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Travel 2.0 tools: User behavior analysis and modeling.

Special emphasis on advertising effectiveness through the eye-tracking methodology

Doctoral thesis

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Doctoral programme in Economics and Business Studies

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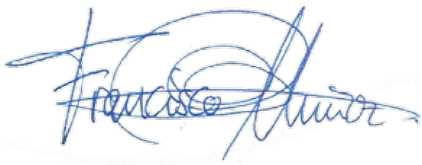

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Una vez que finalicé el Máster Oficial en Marketing y Comportamiento del Consumidor en el año 2010 me dediqué cien por cien a desarrollarme como profesional en el sector turístico y concretamente en el ámbito de la Web 2.0. Pero, gracias a mi director de tesis, el Dr. Francisco Muñoz Leiva, me planteé la opción de compaginar mi trabajo con la elaboración de esta tesis, cuya temática curiosamente coincidía con mi labor profesional del día a día. Aunque el camino no ha sido nada fácil, cinco años después, considero que ha sido una de las mejores decisiones que he tomado en la vida. Por eso le agradezco a mi director de tesis haber confiado plenamente en mí y haberme dado la oportunidad de comenzar una nueva andadura en el mundo de la investigación académica.

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tendente a conseguir un comportamiento de consumo medioambientalmente responsable" (Refª SEJ-1980) y "Estudio del mensaje publicitario en los procesos cognitivos y emocionales que dirigen el comportamiento de consumo sostenible" (Ref. ª SEJ-6768), ambos del programa de Proyectos de Excelencia de la Consejería de Economía, Innovación y Ciencia de la Junta de Andalucía.

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CHAPTER 0: PRELIMINARY

1. JUSTIFICATION OF THE RESEARCH

In the recent years, the evolution of the Information and Communication Technologies (ICTs) has led to the emergence of the Web 2.0. The main characteristic of this new version of the Web is that it allows for user collaboration and participation in the online environment. Its importance and range have kept growing over the years.

On one hand, this new approach of the Web has had an impact on the different activity sectors, which have had to adapt their business models and strategies to the new developments. On the other hand, it has changed consumers' habits and behaviors. Many companies have taken this opportunity and tried to adapt to this new collaborative platforms. For instance, the tourism industry is one of the most influenced by the Web 2.0. New online tools and platforms – known as 'Travel 2.0' tools or 'eTourism 2.0'– have been developed, enabling tourists to obtain information on other tourists' experiences and opinions, as well as to share their own contents after completing a travel. Furthermore, many tourist companies have been using these tools to develop different online marketing strategies, advertising being one of them.

However, thanks to our professional experience in the tourism industry over the last years, we were able to find out first hand that many companies still lack a clear conception of their presence on the Web 2.0. Sadly, many of them are there only because they believe it is a trend or they imitate the competition.

For instance, companies often do not set specific goals before starting to use these tools; the staff or people in charge of these networks do not clearly understand the purpose of the brand/company on the social media; they do not assess the results of their marketing actions on these websites, etc. All this has had negative repercussions on the image or credibility of many companies.

At the same time, there are tourism companies that integrate online advertising (e.g. in banner formats) in the different Travel 2.0 tools, but unfortunately ignore the suitable contents or positions that would make the advertising 100% efficient.

In the academic field, we have noticed that much of the research published in the past years, was focused on Web 2.0 tools in general (e.g. Dwyer et al. 2007; Filgueira 2008;

Hsu and Lin 2008; Joinson 2008 ; Hossain and Silva 2009; Kwak et al. 2010; Diffley et al. 2011; Chu et al. 2011; Castronovo and Huang 2012; Ioanăs and Stoica 2014) and on tourism in particular (e.g. Hu and Ritchie 1993; Fodness and Murray 1999; Goossens 2000; Park and Gretzel 2007; Prayag 2009; Hosany and Gilbert 2010; Mohamad et al. 2012; Pearce 2014); however, there seems to be a lack of conclusive studies in this regard, especially concerning the impact of the Travel 2.0 tools on tourists' behavior.

Therefore, we decided to conduct several studies about three specific Travel 2.0 tools (travel blogs, travel social networks and tourist communities), in order to bring new scientific knowledge to this branch of research and to reach a more comprehensive and conclusive understanding of the new tourist and her/his behavior towards these tools.

At the same time, we found several academic studies that assess advertising efficacy both offline (Lodish et al. 1995; Beerli and Santana 1999; Frazer et al. 2002) and online (Baltas 2003; Cho 2003; Blazquez et al. 2008; Beerli and Martín 2010), although the results are not conclusive enough and there is no research analyzing several Travel 2.0 tools simultaneously. This is why we decided to dedicate a part of our study to analyzing how consumers react to advertising in travel blogs, travel social networks and online tourist communities. Thus, we are not only contributing to the academic research on tourists' behavior on new virtual platforms, but also helping professionals and media companies to implement more efficient marketing practices in the new online environment.

Finally, to add more value and extend the range of our study, we have focused on the navigation behavior through the eye-tracking methodology for assessing the advertising efficiency in Travel 2.0 tools. In particular, the eye-tracking methodology has been applied to psychophysiology studies (Wieser et al. 2009), and some studies have employed this method for testing website usability (e.g. Goldberg and Wichansky 2003; Ehmke and Wilson 2007) and advertising effectiveness (e.g. Djamasbi et al. 2010), but it is a quite new and uncommon technique for analyzing new 2.0 platforms. The next chapter describes the methodology more in detail.

2. GOALS

The main purpose of this PhD thesis is to analyze and model users' behavior towards three specific Travel 2.0 tools (travel blogs, travel social networks and online tourist communities). At the same time, within this general purpose we want to find answers to how consumers react to online advertising when it is inserted in these tools. To this end, special emphasis was put on assessing advertising efficiency through the eye-tracking technique. Based on all of the above, we established the following specific goals for this study:

- Verify which sources of information are most influential in choosing a travel destination, distinguishing between the opinions and recommendations of friends and family (known as offline word of mouth, WOM) and the opinions and recommendations of other users who generate their own content in different websites (electronic word of mouth, eWOM).
- Ascertain which web tools (blogs, social networks and hotel or destination websites where users can post comments) are used most frequently for seeking information about a destination or hotel.
- Determine the socio-demographic and navigation characteristics that explain:
  - The extent to which tourists are influenced by the comments and opinions of other Internet users.
  - Whether or not they share their experiences on travel websites such as blogs or social networks.
- Generalize the underlying behavioral model for explaining tourists' intention to use Travel 2.0 websites according to their main determinants.
- Analyze the viewing pattern and determine the advertising efficiency in different Travel 2.0 tools:
  - Identify the viewing pattern of these tools.
  - Confirm whether banner blindness exists for each tool.
  - Determine banner recognition memories in their users.
  - Identify which type of banner (animated vs. static banners) users pay more attention to.

- Discover which banner content (image or text) users fixate on the most.
- Explore the influence of certain demographic variables and experience level with these tools.

3. STRUCTURE

The present PhD thesis is structured around six chapters, detailed hereafter:

The first chapter includes a brief introduction to present globally and jointly the topics addressed in the different research articles that make up this PhD thesis. The introduction analyzes the impact of Internet on the tourism industry in general, and on the online advertising in particular.

The second chapter analyzes tourists' behavior towards Travel 2.0 tools, considered as sources of information and as 'word-of-mouth' generators. A specific literature review is carried out with this purpose, explaining the sources of offline and online touristic information, as well as the different tourist profiles. The section containing the data analysis displays the main results of the implementation of statistical techniques for comparison of means, to know what information source (WOM or eWOM) influences tourists' travel decision-making the most and what type of web tool is used the most (blog, social network or official website of the destination/hotel with user comments). Likewise, two segmentation trees were created for tourist classification according to certain socio-demographic and navigation characteristics. This classification was intended to reveal the extent to which tourists are virtually influenced by other travelers' comments and to what extent they shared their experiences. The main findings and implications for management are presented at the end of the article, as a result of this partial study.

The third chapter intends to generalize tourists' behavior towards the Travel 2.0 tools. It outlines the modeling of the different adoption behaviors of these sites, with special emphasis on the main determinants. For this purpose, an exhaustive literature review is carried out about the Technological Acceptance Model (TAM) and the importance of the perceived trust variable. Based on all this, the structural equations modeling (SEM)

is applied to each of the three Travel 2.0 tools concerned (blogs, social networks and virtual communities), as well as a test of difference of weights. Finally, the conclusions and limitations of the study are presented along with the future lines of research.

The fourth chapter analyzes the usability and efficiency of advertising in the context of the Travel 2.0 tools. In this case, a thorough literature review about different aspects of online advertising was conducted, with reference to different ways of assessing it. More exactly, the structure of the chapter gives an overview of: 1) the eye-tracking methodology, 2) users' viewing patterns on Travel 2.0 tools, 3) the factors influencing visual attention and the 'banner blindness' phenomenon and 4) the self-reported recall of online advertising. The empirical part conducted to meet the corresponding goals requires the development of a within-subjects experimental design along with the implementation of the eye-tracking technique. The data obtained allow us to: a) know the users' viewing pattern on the Travel 2.0 tools (through heat-maps, gaze plots and eye measurements); b) identify the factors that influence visual attention (analysis of variance –ANOVA– and other means difference tests, etc.); c) see what parts of the Travel 2.0 tools are more effective over time (ANOVAs and the graphs) and d) check if users remember the banner they were exposed to and its content (frequency analysis). The last part finally presents the conclusions, implications for advertisers, limitations and future lines of research derived from this fourth partial study.

The fifth chapter continues with an analysis of the advertising efficiency on different eTourism 2.0 tools. For that, it reviews all the existing research about online advertising and its contents, as well as the classification variables that influence user's attention to advertising (demographic aspects and user experience). In this case, a mixed experimental design was developed, which thanks to the eye-tracking technique achieved a high amount of data, which in turn revealed: a) what type of content (text vs. image) has a higher impact on users' attention (through T-Student tests for difference of means), and b) how the classification variables and the type of advertisement (static vs. dynamic) influences or moderates visual attention. In this case, three analyses of covariance were applied to the data available. Lastly, the corresponding conclusions, limitations and future lines of research complete the article.

The sixth chapter displays the conclusions drawn from the different studies conducted throughout the PhD thesis. Besides, this chapter also includes implications, limitations and future lines of research.

