choice. However, characteristics from system quality, such as visual appeal or navigation were not mentioned by customers, and there were few features highlighted by consumers concerning the technical component of retail websites that could influence their choice. Reliability and security (service quality features) were mentioned but there was no reference to price savings as a motivation to use a retail website, although price steering and discrimination is being used as a strategy to make customers spend more money (Hannak, Soeller, Lazer, Mislove, & Wilson, 2014). It is possible to acknowledge that their choice is also associated to the fact that usually, to make the search on the Internet, they use Google search engine, and a search result page frequently leads them to a retail website. Adding this, consumers feel that SM is more general and used to collect the opinion of others. Nevertheless, Facebook is used as a second option to get extra information. Finally, they do not like to install MA on their smartphones for memory space reasons.

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The characteristics that are highlighted by consumers who prefer to search for a product or service on SM include the easiness to access the searched content, extra information and they feel more comfortable by choosing this option. This data confirms that customers like the aggregated value brought by SM and aim to be part of a real-time participation, answering and asking questions, sharing their experiences and opinions, adding value to the process (Huang & Benyoucef, 2015), and when they search for a product or service through SM it is because they do not mind to be influenced by a third party (Reichelt et al., 2014). The reasons for using a social MA to conduct the search is because they find the platform practical, faster, navigable, user friendly, simpler, easy to access, convenient, familiarized, time saver, and it is adapted to their smartphone screen. Consumers that prefer to use a social MA or a SM platform do not highlight price as one of their motivations to use these platforms or do not mention the fact that they use the social MA due to hedonic benefits, contradicting, in this context, findings such as the ones found by Yang (2013) and Hsiao et al. (2016) who revealed the importance of fun, enjoyment and entertainment as the factor that makes consumers satisfied by using a social MA. Another fact is that consumers have not mentioned that they use SM and social MA to watch videos and pictures of the products or services that they are searching for.

From the sample's opinion, there are characteristics that are convergent (Figure 16). Consumers feel that, within their primary choice to search for a product or service and evaluate alternatives, using a retail website or a social MA / SM platform, both are easy, practical, and faster to access information, and that habit influences the use of these platforms. These characteristics are part of the list of the top 10 terms associated to retail website and SM / social MA (Tables 22 and 24), reinforcing their relevance.
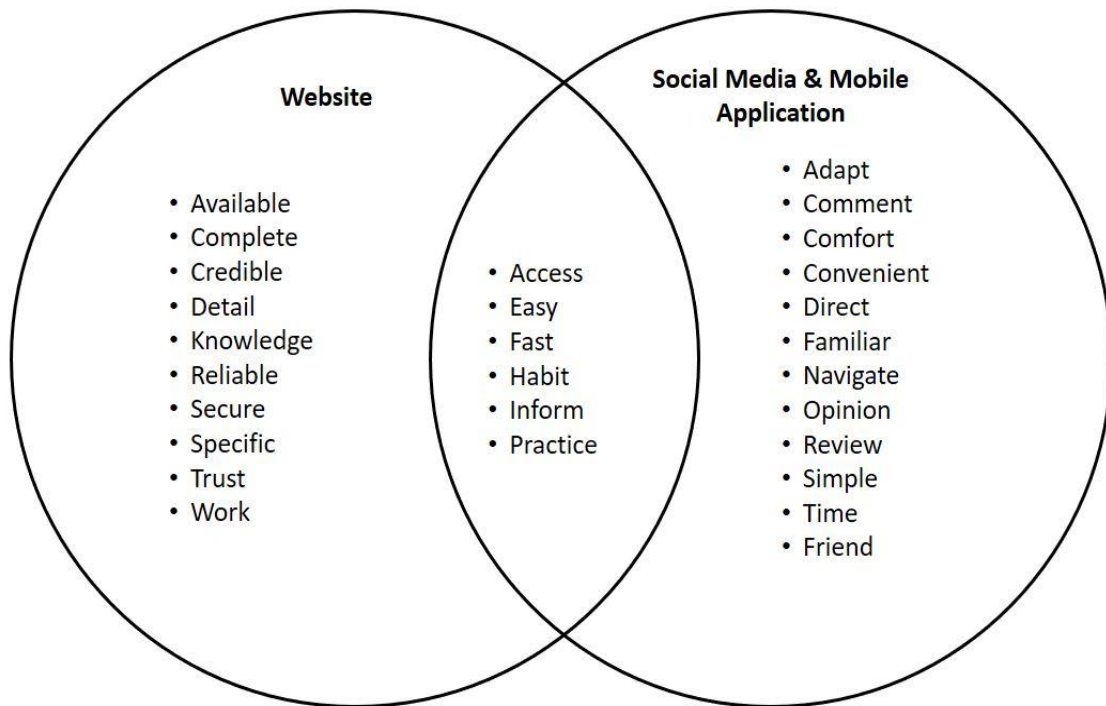
Figure 16 - Convergent terms