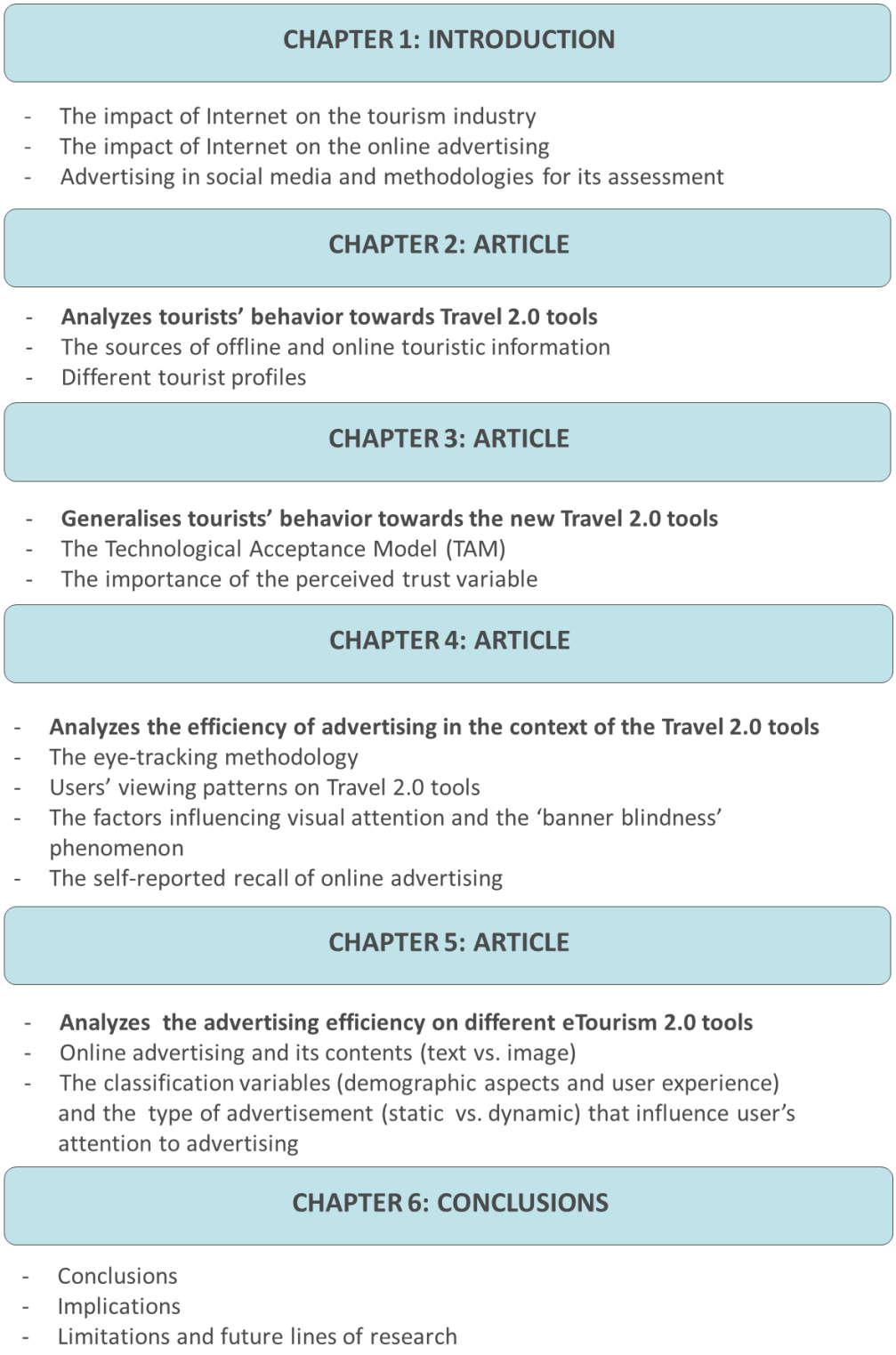

Figure 1. Structure of the thesis

4. SUMMARY IN SPANISH (RESUMEN EN ESPAÑOL)

(Cumpliendo con el artículo 18 de las Normas Reguladoras de las Enseñanzas Oficiales de Doctorado y del Título de Doctor por la Universidad de Granada)

Con la evolución de las Tecnologías de Información y Comunicación (TICs), y concretamente de la Web 2.0, la sociedad en general y los distintos sectores de actividad han experimentado una gran cantidad de cambios. Por un lado, los consumidores se han convertido en los principales protagonistas del mundo virtual y por otro, las empresas han tenido que adaptar sus estrategias de marketing a las nuevas plataformas desarrolladas en el mundo virtual.

Uno de los sectores más afectados por la nueva versión de la Web ha sido el sector turístico. Por este motivo, durante los últimos años han aparecido una serie de plataformas turísticas 2.0 (conocidas como herramientas 'Travel 2.0' o 'eTourism 2.0') que permiten la participación de los turistas en el mundo virtual durante todas las fases de cualquier viaje (antes, durante y después). De esta forma los turistas no sólo podrán compartir sus opiniones y experiencias con otros usuarios una vez que finalizan el viaje, sino que además podrán buscar cualquier tipo de información antes de realizarlo.

Sin lugar a dudas, la aparición del turista 2.0 ha revolucionado tanto al mundo académico como al profesional. Por esta razón los principales objetivos de nuestra investigación son (1) analizar y modelizar el comportamiento del nuevo turista hacia el uso de determinadas herramientas Travel 2.0 (blogs de viajes, redes sociales de viajes y comunidades de viajeros online) y (2) estudiar la eficacia publicitaria en estas herramientas. Para ello hemos estructurado nuestra tesis doctoral en cuatro capítulos diferentes.

Los dos primeros capítulos se centran en el análisis y modelización del comportamiento del turista 2.0. En este caso se comparan las principales fuentes de información turística; se comprueba qué herramienta Travel 2.0 se utiliza en mayor medida; se realiza una clasificación del nuevo turista en función a características socio-demográficas y de navegación y por último, se desarrolla un modelo de

comportamiento de uso de las nuevas plataformas a través del Modelo de Aceptación Teconológica (TAM) y la variable confianza percibida.

La finalidad principal de los otros dos capítulos de nuestro trabajo es analizar la usabilidad y la eficacia publicitaria en las herramientas *Travel 2.0* (blogs, redes sociales y comunidades de viajes online) a través de la técnica eye-tracking. Para ello hemos especificado diferentes objetivos entre los que se encuentran: conocer el patrón de visualización que siguen los usuarios al visitar estas plataformas; comprobar si los internautas atienden y recuerdan los banners, o si por el contrario los ignoran (existe ceguera al banner); analizar qué tipo de contenido es más eficaz en los banners (texto vs. imagen); comprobar qué tipo de banner es más efectivo (estático vs. animado), etc.

Por tanto, los resultados y conclusiones obtenidos en el presente estudio no sólo serán útiles para completar y aclarar la literatura existente sobre las herramientas Travel 2.0 en la investigación académica, sino que además ayudarán a las compañías a adoptar determinadas recomendaciones a la hora de desarrollar sus estrategias de publicidad en el nuevo mundo virtual.

5. REFERENCES

Baltas, G. (2003). Determinants of internet advertising effectiveness: an empirical study. *International Journal of Market Research*, *45*(4), 505-514.

Beerli, A., and Santana, J. D. M. (1999). Design and validation of an instrument for measuring advertising effectiveness in the printed media. *Journal of Current Issues & Research in Advertising*, *21*(2), 11-30.

Beerli, A., and Martín, J. (2010). La eficacia de la publicidad online en el contexto de los blogs. *Cuadernos de Gestión, 10*, 17-42.

Blazquez, J., Molina A., Esteban A., and Martín-Consuegra N.D. (2008). Análisis de la eficacia publicitaria en internet. *Investigaciones europeas de dirección y economía de la empresa*, *14*(1), 159-176.

Castronovo, C., and Huang, L. (2012). Social media in an alternative marketing communication model. *Journal of Marketing Development and Competitiveness*, *6*(1), 117-134.

Cho, C. H. (2003). The effectiveness of banner advertisements: Involvement and click-through. *Journalism & Mass Communication Quarterly*, *80*(3), 623-645.

Chu, S. C., and Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International journal of Advertising*, *30*(1), 47-75.

Diffley, S., Kearns, J., Bennett, W. and Kawalek, P. (2011) Consumer Behaviour in Social

Networking Sites: Implications for Marketers', Irish Journal of Management, 30(2), 47-65.

Djamasbi, Soussan, Marisa Siegel, Tom Tullis, T., and Rui Dai (2010). Efficiency, *trust, and visual appeal: Usability testing through eye tracking. In System Sciences (HICSS), 2010 43rd Hawaii International Conference on* (pp. 1-10). IEEE.

Dwyer, C., Hiltz, S., and Passerini, K. (2007). Trust and privacy concern within social networking *sites: A comparison of Facebook and MySpace. AMCIS 2007 Proceedings, 339.*

Ehmke, C., and Wilson, S. (2007). Identifying web usability problems from eye-tracking data," In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it-Volume 1*(pp. 119-128). British Computer Society.

Filgueira, J. M. (2008). Los *Blogs* dentro del turismo 2.0. *ROTUR/Revista de Ocio y Turismo*, 1, 135-152.

Fodness, D., and Murray, B. (1999). A Model of Tourist Information Search Behavior, *Journal of Travel Research*, 37(3), 220-230.

Frazer, C. F., Sheehan, K. B., and Patti, C. H. (2002). Advertising strategy and effective advertising: comparing the USA and Australia. *Journal of Marketing Communications*, *8*(3), 149-164.

Goldberg, J. and Wichansky A.M. (2003). Eye tracking in usability evaluation: A Practitioner's Guide. In Hyona, J., Radach, R., Duebel, H (Eds.). The mind's eye: cognitive and applied aspects of eye movement research (pp.573-605). Boston, North-Holland / Elesevier.

Goossens, C. (2000). Tourism information and pleasure motivation. *Annals of tourism research*, *27*(2), 301-321.

Hosany, S., and Gilbert, D. (2010). Measuring tourists' emotional experiences toward hedonic holiday destinations. *Journal of Travel Research*, *49*(4), 513-526.

Hossain, L., and Silva, A. (2009). Exploring user acceptance of technology using social networks. *Journal of High Technology Management Research, 20* (1), 1-18.

Hsu, Ch. and Lin, J. (2008). Acceptance of blog usage: the roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, *45* (1), 65-74.

Hu, Y., and Ritchie, J. B. (1993). Measuring destination attractiveness: A contextual approach. *Journal of Travel Research*, *32*(2), 25-34.

Ioanăs, E., & Stoica, I. (2014). Social media and its impact on consumers behavior. *International Journal of Economic Practices and Theories*, *4*(2), 295-303.

Joinson, A. N. (2008). Looking at, looking up or keeping up with people?: motives and use of facebook. In *Proceedings of the SIGCHI conference on Human Factors in Computing Systems* (pp. 1027-1036). ACM.

Kwak, H., Lee, C., Park, H., and Moon, S. (2010). What is Twitter, a social network or a news media?. In *Proceedings of the 19th international conference on World wide web* (pp. 591-600). ACM.

Lodish, L. M., Abraham, M., Kalmenson, S., Livelsberger, J., Lubetkin, B., Richardson, B., and Stevens, M. E. (1995). How TV advertising works: A meta-analysis of 389 real world split cable TV advertising experiments. *Journal of Marketing Research*, *32*(2), 125-139.

Mohamad, M., Abdullah, A. R., and Mokhlis, S. (2012). Tourists' evaluations of destination image and future behavioural intention: The case of Malaysia. *Journal of Management and Sustainability*, *2*(1), p.181.

Park, Y. A., and Gretzel, U. (2007). Success factors for destination marketing web sites: A qualitative meta-analysis. *Journal of Travel Research*, *46*(1), 46-63.

Pearce, D. G. (2014). Toward an integrative conceptual framework of destinations. *Journal of Travel Research*, *53*(2), 141-153.

Prayag, G. (2009). Tourists'evaluations of destination image, satisfaction, and future behavioral intentions- The case of mauritius. *Journal of Travel and Toursim Marketing,* 26(8), 836-853.

Wieser, M. J., Pauli, P., Alpers, G. W., and Mühlberger, A. (2009). Is eye to eye contact really threatening and avoided in social anxiety?—An eye-tracking and psychophysiology study, *Journal of Anxiety Disorders*, *23*(1), 93-103.

CHAPTER 1: INTRODUCTION

1. EVOLUTION OF THE INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE TOURISM INDUSTRY

1.1. Evolution of the Internet and the Web 2.0

Society has seen many changes thanks to the emergence of Internet and these changes have mainly affected the relationships people establish between themselves, the purchase of goods and services, the way of acquiring information, etc. (Relaño 2011).