Figure 17 reveals the age trends for the use of retail website or social MA/SM platforms to search for a product or service and check alternatives. From its analysis, it is observable the beginning of a trend towards SM and social MA. The ages between 19 and 24 years old reveal a greater willingness to use SM and social MA instead of retail websites, confirming the recent statistical evidences. However, after the age of 31, the willingness of consumers to use social MA and SM platforms drop to numbers bellow the use of retail websites, which, on the other hand, have been revealing a very steady use between the ages of 19 until 54 years old.
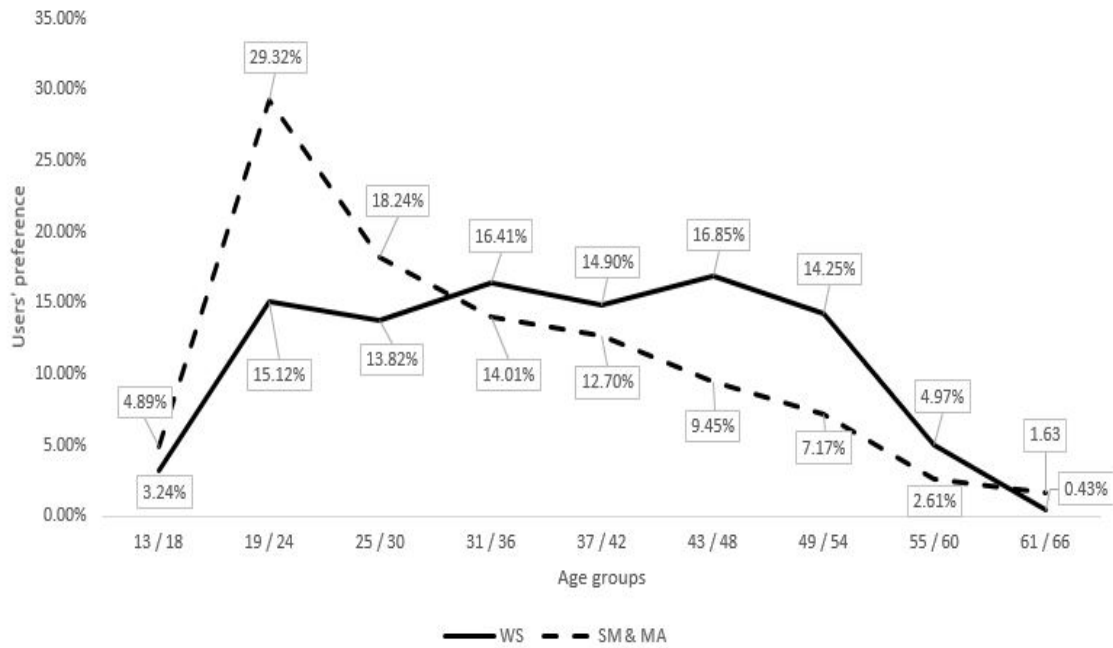
Figure 17 - Age trends

Overall, the main conclusions are that there are relevant differences between consumers who chose a retail website versus consumers who chose a social MA/SM platform to search for a product or service and evaluate alternatives, although there are some convergent features that are highlighted by both type of consumers. In general, consumers prefer a retail website due to content quality and because it can be accessed from every device (desktop, laptop, smartphone, tablet), while SM platforms are used to access ratings, reviews and recommendations from others, which access is facilitated by the technical aspects of a social MA. It is also important to highlight that content quality enhances trust (Hameed, 2017) and trust has not been mentioned on the analysis from those who chose social MA/SM platforms to search for a product or service and assess alternatives.

From the analysis of Figure 17, in the long run there is the perspective of consumers opting to use social MA and SM platform as a primary choice to conduct their searches, turning retail websites to a secondary choice, and irrelevant when compared to the use of social MA/SM platforms.

4.6. Conclusions

Over the last years, humankind has been witnessing the emergence and vertiginous growth of the Internet and the associated technologies, that have been modifying the way people relate and conduct businesses. Within this context, organizations are under a profound and continuous transformation, and need to understand behavioral patterns among their customers to anticipate and adapt in the most lucrative possible way to the new consumer decision journey, innovating and differentiating, to become a reference in their area of expertise. The range and availability of MA and SM platforms are spreading rapidly, leading to changes in consumer behavior when it turns to search for a product or a service online and evaluate alternatives, making consumers to choose between a SM platform / social MA or a retail website.

Establishing this behavior change as the focus of this research, this paper aimed to understand what Internet consumers would choose between a SM / social MA or a retail website to search for a product or service online and evaluate alternatives and revealed the reasons to make such choice.