On one hand, Internet has allowed companies to be visible to a large audience of users at a really low price; on the other hand, it has enabled users to access a significant amount of information and be connected at anytime, from any place (Dellarocas 2003). This saturation of information – a characteristic of the online environment – impacts the success of the companies that have to provide the new consumers with customized products and services, according to their needs and desires (Relaño 2011)

In Spain, 73% of the population older than 15 years old has used Internet from time to time (ONTSI 2014). Young people are the ones who use the Internet the most and the use starts to decrease among people older than 55 years old. Besides, it was proven that students and workers are among the people who access the Internet the most (ONTSI 2014).

The population accesses the Internet with different purposes, reading or sending emails being among the activities that Spanish users perform on a daily basis (Relaño 2011). However, over the years it was proven that entertainment and communication are now among the main purposes of use. For instance, 36.1% of Internet users access it mainly for carrying out entertainment activities, while three out of four Internet users are driven by communication purposes. More exactly, 95.6% of the people aged between 20 and 24 get connected with communication purposes (Telefónica 2015).

But this is not all about the use of the Internet. The development of the Internet has led to the emergence of a new version of websites in the World Wide Web: the Web 2.0. As opposed to the Web 1.0, where users had a passive role and could only access

the information displayed on the Internet, the Web 2.0 allows users to participate and collaborate with the online environment, providing their own information. Therefore, users have adopted a more active role, which has not only revolutionized the different activity sectors, but also the existing companies and enterprises.

With this new version of the Web, a series of free and wide-ranging tools have appeared, aimed mainly at encouraging participation and collaboration among users (blogs, social networks, online communities, etc.). These tools are known as Web 2.0 tools and they include the so-called "horizontal information", meaning that all the users can provide their own knowledge and opinions and share them with the rest of people connected to the Web (ONTSI 2011).

Considering the study "Our Mobile Planet: Spain 2013" about social networks, the results revealed that 86% of the survey respondents visit social networks and 58% do it at least once a day. Likewise, users who know these platforms more in depth are between 18 and 30 years old (IAB Spain Research 2014).

Although many people use social networks to be connected to their environment social media are also used for entertainment and/or professional purposes. In other words, people seek for entertainment, being in contact with other users and promoting themselves professionally (Castañeda and Gutiérrez 2010; ONTSI 2011; Teléfonica 2013).

1.2. Brand presence on the Web 2.0

Many companies, on their part, also took the opportunity of the massive growth of social networks to integrate them in their online marketing plans.

According to the study of Adigital (2014), 85% of companies use social networks to improve corporate image, increase brand reputation and/or promote products and services. In this case, the social networks most used by companies are Facebook and Twitter, although the less massive social networks, such as Instagram or Pinterest, have already exceeded 20% of adoption rate among Spanish companies.

Over time, small companies have also had to adapt to these new technological advances, so that 67% of them now have their own website and 43% are present on social networks (Telefónica 2015).

Among the main reasons for which users follow brands are job offers (78%), scholarships (72%), discounts (77%), information on the product/service (72%) and customer service (70%) (IAB Spain Research 2014).

However, in spite of all of the above, the most popular social networks started to decrease considerably in 2014, while social networks based on pictures acquired more importance. For instance, Instagram is growing by 28%, Tumblr by 22% and Pinterest by 7%, as compared to Facebook, which is decreasing by 6% and Twitter by 3% (Telefónica 2015).

1.3. The 'social' electronic commerce

For several reasons detailed hereafter, electronic commerce has experienced a significant boom in the recent years. So much so that more than half of Internet users have made online purchases at least once in 2012 (ONTSI 2014). The turnover from electronic commerce in Spain increased by 24.7% in the third quarter of 2014, up to 4102.8 million euro. In the same line, the activity sectors with the highest income were tourism (hotel and flight reservations, tourism activities, etc.), direct marketing and the garment industry (CNMC 2014).

Nonetheless, and even though this factor loses weight over time, one of Internet users' biggest fears and concerns for purchasing online is related to privacy and personal data protection (Relaño 2011). For this reason, before making a purchase, more than half of the Spanish users search for information on the Internet (Relaño 2011), as it is a quite valued environment for product information search (a score of 6.7 over 10), as well as for looking for recommendations (Telefónica 2013).

The sectors that register most online searches are tourism, automobile and mobile phones. Since these products and services are more complex and involve higher

payments, consumers prefer to search for information, compare and analyze their characteristics in detail before purchasing them (Relaño 2011).

On the other hand, the evolution of technology has also influenced electronic commerce. In this case, thanks to the mobile network (m-commerce), people can purchase online from any device (tablets, smartphones, laptops, etc.) at anytime and get immediate confirmation (Villalba et al. 2013).

In turn, the Web 2.0 has brought a new type of electronic commerce: the 'social commerce'. This new type of commerce is reflected in the e-commerce websites containing Web 2.0 tools and is either based on content created or exchanged by users (Huang and Beyoucef 2013) or on the integration of online stores within corporate social network profiles (ONTSI 2011).

In the recent years, the use of mobile phones for accessing the Internet and social networks has increased spectacularly. Nielsen's study (2014) confirmed that 64% of social media users use these tools at least once a day on their computers and nearly 50% of smartphone owners visit social networks every day. Comparatively speaking, the most widely visited social network in 2011 was Facebook, with over 140 million visitors, followed by Blogger with approximately 50 million visitors (Nielsen 2011).

Over the years, Facebook continues to be the most widely used social network in general, but in contrast to previous years its growth has considerably decreased from 32.5% in the first trimester of 2012 to 15% in the first trimester of 2014 (Telefónica 2015) and consumers are also using other social networks such as Linkedin, Pinterest and Instagram. Blogger is second to Facebook in terms of the list of users who connect to social networks on their computer, since users who connect on their smartphones use other social networks such as Instagram, Twitter, etc., more frequently (Nielsen, 2014).

Furthermore, the results of binti Mohd Zulkefli and bin Baharudin's study (2014) revealed that 99.1% of the participants have a Facebook account and 35.8% have a blog account.

The new concept known as SOLOMO encloses three terms: Social, Local and Mobile. Users can be connected to the social networks (Social) and use geolocalized services

(Local) with their *smartphones* or *tablets* at any time (Móvil) (Villalba et al. 2013). However, the phenomenon of social commerce is still quite new and still needs to be studied more in depth (Huang and Beyoucef 2013).

2. THE IMPACT OF ICTS ON THE TOURISM INDUSTRY

2.1. The tourist 2.0 and Travel 2.0 tools

The development of ICTs and, in particular, of the Web 2.0, has affected the different activity sectors (Education 2.0, Marketing 2.0, Journalism 2.0, etc.), tourism being one of the most impacted sectors by this new version of the Web.

As a result, a new concept called Travel 2.0 is created, which could be defined as the Web 2.0 oriented towards tourism and travels. For Filgueira (2008, p. 136), "it is a new Internet model for consulting, publishing, sharing, discussing and distributing information about tourism, with content created by Internet users who interact between themselves".

Consequently, today's tourists are more and more informed and, therefore, more demanding in terms of travel planning (González-Rodrigo et al. 2010). This gives rise to significant changes in their travel behavior and habits, originating the so-called tourist 2.0. According to Sobejano (2009), the following typology of the tourist 2.0 can be established:

- Consumer: the tourist who prepares his/her travel through tour operators (the classical tourist).
- Prosumer: (PROducer or PROfessional + ConSUMER): it refers to the tourist who plans his/her own travels, creating the product he/she will consume afterwards. A wide variety of information sources is used in this process, such as blogs and social networks.
- Adprosumer (ADvertiser + PROducer + ConSUMER): it refers to the active prosumer. In this case, the tourist not only creates the product he/she will

consume afterwards, but also advertizes his/her experiences and opinions on different travel websites.

Besides, the new tourists are more independent and concerned by how they spend their money and time during their travel planning. Therefore, they are more interested in designing their own customized travel than in acquiring the classical package tours (Buhalis and Law 2008; Chamorro 2008).

At the same time, the development of ICTs has enables consumers to access directly the wholesaler, without intermediaries (travel companies, tour operators, etc.) (Barnett and Standing 2001; Buhalis and Law 2008; González-Rodrigo et al. 2010; Manero et al. 2012). This way, with the appearance of virtual travel companies and specialized search engines (e.g. Trivago or Kayak), tourists can compare prices and choose the cheapest service (Barnett and Standing 2001).

As we can see, travelers have different tools and applications at their disposal, hereinafter called "Travel 2.0 tools", which allow them to adopt a more active role in the decision-making and preparation of their travel, as well as to help other tourists by giving a prior insight of their destination. As travel products are intangible and cannot be assessed before consumption (involving high risk) (Lin et al. 2009), the word-of-mouth effect has become one of the most reliable information sources for travel planning, both offline (Word of mouth-WOM) and online (electronic Word of mouth-eWOM) (Schmallegger and Carson 2008; Gretzel and Yoo 2008; Fotis et al. 2012; Leung et al. 2013). On the Internet, users use social media during all the stages of their travel, but especially after completion, for sharing their experiences, opinions and materials (pictures, videos, etc.) (Fotis et al. 2012).

In turn, the fact that users use social media for preparing their travels also gives them benefits, such as entertainment or fun during use, more knowledge about their destinations, a sense of belonging to groups with common interests, cost savings, etc. (Parra-López et al 2011).

Tourism companies must take this opportunity and ensure their presence on the platform 2.0. Once there, they will be able to identify new market segments, launch specific campaigns, increase their presence online, involve potential customers,

position against the competitors, etc. (Noone et al 2011; Chan and Guillet 2011; Leung et al. 2013).

In any case, the Web 2.0 should be taken as complementary to the Web 1.0 and not as a substitute, since there are still tourists who prefer to visit the official websites of hotels/apartments for planning their travels (Jacobsen and Munar 2012). Besides, it was confirmed that if the content created by users about their travels is included within official tourism websites, the level of trust of potential tourists increases considerably (Yoo and Gretzel 2011).

2.2. Travel 2.0 tools

As we can see, the Web 2.0 focused on tourism has an endless number of platforms and applications on which companies can have presence: travel blogs, discussion forums, online travel communities, social networks of destinations/hotels, wikis, etc. However, for a proper investment in the platform 2.0, is it advisable that companies understand their target market in depth (Noone et al. 2011).

Our study is focused on three specific Travel 2.0 tools: travel blogs, travel social networks and online tourist communities.

2.2.1. Travel blogs

Blogs are online diaries created by people and stored on the Internet so anyone can access them (Sharda and Ponnada 2008). Bloggers provide comments and personal thoughts about a particular topic, which are normally left in chronological order and frequently updated (Schmalleger and Carson 2008).

Fumero (2005, p. 4) defines the blog as "a hierarchy of chronologically organized texts, images, multimedia objects and data, supported by a distribution system able to provide (to the author) the necessary functionality for regular content distribution, requiring minimum technical skills, which can facilitate the creation of significant social connections or virtual communities around any topic of interest".

Blogs can be written by professionals or by any person (Price and Starkov 2006) and, as opposed to classical magazines, these are granted more freedom in terms of speech, use of language, experiences shared and personal opinions (Kayak 2013).

The tourism blogosphere offers different forms of communication: consumer to consumer (C2C), business to business (B2B), business to consumer (B2C), government to consumer (G2C), and government to business (G2B) (Schmalleger and Carson, 2008; Akehurst 2009).

However, most travel blogs are personal and their author's main purpose is to express opinions and travel experiences so that other readers can access the information they need about the place/hotel they plan to visit.

In this sense, tourism blogs are becoming an important information exchange mechanism between tourists (Wenger 2008) since, in contrast to official destination/hotel websites, the former provide the travelers' own personal experiences, which increases the credibility and authenticity of the information (Sharda and Ponnada 2008).

Wang's study (2012) demonstrated that travel blogs have a significant influence on potential clients' perceived image of the destination and their intention to travel. Companies have therefore realized that blogs are economical, effective media for advertising (Akehurst 2009).