The achieved findings allowed to understand of what is influencing the behavioral change and the new consumer decision journey, from the consumer´s perspective, and revealed the characteristics that can be improved to enhance the use of retail websites, social MA and SM platforms. In turn, these findings made a conceptual addition to academia, by revealing the characteristics that influence the use of SM platforms, social MA and retail websites, and provided Internet professionals valuable insights to align their online strategies toward the Internet consumer experience and expectations.

Despite the contributions of this study, there are limitations that need to be stated and considered for future research. First, the unstructured interviews used to collect data were designed for a general data collection and not for a particular product, service, or company. Therefore, in future research, the unstructured interview should be applied to a specific product, service or company to address different product categories and make comparison of results between them. Second, the collection of a representative sample of the Internet consumers will represent an important step for understanding more accurately the Internet consumers' choice and the reasons that support such choice. Third, the conclusions were based on self-reported responses and may not be totally reliable.

Consistently, data on records of online purchases by Internet consumers should be obtained in future research.

Chapter 5: Conclusion

Facing the statistical evidence that SM and MA are being increasingly used, this thesis proposed an approach to understand the reasons for such behavioral change. Data was collected from the academia to conduct a literature review to reveal the right path for researchers to conduct their future research, Internet professionals provided their opinion towards the behavioral change, and Internet users were questioned for the reasons that led for the affirmed change.

Relevant conclusions can be withdrawn from this thesis. From the perspective of researchers, this research unveiled the following conclusions:

- The focus of researchers concerning the usability principles of IW, SM and MA have been in the field of Health. The number of papers published in the Journal of Medical Internet Research (125 from the total of 302) reveals the propensity of health researchers to understand the phenomena that usability has been in the three dimensions;

- Marketing and Nutrition fields reveal to be undeveloped in terms of usability knowledge in the three dimensions;

- There has been a growing interest in the usability technology setting of SM, while usability principles of MA are less focused;

On the other hand, in general, Internet professionals argue that:

- Search engine (e.g., Google) search will lead users to a website, reinforcing their relevance;

- Show resilience to set SM as the center of the online strategy, arguing the retail website is a platform owned by them, contrary to SM platforms, fearing algorithm changes and, for that reason, to lose control and dependent of third parties;

- They argue that users will continue to prefer retail websites if the content is considered to be relevant and with quality, contradicting the statistical evidence that there is on the way a behavioral change;

However, the analysis of the data collected from the users' perspective, it is possible to highlight the reasons that make users to choose a retail website or a social MA / SM platform;

Users that prefer retail websites reveal their reasons:

- Users that preferred retail websites to conduct a search highlighted that information quality is the reason for such choice, namely, information complete, credible, detailed, trustworthy and reliable;
- Availability of the product or service in real time is mentioned by users as one of the advantages that retail websites have, compared with SM;
- Users use search engines to find what they are looking for, and the search results often lead them to a retail website;
- Facebook is used as the secondary option to collect others' opinions;
- Users like the integration of SM plugins in retail websites;
- Users reveal resilience of installing MA on their smartphones for memory space reasons;

The characteristics that users highlight to choose a social MA / SM platform to search for a product or service are the following:

- Utilitarian characteristics of social MA and SM platforms are among of the reasons that users highlight for the preference of these platforms;
- Users prefer social MA due to the easiness to use and loading speed;
- Easiness to find the searched content and the extra information shared by others;
- Find the social MA adapted to their smartphone, practical, navigable, user-friendly, simpler, convenient, feel familiarized with the technology and time saver;

Nevertheless, younger generations reveal more propensity to use social MA / SM platforms to conduct their search, in line with previous research (Bilgihan, 2016), indicating that on the long run, these will be the preferred platforms for those who need to undertake an Internet search for a product or service.

Facing the conclusions from the dimensions of Scholars and Internet Professionals, recommendations need to be addressed to align these two dimensions towards meeting the users' expectations. In terms of research, a usability researcher, to be in the front line of usability research in the researched dimensions (website, SM, and MA), must consider the trends and gaps revealed, and taking into consideration the results of stage three, for their work to be considered useful and relevant for academia and professionals. The revealed research gaps and trends, the aspects highlighted by users for their preference, and age, need to be taken into consideration.

Internet professionals believe that users will continue to use search engines that will lead consumers to their website. Findings reveal that this assumption is true for Internet users with more than 31 years old. However, for users under 31, these assumptions are not confirmed since these age segments reveal a different behavior when to search for a product or service online. Users under 31, searching for a product or service online, conduct their searches on SM and MA. By contrast, findings reveal that Internet users with more than 31 years old act according to the beliefs of Internet professionals, revealing a different behavior when compared with others. Different generations reveal different behaviors and companies need to have this into consideration (Bolton et al., 2013). These findings imply that different strategies should be adopted by companies, according to the age of the target, and should not be generalized believing that all users conduct Internet searches on search engines.