However, in order for blogs to be successful, it is important that they are updated regularly with valuable and reliable content (Schmallegger and Carson 2008; Jacobsen and Munar 2012). At the same time, if blog followers perceive that the content is very commercial, they will stop following the blog or reading its posts (Price and Starkov 2006).

Blog promotion is cheaper than traditional advertising media; besides, it can improve a company's positioning on the Internet (Kayak 2013; Leung et al. 2013). Therefore, blogs should be part of the online strategy of a business (Price and Starkov 2006). So much so that lately many brands have decided to sponsor professional bloggers (for instance, paying them a travel, the accommodation, etc.), in return for writing about the company in some posts (Schmallegger and Carson 2008).

2.2.2. Travel social networks

Social networks are expanding at an excessively fast pace (Qualman 2011) and have become a popular way for users to connect and share digital content (Viswanath et al. 2009). At the present time, the number of active users (1.350 billion) has nearly reached the population of China (ABC 2015).

For now, the most popular social network is Facebook, followed by Twitter and Youtube (IAB Spain Research, 2014). Since Facebook was created in 2004 as a social network for the students of Harvard University, it has not only changed the way people relate to each other, but also the interaction of companies with customers (Qualman, 2011). It has been confirmed that people trust their friends' opinions more than traditional advertisements. Social networks are therefore being increasingly used to search for opinions and experiences with certain products and services (Qualman, 2011).

In our context, the study by Almansa and Navarrete (2014) demonstrated that Facebook is the most widely used social network among tourism institutions, as it is a very thorough social network that allows you to interact, publish videos and photos, create events, etc.

Similarly, Lange-Faria and Elliot (2012) demonstrated that social networks influence travel decisions. Tourism companies therefore have to take advantage of the opportunity and incorporate marketing strategies on different social networks.

If social networks are not properly managed, they can have a negative impact on a company's image and reliability. In order to avoid this, community managers must know very well the company goals, take into account customers' needs and desires and encourage interaction between the business and the client (Salkhorder 2011; Chan and Guillet 2011). Additionally, social networks require to update the content regularly and to manage and reply quickly to customers' comments, whether positive or negative (Salkhorder 2011; Chan and Guillet 2011; Parra-López et al. 2011).

We have seen how in the recent years, the study of social networks has attracted special attention and interest from both professionals and researchers (Pérez-Latre et al. 2012).

2.2.3. Online travel communities

The appearance of the new version of the Web has given rise to different online communities where tourists can exchange experiences and opinions about a topic of common interest (Schmallegger and Carson 2008). This has led to the integration of content created by users (UGC) into different online portals, Tripadvisor being one of the front-runners (SEGITTUR, Turismo e Innovación 2013).

The goal of the virtual community TripAdvisor, founded in 2000 in the tourism sector (Miguéns et al. 2008), is to provide users with recommendations for hotels and other travel-related Information (Law 2006). Travelers can visit the site and consult the opinions posted by other travelers about any hotel, restaurant, etc. (O'Connor 2008). TripAdvisor actually serves as an intermediary for tourists to trust if they wish to plan their own trips, instead of relying on a travel agent (Jeacle and Carter 2011).

Additionally, this travel community allows you to upload multimedia content (pictures and videos), participate in discussion forums (Miguéns et al. 2008) and see the highest rated hotels in each region based on user ratings (Lee et al. 2011). In general, the content is relevant, well structured, and users can easily navigate through the site (Law 2006).

Travelers can visit the Tripadvisor website before, during and after the travel, to get information about their hotel/destination or to publish own experiences and comments after completing their travel (SEGITTUR, Turismo e Innovación 2013). These user comments are not only positive for customers, but also for the hotel management, since they can access other customers' opinions about the hotel and take the appropriate measures in each case (Melián et al. 2011).

Apart from the travelers' comments and pictures, on Tripadvisor tourists can rate the different services provided by the hotels, thus establishing a ranking of the hotels located in the same area. In this sense, it is widely known that online reputation mechanisms are more and more important and they influence tourists' decisions considerably (Dellarocas 2003).

Clearly, one of the main inconveniences of a site like TripAdvisor is the lack of credibility of its content, since users often think that some of the posted comments

might be false, controlled or manipulated by the hotels or the competition (O'Connor 2008). Despite this inconvenience, TripAdvisor currently has nearly 375 million users visiting their site every month, and over 250 million comments and opinions posted about more than 5.2 million different accommodations, restaurants and places of interest (TripAdvisor.com 2015). Tourism companies should therefore take advantage of the opportunities offered for advertising on these online travel platforms.

3. ONLINE ADVERTISING

3.1. Characteristics and issues of online advertising

As we have seen, not only the consumer's role has changed on the Internet, but also new media and platforms are born, where companies can integrate their marketing strategies, which include the online advertising campaigns.

In the recent years, investment in online advertising has increased considerably. According to the study conducted by IAB Spain 2015, investment in digital advertising in 2014 reached 1065.6 million euro, up by 9.9 % over 2013.

Unlike traditional media, advertising on the Internet is characterized by being more global, cheaper and immediate, by allowing market identification and facilitating segmentation of target audience, etc. (Wu et al. 2008; Hsieh and Chen 2011).

Nonetheless, the main characteristic of online advertising is interactivity. In this sense, consumers adopt an active attitude and can control at any time whether they want to receive information about the advertisement or not (Blazquez et al. 2007).

In spite of all this, online advertisements have not replaced the ones displayed in traditional media, since they are a complementary option, not a substitute (Margarida 2013).

There are different types of advertising formats which can be inserted in a website (banner, skyscraper, MPU[1], streaming, button and contextual advertising) or appear as

[1] MPU = mid page units.

floating ads (pop-up/pop-under, interstitial or curtain ads, superstitial and floating) (Beerli and Santana 2010). However, the banner is the most widely used advertising format on the Internet (Rejón 2012) since its first appearance in October 1994 in the Hotwired online magazine (Hollis 2005; Blazquez et al. 2007; Abuín 2008).

The main purpose of a banner is to catch users' attention so that they click on it and are redirected to the advertiser's website (Abuín 2008), or to at least be recalled (Danaher and Mullarkey 2003). However, one of the biggest issues that online advertising in general and banners in particular face nowadays is that users do not pay enough attention to them, so they become inefficient tools for companies. Derived from this issue, the concept of 'banner blindness' was born to refer to the fact that many users do not pay attention to the banners and even avoid or ignore them (Benway 1998; Benway and Lane 1998; Drèze and Hussherr 2003; Evoc Insights 2009; Burke et al. 2005; Nielsen 2007; Owens et al. 2011; Margarida 2013).

The saturation of advertising in the online environment has taught users to be alert at any time and use mechanisms to avoid being bothered by advertisements during navigation.

In this case, thanks to their prior experience in the use of Internet, users recognize the structure of a website easily and ignore the parts they are not interested in, like for instance the ads (Lapa 2007; Hsieh and Chen 2011). In the same way, peripheral vision allows them to filter graphic formats similar to ads and focus their attention on the main content (León 2009).

Following the specific literature review, we could see how the banner blindness effect can vary depending on different factors. For example, depending on the position of the banner on the website (Evoc Insights 2009; Mosconi et al. 2008; Owens et al. 2011), the type of task users carry out on the website (exploratory navigation vs. goal-oriented navigation) (Burke et al. 2005; Pagendarm and Schaumburg 2006), the type of banner (animated vs. static) (Benway and Lane 1998; Chandon et al. 2003; Baltas 2003; Lohtia et al. 2003; Chandon et al. 2007; Hamborg et al. 2012), the content of the website where the banner is inserted (Hsieh and Chen 2011), the size of the banner

(Chandon et al. 2003; Robinson et al. 2007), the content of the banner (Hughes et al 2003; Robinson et al. 2007; Rasty et al. 2013; Scott et al. 2015), the user's level of involvement with the product advertized (Cho et al. 2001; Cho 2003; Wu et al. 2008; Beerli et al. 2010; Flores et al. 2014) or the link between the ad and the website, like for instance contextual advertisements (Yeun Chun et al. 2014), among others.

3.2. Advertising on Social Media

The development of social networks has evidently led to the appearance of *Social Media Marketing*. Advertisers have thereby taken advantage of the opportunity to insert their advertising, either paid or for free, on different social networks.

Advertising on social media needs to convey the message that users also have a main character status, and as such they have the capacity to decide whether they want to pay attention to an ad or not, whether they want to access the advertiser's website or not, etc. (The Cocktail Analysis 2010; Llorente et al. 2013).

One of the advantages provided by social networks is the advertising segmentation according to specific user groups (ONTSI 2011; Vejacka 2012). For instance, in the case of Facebook, thanks to the great amount of information shared by users on their profiles, different filters can be applied (localization, demographic, etc.) in order to provide customized advertisements (Vejacka 2012). At the same time, Facebook allows segmentation according to the user's perspective, since it is the user who chooses whether he/she wants follow certain pages or not, to join certain groups or not, etc. (The Coktail Analysis 2010).

According to the study conducted by ONTSI 2014, 29.1% of the companies with more than 10 employees have used social networks for different reasons (improving their corporate image, launching specific products, etc.), one of them being advertising.

According to Nielsen's study (2013), advertisers are increasingly using marketing in social media. 89% of the surveyed advertisers indicated that they used free social media tools, and 75% of the participants indicated that they had paid to insert

advertising on these websites. Only 6% of the sample made no advertising efforts with social media.

Despite the fact that Social Media Marketing has increased, it is still a rather new practice for advertisers and companies. Nielsen's results (2013) demonstrated that only 41% of the advertisers indicated that they have a budget dedicated to social media, and 70% of the sample indicated that the line items used for social media were less than 1% of their general budget.

3.3. Advertising efficiency and assessment techniques

As mentioned above, banner blindness has become one of the biggest issues and concerns for both media companies and researchers lately.

Whenever companies insert an ad on a website, they have to ensure a specific follow-up of the ad to make sure the result of their investment is in line with their goals (Rejón 2013). For assessing advertising efficiency on the Internet, goals are based on increasing the number of post-views, the number of post-clicks or the click-through rate (Cho 2003; León 2009; Blazquez et al. 2007; Beerli et al. 2010).

However, in the context of neuromarketing, different philosophical and semi-philosophical techniques have acquired special importance in the assessment of advertising efficiency. These techniques allow analyzing the consumers' brain activity when exposed to a stimulus (advertising), to see whether the activation is successful or not (Morin 2011).

These methodologies, based on experimental psychology and cognitive neuroscience, analyze the subject and employ magnetic resonance techniques (Braidot 2009), electroencephalography (EEG), magnetoencephalography (MEG), functional magnetic resonance imaging (fMRI), facial recognition and eye-tracking mechanisms (IAB Spain Research and The Cocktail Analysis 2009; Kuo et al. 2009; Hervet et al. 2011).

In our research we implemented the latest eye-tracking technique, which has been widely applied for analyzing the usability level of different websites (Pan et al. 2004;

Burke et al. 2005; Lapa 2007; Ehmke and Wilson 2007; Hervet et al. 2011; Hao et al 2015; Marchiori and Cantoni 2015).

This technique allows recording the user's eye movements while viewing a given stimulus (Ehmke and Wilson 2007). Therefore, with this technique researchers can know whether users pay attention to the ad or ignore it (Hervet et al. 2011).

There are two types of eye-trackers: the ones that are placed on the participant's head, and the remote systems, which place a camera on the computer's screen. The first ones are considered to be more intrusive, as they can limit participants' natural behavior for being placed on their heads. They are mainly used for tasks involving movement such as sport activities or activities that require motion (Goldberg and Wichansky 2003).

This technique records two types of eye movements: saccades and fixations. The saccades are rapid eye movements that can last from 20 to 200 milliseconds and usually have visual angles from 3 to 5 degrees (Pan and Zhang 2010). During saccades, the eye can only move without collecting information. Fixations occur when the eye stabilizes on a specific spot for up to 600 milliseconds (Jacob 1990; Hughes et al. 2003). However, the eye during fixation can still record small nervous movements, normally less than one degree (Jacob 1990).

The "scanpath" is the pattern the eye follows during movement (saccades and fixations), through visual stimuli (Noton and Stark 1971). The eye paths and fixations are captured by the most innovative eye-tracking systems by capturing the reflection of a beam of infrared light in the center of the pupil (infrared corneal reflection). The eye-tracking system also records the coordinates of the fixation (x,y) in conventional ranges between 30Hz and 250Hz (Goldberg and Wichansky 2003). The study of these movements and fixations can be applied to the design of stimuli involved in visual marketing (*bottom-up factors*[2]) that is intended to catch consumers' attention as well as to determine their impact on an individual's specific characteristics (*top-down factors*) in the voluntary attention process.

[2] *Top-down* factors are based on a cognitive theory or theoretically-supported hypotheses. *Bottom-up* factors are based on observations of the data without theoretical support (Jacob and Karn 2003).

Through the eye-tracking method, researchers can obtain a great amount of information from the participants to the experiment and check the usability of any website (Lapa 2007). Firstly, a qualitative analysis can be carried out through heat-maps and gaze-plots. The heat-map shows through different colors the areas of the website on which users focus the most. The red color is for the 'hottest' areas or the areas receiving most fixations, while the green color is for the areas receiving the shortest fixations (Ehmke and Wilson 2007; Hao et al. 2015).

On the other hand, many ocular measurements can be obtained about the different areas of interest analyzed: fixation count and fixation duration, total fixation duration, time to the first fixation, number of fixations before reaching the area of interest, etc. (Holmqvist et al. 2011). Thanks to these measurements, researchers can quantify the results of the study.

Nonetheless, as Lapa (2007) states, this technique has some inconveniences also. Among them, the size and cost of the necessary equipment are a limitation for many researchers and professionals. Finally, from the researcher's perspective, the analysis and interpretation of the results obtained with the eye-tracking technique is more time and effort consuming.

3.4. Perception and attention

But attention measures should be conducted and complemented through other measures such as the memory or the expressed emotional response (Van Trijp 2009).

This statement is justified by the fact that attention can often be paid with a low level of awareness, meaning that the information can be actively processed due to the fact that some external information or internal representations or knowledge is already present in our memory. Therefore, external information may be ''enriched'' as a consequence of (spontaneous) associations that are co-activated in the brain. On the contrary, this process of "filling in" the information from "accurate" inferences may lead to misinterpretation of that information (Van Trip 2009). Some studies show that many consumers simply don't pay attention to the information provided in a store

(e.g. Steenhuis et al. 2004 [intervention via nutritional labeling in a store]) or the information is incorrectly interpreted, well beyond its factual and even intended meaning (Leathwood et al. 2007 [in nutrition and health claims]).

Thus, there is a clear need for more research on consumer attention and perception of marketing stimuli or information in more market-relevant conditions, as attention may be an important bottleneck in further information processing. Such research should rely on experimental and behavioral observation methods rather than on purely memory-based survey research, as it used to be (Van Trijp 2009). In our case, eye-tracking methodologies provide a solution to overcome this difficulty and allow comparing the subjects' attention results with self-reported memory.

4. REFERENCES

ABC (2015). Facebook alcanza los 1.350 millones de usuarios activos, casi la población de China. http://www.abc.es/tecnologia/redes/20141028/abci-resultados-financieros-facebook-201410282211.html (accessed August 03, 2015).

Abuín Vences, N. (2009). *La publicidad en periódicos electrónicos: creación y evaluación de un modelo de eficacia.* Tesis Doctoral. Universidad Complutense de Madrid.

Almansa, A., and Navarrete, B. (2013). Relaciones públicas 2.0. En la promoción turística. El caso de Costa del Sol. VIII Congreso Internacional de Investigación en Relaciones Públicas "La conducta interactiva de los públicos para las relaciones eficaces". Abril 2013. Zaragoza.

Akehurst, G. (2009). User generated content: the use of blogs for tourism organisations and tourism consumers. *Service Business*, *3*(1), 51-61.

Adigital. Asociación Española de Economía Digital (2014). Informe sobre uso de redes sociales en empresas 2014. https://www.adigital.org/emailing/2014/rrss/informe.pdf (accessed August 01, 2015).

Baltas, G. (2003). Determinants of internet advertising effectiveness: An empirical study. *International Journal of Market Research*, *45*(4), 505-513.

Barnett, M., and Standing, C. (2001). Repositioning travel agencies on the Internet. *Journal of Vacation Marketing*, *7*(2), 143-152.

Beerli Palacio, A., and Martín Santana, J. D. (2010). La eficacia de la publicidad on-line en el contexto de los blogs. *Cuadernos de Gestión*, *10*(1), 17-42.

Benway, J. (1998). Banner blindness: The irony of attention grabbing on the World Wide Web. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting 42*(5), 463-467. SAGE Publications.

Benway, J.P., and Lane, D.M. (1998). Banner blindness: web searchers often miss "obvious" links. Internet working 1(3) (Internet Technical Group, Human Factors and Ergonomics Society, Santa Monica, CA), pp. 1-4.

binti Mohd Zulkefli, N. A., and bin Baharudin, B. (2014). A case study on travel

information from social network—Focus in Facebook and blogs in Malaysia. In *Computer and Information Sciences (ICCOINS), 2014 International Conference on* (pp. 1-6). IEEE.

Blazquez, J.J. , Esteban, A., and Díaz E. (2007). Relación entre eficacia publicitaria, Conocimiento y tipo de publicidad: aplicación al medio internet. In *Conocimiento, innovación y emprendedores: camino al futuro* (p. 156). Universidad de La Rioja.

Braidot, N. (2009). *Neuromarketing*. Ediciones Gestión 2000, España.

Buhalis, D., and Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research. *Tourism management*, *29*(4), 609-623.

Burke, M., Hornof, A., Lewis, N., and Gorman, N. (2005). High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten. *ACM Trans.Comput.-Hum. Interact.*, *12*(4), 423–445.

Castañeda, L., and Gutiérrez, I. (2010). Redes sociales y otros tejidos online para conectar personas. *Aprendizaje con Redes Sociales. Tejidos educativos en los nuevos entornos. Sevilla: MAD Eduforma*.

Chamorro (2008). Una revolución en el turismo gracias a las TIC. *Bit* (170), 30-33.

Chan, N. L., and Guillet, B. D. (2011). Investigation of social media marketing: how does the hotel industry in Hong Kong perform in marketing on social media websites?. *Journal of Travel & Tourism Marketing*, *28*(4), 345-368.

Chandon, J. L., Chtourou, M. S., and Fortin, D. R. (2003). Effects of configuration and exposure levels on responses to web advertisements. *Journal of Advertising Research*, *43*(02), 217-229.

Chandon, P., Hutchinson, J. W., Bradlow, E., and Young, S. H. (2007). Measuring the Value of Point-of-Purchase Marketing with Commercial Eye tracking Data. *Business School Research Paper* No. 2007/22/MKT/ACGRD. http://ssrn.com/abstract=1032162 or http://dx.doi.org/10.2139/ssrn.1032162 (accesed August 14, 2015).

CNMC. Comisión Nacional de los Mercados y la Competencia (2014). http://www.cnmc.es/CNMC/Prensa/TabId/254/ArtMID/6629/ArticleID/1259/El-comercio-electr243nico-supera-en-Espa241a-los-4100-millones-de-euros-en-el-tercer-trimestre-de-2014-un-25-m225s-que-el-a241o-anterior.aspx (accessed August 10, 2015).

Cho, C. H., Lee, J. G., and Tharp, M. (2001). Different forced-exposure levels to banner advertisements. *Journal of Advertising Research*, *41*(4), 45-56.

Cho, C. H. (2003). The effectiveness of banner advertisements: Involvement and click-through. *Journalism & Mass Communication Quarterly*, *80*(3), 623-645.

Danaher, Peter J. and Guy W. Mullarkey (2003). Factors affecting online advertising recall: A study of students. *Journal of Advertising Research*, *43*(3), 252-267.

Dellarocas, C. (2003). The digitization of word of mouth: Promise and challenges of online feedback mechanisms. *Management science*, *49*(10), 1407-1424.

Drèze, X., and Hussherr, F.X. (2003). Internet advertising: is anybody watching? *Journal of Interactive Marketing*, *17*(4), 8-23.

Ehmke, C., and Wilson, E. (2007). Identifying web usability problems from eye-tracking data, In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers*, *Volume 1*(pp. 119-128). British Computer Society.

Evoc Insights (2009). Methodology Spotlight. http://www.evocinsights.com/newsletter_q2_09_eyetracking.html (accessed November 11, 2014).

Figueira, J.M. (2008). Los Blogs dentro del turismo 2.0. *ROTUR: Revista de Ocio y Turismo*, (1),

135-152.

Flores, W., Chen, J. C. V., and Ross, W. H. (2014). The effect of variations in banner ad, type of product, website context, and language of advertising on Internet users' attitudes. *Computers in Human Behavior*, *31*, 37-47.

Fotis, J., Buhalis, D., and Rossides, N. (2012). Social Media Impact on Holiday Travel Planning: The Case of the Russian. *Transdisciplinary Marketing Concepts and Emergent Methods for Virtual Environments*, 230.

Fumero, A. (2005). Un tutorial sobre *blogs*. El abecé del universo *blog*. *Telos. Cuadernos de Comunicación e Innovación, 65, 1-20*. Retrieved January 17, 2011, from http://www.campusred.net/telos/articulocuaderno.asp?idarticulo=1&rev=65

Goldberg, J. and Wichansky A.M. (2003). Eye tracking in usability evaluation: A Practitioner's Guide. To appear in: Hyona, J., Radach, R., Duebel, H (Eds.). The mind's eye: cognitive and applied aspects of eye movement research (pp.573-605). Boston, North-Holland / Elesevier.

González-Rodrigo, E., Jiménez-Zarco, A. I., and Torrent-Sellens, J. (2010). Usuarios de Internet y comercio electrónico en turismo. In *Turitec 2010: VIII Congreso Nacional Turismo y Tecnologías de la Información y las Comunicaciones* (pp. 229-243). Escuela Universitaria de Turismo.

Gretzel, U., and Yoo, K. H. (2008). Use and impact of online travel reviews. *Information and communication technologies in tourism 2008*, 35-46.

Hamborg, K.-C., Bruns, M., Ollermann, F., and Kaspar, K. (2012). The effect of banner animation on fixation behavior and recall performance in search tasks. Computers in Human Behavior, 28(2), 576–582.

Hao, J. X., Tang, R., Yu, Y., Li, N., and Law, R. (2015). Visual Appeal of Hotel Websites: An Exploratory Eye Tracking Study on Chinese Generation Y. In*Information and Communication Technologies in Tourism 2015* (pp. 607-620). Springer International Publishing.

Hervet, G., Guérard, K., Tremblay, S., and Chtourou, M. S. (2011). Is banner blindness genuine? Eye tracking internet text advertising. *Applied Cognitive Psychology*, *25*(5), 708–716.

Hollis, N. (2005). Ten years of learning on how online advertising builds brands.*Journal of advertising research*, *45*(02), 255-268.

Holmqvist K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H., and Van de Weijer, J. (2011). *Eye Tracking: A comprehensive guide to methods and measures*. Oxford University Press, Oxford.

Hsieh, Y. C., and Chen, K. H. (2011). How different information types affect viewer's attention on internet advertising. *Computers in Human Behavior*, *27*(2), 935-945.