On the other hand, Internet professionals reveal resilience by setting SM and social MA in the center of their online strategy because they would be transferring their online platforms to the hands of a third party. A retail website is a place controlled by the owner while SM platforms and social MA make professionals dependent of the platforms' algorithm that determines, for example, the organic reach of a companies' post (Manson, 2014). However, facing the scenario provided by the findings of this study, Internet professionals must consider that Internet users are in fact changing their behavior when searching for a product or service. From this standpoint, placing SM and social MA in the center of their online strategy can reveal itself as the best option to meet the clients' expectations. These findings corroborate with the study of Li and Ku (2018) that argue that if there are social support and social interactions, they tend to choose social commerce instead of e-commerce, and if their conformity motivation level is high, the

behavioral change increases. Recommendations for setting the retail website acting as a hub, transferring users to SM platforms seem to be the best option, since it makes possible for the website to be found via search engine, but after the clients find the website, it is mandatory to have SM plugins that will lead users to the SM platforms where the company has presence, meeting the clients perspectives and demands, and taking the client to a comfortable place, and where they are used to be (Li & Ku, 2018).

Also, results reveal that the use of MA is determined by utilitarian aspects, namely, simpler, ease of use, convenient, time saver and adapted to the smartphone. These findings are consistent with previous research that indicates that effort expectancy is a significant predictor of the use of MA, highlighting the importance of easiness (Kang, 2014). The use of SM to search for a product or service is to have access to ratings, reviews, and recommendations. These findings are in line with other past studies that indicated that social benefit and social support influence the use of SM (Li & Ku, 2018). For companies that invest and have interest in developing an online strategy that includes SM and MA, it is mandatory to consider the characteristics revealed by users as the ones' that motivates the use of such technologies, in order to please consumers, increase sales, and to prosper.

This behavioral change has potentially negative consequences for companies and alterations on the consumer decision journey in the online context, factors that validate the importance of this study.

5.1. Theoretical implications

Although there are abundance of studies regarding retail websites (Ainsworth & Ballantine, 2014; S. Kim & Stoel, 2004; King, Schilhavy, Chowa, & Chin, 2016; McDowell et al., 2016), e-commerce (Chiu, Wang, Fang, & Huang, 2014; Hannak et al., 2014; Yoon & Occeña, 2015), social media (Grange, 2018b; Gruzd, Staves, & Wilk, 2012; Hajli, 2014; Stavros, Meng, Westberg, & Farrelly, 2014), social commerce (Huang & Benyoucef, 2015; Liang, Ho, Li, & Turban, 2011; Lin et al., 2017), technology acceptance (Cheung & Vogel, 2013; Kesharwani & Bisht, 2012; W. Lee, Xiong, & Hu, 2012; Park, Nam, & Cha, 2012), mobile applications usage (Gerlich et al., 2015; Hsiao et al., 2016; Molina-Castillo & Meroño-Cerdan, 2014; Shin, Hong, & Dey, 2012), in-app

purchase (Roma & Ragaglia, 2016; Taylor & Levin, 2014; Wu et al., 2015), but few had the focus on an Internet behavioral change (Huang & Benyoucef, 2013; Li & Ku, 2018; Yan et al., 2016). However, no research to date has directly and empirically studied the Internet behavioral change that is occurring due to the increasing use of SM and MA, and the impact that these changes are having on websites. These findings make a conceptual addition to academia, by revealing that utilitarian characteristics are influencing the behavioral change, providing academia the state-of-the-art knowledge regarding the changes that are occurring on the Internet.

5.2. Managerial implications

This study provides relevant insights for management in the online context. Professionals, to achieve success and thrive, it is mandatory to follow the aspects highlighted by users, meeting their demands. The aspects revealed by users must be considered as a primordial focus in an online strategy to meet users' interest. Demographics is also an aspect to be considered. For example, Internet professionals need to act accordingly to the desire of users, meaning that they will need to adapt to recent changes. Strategically, if their target is clients under 31 years old, they should aim their efforts towards SM and MA. If above 31, the strategy should be the one that they are conducting now, referring to set their retail websites as the center of the online strategy. Same recommendations are addressed for usability research in the context of the researched dimensions.

These revelations acknowledge that the identified behavioral change has impact over the consumer decision journey and companies should be aware of these changes, taking into consideration that nowadays consumers have the power to influence the organization strategy (Aral et al., 2013). Internet professionals must follow the outline of this study and redirect their strategies toward the identified behavioral change to better target and communicate with their audience and market segments.

5.3. Future research

Research to increase knowledge to understand the identified behavioral change need to be conducted. The impact of this behavioral change in the different stages of the consumer decision journey (other than search and analysis of alternatives) must be conducted to fully understand the phenomena in the consumer decision making. The application of this research in a specific product, service or organization will add knowledge to these findings by segmenting the behavioral change in different typologies.

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