Huang, Z., and Benyoucef, M. (2013). From e-commerce to social commerce: A close look at design features. *Electronic Commerce Research and Applications*, *12*(4), 246-259.

Hughes, A., Wilkens, T., Wildemuth, B., & Marchionini, G. (2003). Text or Pictures? An eyetracking study of how people view digital video surrogates. *CIVR'03 Proceedings of the 2nd international conference on Image and video retrieval*, (pp. 271-280). Berlin (Germany): Springer-Verlag.

IAB Spain Research, and The Cocktail Analysis (2009). Claves sobre la Interacción visual con la publicidad web. Aplicación de la técnica eye tracking. Madrid: IAB Spain Research.

IAB Spain Research (2014). V Estudio anual de Redes sociales. http://www.iabspain.net/wp-content/uploads/downloads/2014/04/V-Estudio-Anual-de-Redes-Sociales-versi%C3%B3n-reducida.pdf (accesed August 15, 2015).

IAB Spain (2015). Estudio de Inversión en Publicidad Digital 2014.

http://www.iabspain.net/wp-content/uploads/downloads/2015/05/Estudio_Inversion_Publicidad_Digital_2014_v_Reducida.pdf (accessed August 11, 2015).

Jacob, R. J. (1990). What you look at is what you get: eye movement-based interaction techniques. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 11-18). ACM.

Jacobsen, J. K. S., and Munar, A. M. (2012). Tourist information search and destination choice in a digital age. *Tourism Management Perspectives*, *1*, 39-47.

Jeacle, I., and Carter, C. (2011). In TripAdvisor we trust: Rankings, calculative regimes and abstract systems. *Accounting, Organizations and Society*, *36*(4), 293-309.

Kayak (2013). Barómetro Kayk de viajes online. El Viajero Español del Futuro (Tendencias para el 2013). http://www.segittur.es/opencms/export/sites/segitur/.content/galerias/descargas/documentos/IVBarometro-Kayak-2013.pdf (accesed August 16, 2015).

Kuo, F.-Y., Hsu, C.-W., and Day, R.-F. (2009). An exploratory study of cognitive effort involved in decision under Framing—an application of the eye tracking technology. *Decision Support Systems*, *48*(1), 81–91.

Lange-Faria, W., and Elliot, S. (2012). Understanding the role of social media in destination marketing. *Tourismos. An International Multidisciplinary Journal of Tourism*, *7*(1).

Lapa, Ch. (2007). Using eye tracking to understand banner blindness and improve website design. Thesis. Rochester Institute of Technology.

Law, R. (2006). Internet and Tourism—Part XXI: TripAdvisor. *Journal of Travel & Tourism Marketing*, *20*(1), 75-77.

Leathwood P., Richardson DR. Straeter P, Todd PM., and Van Trijp HCM. (2007). Consumer understanding of health claims: sources of evidence. *British Jorunal of Nutrition*, *98*(3), 474–484.

Lee, H. A., Law, R., and Murphy, J. (2011). Helpful reviewers in TripAdvisor, an online travel community. *Journal of Travel & Tourism Marketing*, *28*(7), 675-688.

León, J.L. (2009). Nuevos Soportes y mercados de la publicidad digital. Transiciones y experiencias. *Pensar la Publicidad. Revista nternacional de investigaciones publicitarias 3*(2), 17-30.

Leung, D., Law, R., Van Hoof, H., and Buhalis, D. (2013). Social media in tourism and hospitality: A literature review. *Journal of Travel & Tourism Marketing*, *30*(1-2), 3-22.

Lin, P. J., Jones, E., and Westwood, S. (2009). Perceived risk and risk-relievers in online travel purchase intentions. *Journal of Hospitality Marketing & Management*, *18*(8), 782-810.

LLorente, C., Bartolomé, A., and Navarro, E. (2013). Eficacia publicitaria en redes sociales: el caso de Mango en Facebook España. *Questiones Publicitarias, 1*(18), 93-110.

Lohtia, R., Donthu, N., and Hersherger, E.K. (2003). The impact of content and design elements on banner advertising click-through rates. *Journal of Advertising Research*, *43*(4), 410-418.

Manero, C. B., García-González, M., García-Uceda, M. E., and Grijalba, J. M. M. (2012). Modelización de los cambios en el sistema de distribución del sector turístico debidos a la incorporación de las tecnologías. *Cuadernos de Economía y Dirección de la Empresa*, *15*(3), 117-129.

Marchiori, E., and Cantoni, L. (2015). Studying Online Contents Navigation: A Comparison Between Eye-Tracking Technique and Self-Reported Investigation. In *Information and Communication Technologies in Tourism 2015* (pp. 349-359). Springer International Publishing.

Margarida Barreto, A. (2013). Do users look at banner ads on Facebook? *Journal of Research in Interactive Marketing*, *7*(2), 119-139.

Melián González, S., Bulchand Gidumal, J., and González López-Valcárcel, B. (2011). La participación de los clientes en sitios web de valoración de servicios turísticos. El caso de Tripadvisor. *Revista de Análisis Turístico*, 10.

Miguéns, J., Baggio, R., and Costa, C. (2008). Social media and tourism destinations: TripAdvisor case study. *Advances in Tourism Research*, 26-28.

Morin, C. (2011). Neuromarketing: the new science of consumer behavior. *Society*, *48*(2), 131-135.

Mosconi, Mauro, Marco Porta, and Alice Ravarelli (2008). On-line newspapers and multimedia content: an eye tracking study. In *Proceedings of the 26th annual ACM international conference on Design of communication* (pp. 55-64). ACM.

Nielsen, J. (2007). Banner blindness: old and new findings. http://www.nngroup.com/articles/banner-blindness-old-and-new-findings/ (accessed November 11, 2014).

Nielsen (2011). State of the Media: The Social Media Report Q3. http://www.nielsen.com/us/en/insights/reports/2011/social-media-report-q3.html (accessed July 24, 2015).

Nielsen (2013). Paid Social Media Avertising. http://www.nielsen.com/us/en/insights/reports/2013/the-paid-social-media-advertising-report-2013.html (accesed July 22, 2015).

Nielsen (2014). The Digital Consumer Report. http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2014%20Reports/the-digital-consumer-report-feb-2014.pdf (accesed August 04, 2015).

Noone, B. M., McGuire, K. A., and Rohlfs, K. V. (2011). Social media meets hotel revenue management: Opportunities, issues and unanswered questions. *Journal of Revenue & Pricing Management*, *10*(4), 293-305.

Noton, D- and Stark L. (1971). Eye movements and visual perception. *Scientific American*, 224, 34-43.

O'Connor, P. (2008). User-generated content and travel: A case study on Tripadvisor. com. *Information and communication technologies in tourism 2008*, 47-58.

ONTSI (2011). Las Redes Sociales en Internet. http://www.ontsi.red.es/ontsi/sites/default/files/2003-presentacion_final_redes_sociales_vpmj.pdf (accessed August 05, 2015).

ONTSI (2014). La Sociedad en Red. Informe Anual 2013. http://www.ontsi.red.es/ontsi/es/estudios-informes/informe-anual-la-sociedad-en-red-2013-edici%C3%B3n-2014 (accessed August 10, 2015).

Our Mobile Planet: Spain (2013). Conoce mejor al consumidor móvil. http://boletines.prisadigital.com/our_mobile_planet_spain_es.pdf (accessed August 06, 2015).

Owens, Justin W., Barbara S. Chaparro, and Evan M. Palmer (2011). Text advertising blindness: the new banner blindness?. *Journal of Usability Studies*, *6*(3), 172-197.

Pagendarm, M., and Schaumburg, H. (2006). Why are users banner-blind? The impact of navigation style on the perception of web banners. *Journal of Digital Information*, *2*(1).

Pan, B., Hembrooke, H., Gay, G., Granka, L., Feusner, M., and Newman, J. (2004). The Determinants of web page viewing behavior: An eye-tracking study. In A. Duchowski (Ed.), *Proceedings of Eye Tracking Research & Applications Symposium (ETRA 04)* (pp. 147-154). New York: ACM.

Pan, B., and Zhang, L. (2010). An eyetracking study on online hotel decision making: The effects of images and number of options. *Travel and Tourism Research*, *Association Annual Conference*, San Antonio, June 20-22, 2010.

Parra-López, E., Bulchand-Gidumal, J., Gutiérrez-Taño, D., and Díaz-Armas, R. (2011). Intentions to use social media in organizing and taking vacation trips.*Computers in Human Behavior*, *27*(2), 640-654.

Pérez-Latre, F. J., Portilla, I., and Sánchez-Blanco, C. (2012). Social networks, media and audiences: A literature review. http://dadun.unav.edu/bitstream/10171/23805/1/PEREZ%20LATRE.pdf (accessed August 13, 2015).

Price, J., and Starkov, M. (2006). Building a Blog Strategy in Hospitality. *Grow Customer*. http://www.hospitalitynet.org/news/4026867.html (accessed June 25, 2015).

Qualman, E. (2011). How social media transforms the way we live and do business. *Ipswich, MA: Business Book Summaries*. https://www.ebscohost.com/uploads/corpLearn/pdf/bbs_socialnomics.pdf (accessed July 13, 2015).

Rasty, F., Chou, C. J., and Feiz, D. (2013). The Impact of Internet Travel Advertising Design, Tourists' Attitude, and Internet Travel Advertising Effect on Tourists' Purchase Intention: The Moderating Role of Involvement. *Journal of Travel & Tourism Marketing*, *30*(5), 482-496.

Rejón, F., Sánchez, J., and Muñoz, F. (2012). Improving the Effectiveness of Advertising in Internet Social Networking. In M.M. Cruz-Cunha, P. Gonçalves, N. Lopes, E.M. Miranda, & G.D. Putnik (Eds.), *Handbook of Research on Business Social Networking: Organizational, Managerial, and Technological Dimensions* (pp. 756-785). Hershey, PA: IGI-Global.

Rejón (2013). *La respuesta del consumidor a la publicidad en las redes sociales*. Tesis doctoral. Departamento de Comercialización e Investigación de Mercados. Universidad de Granada.

Relaño, A. (2011). Consumidores digitales, un nuevo interlocutor. *Distribución y consumo*, *116*, 44-51.

Robinson, H., Wysocka, A., and Hand, C. (2007). Internet advertising effectiveness. The effect of design on click-through rates for banners ads. *International Journal of Advertising*, *26*(4), 527-541.

Salkhordeh, P. (2011). Key issues in use of social networking in hospitality industry: 2009. http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1259&context=gradconf_hospitality (accessed June 18, 2015).

Schmallegger, D., and Carson, D. (2008). Blogs in tourism: Changing approaches to information exchange. *Journal of vacation marketing*, *14*(2), 99-110.

Scott, N., Green, C., and Fairley, S. (2015). Investigation of the use of eye tracking to examine tourism advertising effectiveness. *Current Issues in Tourism*, (ahead-of-print), 1-9.

SEGITTUR , Turismo e Innovación (2013). Estudio de mercado de apps turísticas. http://www.segittur.es/opencms/export/sites/segitur/.content/galerias/descargas/documentos/Segittur_APPS-Turismo.pdf (accesed August 08, 2015).

Sharda, N. and Ponnada, M. (2008). Tourism Blog Visualizer for Better Tour Planning. Journal of Vacation Marketing *14*(2), 157–67.

Sobejano 2009. Los distintos modelos del nuevo cliente turístico.

http://www.hosteltur.com/58823_distintos-modelos-nuevo-cliente-turistico.html (accesed July 16, 2015).

Steenhuis IP., Van Assema P., Van Breukelen G., and Glanz K. (2004). The effectiveness of nutrition education and labelling in Dutch supermarkets. *American Journal of Health Promotion*, 18, 221–224.

The Cocktail Analysis (2010). Informe de Resultados. Observatorio de Redes Sociale. 2º oleada. https://s3.amazonaws.com/tca-2012/uploads/2010/02/tca-2a_ola_observatorio_redes_informe_publico.pdf (accessed August 14, 2015).

Telefónica, F. (2013). La Sociedad de la Información en España 2012. Grupo Planeta Spain. http://www.fundaciontelefonica.com/arte_cultura/publicaciones-listado/pagina-item-publicaciones/?itempubli=176 (accesed July 28, 2015).

Telefónica, F. (2015). La Sociedad de la Información en España 2014. Grupo Planeta Spain. http://www.fundaciontelefonica.com/arte_cultura/publicaciones-listado/pagina-item-publicaciones/?itempubli=323 (accesed July 26, 2015).

Tripadvisor.com (2015). http://www.tripadvisor.com/PressCenter-c4-Fact_Sheet.html (accesed August 12, 2015).

Van Trijp, and Hans C.M. (2009). Consumer understanding and nutritional communication: Key issues in the context of the new EU legislation. *European Journal of Nutrition*, *48*(1), 41-48.

Vejacka, M. (2012). Facebook advertising and its efficiency on the Slovak market. *E+ M Ekonomie a Management*, *15*(1), 116-127.

Villalba, R., Martínez, L. and Martínez, S. (2013). Aplicación de las TIC en los portales turísticos españoles. Smart Regions for a Smarter Growth Strategy: New challengesof the regional policy and potentials worldwide economic crisis. Palacio de Exposiciones y Congresos "Ciudad de Oviedo". Noviembre 2013. http://www.reunionesdeestudiosregionales.org/Oviedo2013/htdocs/pdf/p673.pdf (accessed July 25, 2015).

Viswanath, B., Mislove, A., Cha, M., and Gummadi, K. P. (2009, August). On the evolution of user interaction in facebook. In *Proceedings of the 2nd ACM workshop on Online social networks* (pp. 37-42). ACM.

Wang, H. Y. (2012). Investigating the determinants of travel blogs influencing readers' intention to travel. *The Service Industries Journal*, *32*(2), 231-255.

Wenger, A. (2008). Analysis of travel bloggers' characteristics and their communication about Austria as a tourism destination. *Journal of Vacation Marketing*, *14*(2), 169-176.

Wu, S. I., Wei, P. L., and Chen, J. H. (2008). Influential factors and relational structure of Internet banner advertising in the tourism industry. *Tourism Management*, *29*(2), 221-236.

Yeun Chun, K., Hee Song, J., Hollenbeck, C. R., and Lee, J. H. (2014). Are contextual advertisements effective? The moderating role of complexity in banner advertising. *International Journal of Advertising*, *33*(2), 351-371.

Yoo, K. H., and Gretzel, U. (2010). Antecedents and impacts of trust in travel-related consumer-generated media. *Information Technology & Tourism*, *12*(2), 139-152.

CHAPTER 2: THE INFLUENCE OF e-WOM ON TRAVEL DECISION MAKING: CONSUMER PROFILES

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1. INTRODUCTION

Since the 1980s, the development of information and communication technologies (ICTs) has undoubtedly had an important impact on a wide range of practices and strategies, as well as industry structures, among them tourism (Buhalis & Law, 2008). Due to the evolution from Web 1.0 to Web 2.0 in recent years, the Internet has become a medium that encourages participation and the sharing of information between users, thus revolutionizing sources of travel information (Eichhorn, Miller, Michopoulou, & Buhalis, 2008). Because the new Travel 2.0 tourism model allows users to share their views and travel experiences with others, information is no longer controlled solely by tourism enterprises, but also by users who can provide and disseminate information through a series of free, powerful tools such as blogs, social networks, virtual communities, and others (Travel 2.0 applications).

Indeed, the development of new ICTs in general, and the Internet in particular, has substantially altered the relationship between companies and their target audiences; especially in the case of service companies. The tourism sector has not been immune to such influences, where the traditional distribution and communication channels have undergone enormous changes in recent years. In this sense, traditional travel agencies, which provided an almost irreplaceable added value to customers when choosing their destinations and/or accommodation, have now become less useful when dealing with increasingly well-informed consumers (Suárez Álvarez, Díaz Martín, & Vázquez Casielles, 2007). These consumers have become practically self-sufficient in terms of fulfilling their information needs, primarily due to the many sources of information that the Internet provides in the form of websites, forums, social networks, and others.

In this changing environment, it is important that tourism enterprises become aware of the opportunities Travel 2.0 applications offer. Specifically, the fact that these applications enable direct relationships to be established with users, permitting enterprises to determine not only what users think about the company (its reputation), but also to gain firsthand knowledge about the needs of customers and thus tailor their products to them in the best possible manner.

This paper aims to examine the influence of Travel 2.0 applications on tourist behaviour. To this end, we have established the following objectives: 1) verify which sources of information are most influential in choosing a travel destination, distinguishing between the opinions and recommendations of friends and family (known as offline word of mouth or WOM) and the opinions and recommendations of other users who generate their own content in different websites (electronic word of

mouth or eWOM); 2) ascertain which web tools (blogs, social networks and hotel or destination websites where users can post comments) are used most frequently for seeking information about a destination or hotel; and 3) determine the socio-demographic and navigation characteristics that explain a) the extent to which tourists use different online media as a source of information for planning their trip, and b) whether or not they share their experiences on travel websites such as blogs or social networks.

Our study is structured into six sections. Following the introduction, in Section 2 we provide a theoretical framework with a view to determining the important role that destination/hotel websites, travel blogs, and online social networks (OSNs) play as information sources. In the Section 3, we describe the methodology used in our research. In the Section 4 we analyze and discuss the results. Finally, we draw the main conclusions and discuss some implications and limitations of the study in Sections 5 and 6.

2. THEORETICAL BACKGROUND

2.1. Sources of information in tourism

When planning a trip, tourists need information on their travel destinations and hotels to ensure that they make the best possible choice. Moreover, because travel products are intangible goods and involve complex decisions associated with high costs, they are considered high-risk products (Lin, Jones, & Westwood, 2009; Reza & Samiei, 2012). These factors lead people to seek a greater amount of information (Lin & Fang, 2006) through a wide range of sources (Maser & Weiermair, 1998). With regard to the tourism sector, information can be classified by source into commercial or non-commercial and by type into personal or impersonal (Fodness & Murray, 1999) (see Table 1).

Table 1. Sources of information used in tourism

Source of information	**Type of information**	
	Impersonal	**Personal**
Commercial	Brochures Travel guides Local tourist offices	Clubs Travel agencies
Non-commercial	Magazines Newspapers	Friends and family Personal experience

Source: Fodness and Murray (1999)

As the sources of information described above show, recommendations from friends, relatives and acquaintances (WOM) have become one of the main factors that mitigate perceived risk when making a decision to travel. Because tourism services are products of experience and cannot be evaluated prior to their consumption, consumers tend to rely more on the recommendations and views of others (Fakharyan, Reza & Elyasi, 2012; Senecal & Nantel, 2004; Walker, 2001). In this same line, Cheema & Kaikati (2010) showed that recommendations can be perceived as being more persuasive than the actual features of the product itself. It can therefore be concluded that perceived risk and the search for information are two of the most influential factors when making decisions about travel (Maser & Weiermair, 1998).

Traditionally, many consumers have preferred sources of information such as travel agencies as they provide more detailed information about the destination, and contact with service providers is more direct (Heung, 2003). However, in a dramatic speed, people have begun to use the Internet and several electronic media as a source of information when planning a trip (Gretzel, 2007; Liang, Ekinci, Occhiocupo, & Whyatt, in press). Litvin, Goldsmith, and Pan (2008) showed that the majority of tourists from the USA used the Internet as a source of information for making travel arrangements, a trend that has increased significantly in recent years (Domínguez & Araújo, 2012). Saving time and ease of use are the main reasons that drive consumers to seek travel information on the Internet (Heung, 2003). In addition, most people who use Internet as a source of information are quite satisfied with their experience given the advantages to this medium (Fesenmaier, Cook, & Sheatsley, 2009) as it 1) provides more information on the destination and/or hotel, 2) permits evaluating where to go and what to do in a better manner, and 3) tourists are more involved in the travel planning process.

As can be seen, the literature does not provide conclusive, scientifically rigorous results regarding the most frequently used source of information when selecting a destination and even less so with regard to the Internet; an issue that this paper will attempt to address by focusing on different Travel 2.0 applications.

The emergence of Web 2.0-based websites has revolutionized the Internet in a significant manner by transforming it into a space characterized by the participation and collaboration of users. In this context, a new concept called Travel 2.0 has emerged, which is revolutionizing the tourism industry and can be defined as the tourism and travel-oriented Web 2.0. As Filgueira (2008, p.136) states, this “is a new Internet model to access, publish, share, discuss and distribute information on tourism whose content is created by users interacting with each other.” Moreover, a study by the Hotel Technology Institute (2007, p.16) defines the Travel 2.0 as “WOM applied to the twenty-first century using technology.”

This new generation of websites containing tourist information encompasses a range of tools or applications which permit tourists to actively participate in the online medium and share their travel experiences with other users, including blogs and discussion forums, travel social networks, hotel and destination websites where users can post comments, mapping systems, global positioning systems (Domínguez & Araújo, 2012; Nielsen & Liburd, 2008), and augmented reality, among others (see Figure 2). In the following sections, we will provide a brief description of the most commonly used tools today, focusing specifically on the first three tools mentioned above (travel blogs, OSNs, and interactive websites).

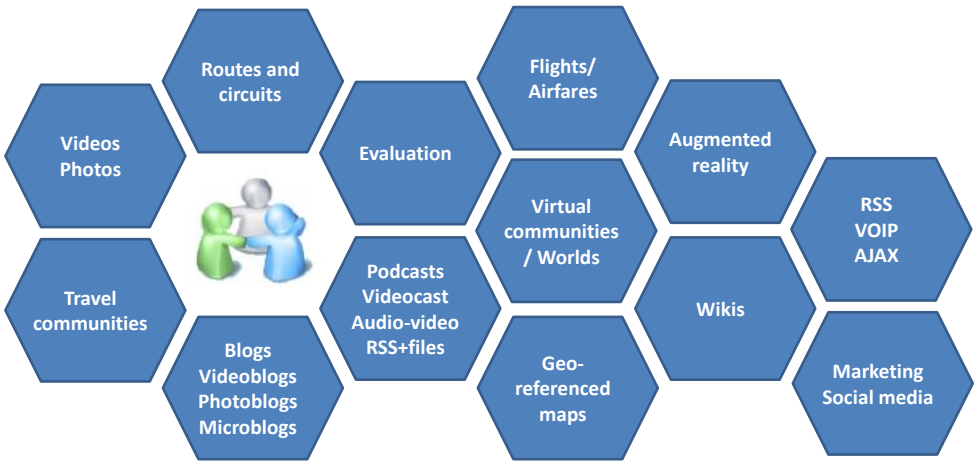

Figure 2. New generation of tourism websites. *Source: Caso (2010)*

2.2. Tourist information in Travel 2.0 applications

2.2.1. Travel blogs

A *blog* is

> a hierarchy of text, images, multimedia objects and data, which are arranged chronologically and supported by a content distribution system capable of providing (the author) the necessary functionality to distribute that content with some frequency. Blogs require minimal technical capabilities, and can facilitate the construction of meaningful social connections or virtual communities around any subject of interest (Fumero, 2005, p. 4).

Blogs can be of two types: personal blogs and corporate blogs (Castronovo & Huang, 2012; Fumero, 2005). In personal blogs, which are also known as 'online journals' or 'online diaries', the users themselves are the authors. The purpose of personal blogs is

to provide a space for users to share their experiences and views by means of text and photographs. In contrast, the authors of corporate blogs are members of a company who use the blogs to spread the company's message. While blogs are useful for tourism firms to respond to negative feedback that may have an adverse effect on the company's reputation (Price & Starkov, 2006), an increasing number are also creating their own corporate blogs (Mack, Blose, & Pan, 2008).

Travel blogs are a type of blog that is usually personal (e.g. travelblog.org, travelpod.com, travelpost.com, etc.). Travel blogs allow the authors to express their opinions and share travel experiences as well as providing information (positive or negative) to tourists about a destination or hotel prior to a trip. In this regard, Wang (2012) showed that travel blogs have an important influence on potential clients' perceived image of the destination and on their subsequent intention to travel. For this reason, we felt that it was important to include this particular tool or application in our paper and examine how it is used today in the context of tourism.

2.2.2. OSNs

In the context of the Travel 2.0, *social networking* lets users share their travel experiences with others, provide travel tips and recommendations, upload travel photos or evaluate hotels and restaurants to give readers an idea of the destination or hotel they intend to visit. Some examples of social networks are viajaris.com, minube.com or travbuddy.com.

In general, consumers dedicate more than five and a half hours to social networking; an 82% increase over last year when users spent just over three hours per week on social networking sites (Nielsen Company, 2009a). Another study conducted by Microsoft (2007) found that 60% of Europeans use social networks to keep in touch with friends and family, and about half use them to give opinions and recommendations on issues of interest, including topics related to travel and tourism. According to forecasts by the Interactive Advertising Bureau, IAB Europe (2009), Internet social networks will attract 101 million users in the US and earn $4.3 billion in ad revenues in the year 2011. These data clearly demonstrate the potential for growth of this industry. In general, users utilize these social platforms for their perceived benefits, namely social, functional, psychological and hedonic ones (Parra, Bulchand, Gutiérrez, & Díaz, 2011).

In social networks, friends significantly influence the opinions and attitudes of others towards companies, products or brands. Thus, if a user joins a group and recommends it to his or her friends, they will be more likely to join (Diffley, Kearns, Bennett, & Kawale, 2011). In our context, Lange-Faria and Elliot (2012) demonstrated first, that

social networks influence travel decisions and, second, that users normally participate in these communities to find information, interact socially and also for purposes of enjoyment.

From an assesment of the role and use of OSNs as a marketing tool in the context of hotels, Jung, Ineson, and Green (2013) found that these applications provide relationship marketing opportunities and raises business value.

2.2.3. Interactive travel websites or virtual communities

Following the emergence of Web 2.0, the websites of travel destinations and hotels have made the leap from being merely descriptive to being interactive so that tourists can generate content on these sites and help readers in their travel decisions (Antón & Villalta, 2004). However, while it has been demonstrated that the experiences and opinions of tourists influence the decisions of others, there are still very few official travel websites that allow consumers to generate their own content (Huertas, 2008).

In spite of this, there are virtual communities such as tripadvisor.com or minube.com that allow users to either plan their trip (arrange flights, book hotels, plan activities or visits, etc.) with the aid of browsers on the site itself, participate in forums where tourists can post their views and opinions about their trips or access information provided by other users. Concretely, TripAdvisor (tripadvisor.com) is considered the most successful social networking/virtual community in tourism that permits hotels around the world to be reviewed through discussion forums (Buhalis & Law, 2008).

As we have mentioned before, tourists often follow the advice of friends, relatives and acquaintances when arranging trips, especially when they intend to travel to a destination they have not visited previously (Litvin et al., 2008). This word of mouth, or WOM, is informal communication among consumers about the characteristics, properties and use of a product or service, in which the sources are considered to be independent of commercial influence (Litvin et al., 2008; Park, Lee, & Han, 2007; Westbrook, 1987).

In a study conducted by Nielsen BuzzMetrics to determine the degree of trust consumers associate to different advertising media, WOM was found to be the form of advertising that consumers trust most since conventional media (including television) are becoming less credible (Blackshaw and Nazzaro, 2006; Fotis, Buhalis, & Rossides, 2012; Lange-Faria & Elliot, 2012; Liang et al., in press; Nielsen BuzzMetrics, 2006; Pan, McLaurin, & Crotts, 2007). WOM has also been shown to be a very influential source of information in consumer decision-making processes (Chevalier & Myazlin, 2003; Westbrook, 1987). This type of communication is, therefore, essential for tourists to

create an image of the destination or hotel before acquiring the product (Beerli & Martin, 2004).

But why do consumers make recommendations to other consumers? When consumers are satisfied with the service they receive, they are more likely to recommend it to others and the information they provide about it will also be positive (Athanassopoulos, Gounaris, & Stathakopoulos, 2001; Wirtz & Chew, 2002). If we apply this concept to the objective of our paper, when tourists have a positive image of a place or hotel they have visited, it is more likely that they will want to return to the destination and recommend it to others through the WOM effect (Prayag, 2009; Reza, Samiei, Dini, & Yaghoubi, 2012).

The evolution of the Internet in recent years due to the advent of Web 2.0 has also modified traditional WOM. While people used to exchange opinions and share experiences with others face-to-face or in small groups, the new website generation permits consumers' messages to reach millions of readers anywhere in the world (Bickart & Schindler, 2001; Blackshaw & Nazzaro, 2006; Lorente, 2010). This changing scenario has given rise to new concepts such as online or electronic word of mouth (eWOM), buzz marketing, user-generated content (UGC) (Burgess, Sellito, & Cox, 2009), or WOM 2.0 communication (Lorente, 2010). Hennig-Thurau, Gwinner, Walsh, and Gremler (2004, p.39) defined eWOM communication as "any positive or negative statement made by potential, actual or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet."

With respect to the differences between both types of communication, traditional WOM usually reaches only a very small circle of people, while online WOM can reach many more people in a shorter period of time over the Internet (Bronner & de Hoog, 2011). Second, the people who transmit information in WOM communication are friends, acquaintances or relatives, while those who transmit information in eWOM are anonymous. Therefore the information provided by traditional sources may be more credible (Davis & Khazanchi, 2008). As a result, given that consumers are able to post their own comments and opinions on public websites, marketers take the situation seriously and act accordingly by 1) designing the website in the best possible way, 2) placing positive messages generated by users in the most visible part of the website, or 3) responding to constructive criticism from customers.

The advent of eWOM has also had an impact on the tourism industry (Ye, Law, Gu, & Chen, 2011). First, more information is available to tourists from a wide range of users (acquaintances, anonymous tourists, etc.), thus providing new knowledge and changing their perception of travel. Secondly, the online medium has changed the way in which users access information and how that information is structured (Litvin et al., 2008).

One advantage to eWOM is that it is considered a more credible source of information than other sources (including corporate websites where information is provided by marketers and advertisers) because those who generate the content have no vested interest in the companies (Bickart & Schindler, 2001; Burgess et al., 2009; Fotis et al., 2012; Goldsmith and Horowitz, 2006; Gretzel, 2007; Trusov, Bucklin, & Pauwels, 2008). If users trust the comments and opinions of others in the online environment, it will positively affect their trust and attitude towards the brand and their purchase intent (Wu & Wang, 2011). Liang et al. (in press) found that attitude towards eWOM fully mediates the consumer satifaction with travel experience on the intention of use eWOM communication media. Therefore, one can say that eWOM significantly influences consumer behavior (Prendergast & Ko, 2010).

In recent years, there has been much talk about a new evolution from the Web 2.0 to the Web 3.0. The Web 3.0 is a "semantic Web technologies integrated into, or powering, large-scale applications" (Hendler, 2009, p.111), which has developed networked digital technologies that support human cooperation (Fuchs et al., 2010). This new conception is essential as it makes information more meaningful to people by making it more understandable to machines promising a WorldWide Web consisting of semantically linked data instead of a mere collection of HTML documents (Antezana, Kuiper, & Mironov, 2009). Not only does the Web 3.0 allow using words, but also integrates spatial information, images, sounds and feelings in a new concept in which the traditional web becomes overactive and intelligent (Garrigos-Simon, Lapiedra-Alcamí, & Barberá-Ribera, 2012). Clearly, the possibilities of e-WOM will be broadened with the implementation of these new technologies. Users have an identity in the network and with such an identity they can make meaningful, accurate and intelligent searches. Information, space, and technology will be integrated to enrich both the description of the traveler's experience and improve the accuracy of the information sought by the prospective traveler. Moreover, from the point of view of tourism, this technology will have a major impact on the distribution of travel and accommodation; a fact which may radically change how tourism databases are used for promoting and selling the available supply.

2.3. Tourist profiles

Regarding the third objective of this study, a review of the scientific literature revealed recent studies on the extraction of consumer groups of offline services users (Cameron, Cornish, & Nelson, 2006; Garland, 2005; Karjalouto, Mattila, & Pento, 2002; Kaynak & Harcar, 2005; Lee, Kwon, & Schumann, 2005; Machauer & Morgner, 2001; Rajshekhar & Dion, 1999; Soper, 2002), and online services users (e.g. Schwaiger & Locarek-Junge, 1998 [based theoretically on the degree to which an innovation is

adopted]; Durkin, 2004 [customer decision-making processes]; Pons, 2007 [in the context of Web 2.0 and rural tourism]). The review, however, did not find classifications for tourists who consult various tourism information sources such as virtual communities or social networks.

As regards the tourism sector in particular, the research study by Huang, Hsu, Basu, and Huang (2009) showed that women find it harder to use social networking to search for travel information than men and also find it more difficult to express their opinions online. The study by Chiappa (2011), however, showed that women are more likely to post comments, reviews, photos and videos online, and also change their hotel accommodation more often than men after reading reviews posted by others in the online medium. As regards the typical tourist profile, Fesenmaier et al. (2009) showed that 30-50 year old married men who work full time use the Internet most to arrange travel. Another study revealed that social network users are people with high education and income levels and expertise in the Internet (Gretzel, 2007). The results of the study by Bronner and de Hoog (2011) showed that tourists who normally publish comments on the Internet are characterized by being younger than 55, having higher or lower than average incomes, and having a partner (with or without children). Furthermore, it has been found that users with more experience in social media are more likely to share content in this environment (Lee & Ma, 2012).

The study by Murphy, Mascardo, and Benckendorff (2007) can shed further light on the characteristics that distinguish both groups (those who prefer eWOM and those who opt for offline WOM). The results of this study revealed that a greater number of respondents obtained information from friends and family about trips rather than other tourists via the Web. Furthermore, respondents who use traditional WOM as a source of information have higher levels of income and tend to visit friends and family. However, respondents who only use WOM information from other travelers as a source of information when preparing a trip are younger, have lower income levels and are considered “backpackers”. The study found no gender differences between the two groups (Murphy et al., 2007).

3. METHODOLOGY

3.1. Data collection and questionnaire

From the literature review, we can say both the comments and opinions of friends, relatives, and acquaintances, as well as those posted by other users online have a significant impact on tourists’ choice of destination or hotel and the use of eWOM

communication media. The first objective of our study is to determine whether online or offline word of mouth has a greater influence on tourist decision-making behaviour.

With respect to the second objective, this study aims to determine whether the respondents have similar preferences regarding Travel 2.0 applications; specifically, which tool (travel blogs, travel social networks or destination and/or hotel websites, etc.) tourists prefer most.

The third objective of our study is to profile tourists according to 1) the extent to which they use different online travel information sources, and 2) whether or not they post their experiences on travel websites (blogs, social networks, etc.). These are the criterion or dependent variables used in the hierarchical segmentation analysis applied here. Gender, age, income level, educational level, family status, occupation, and experience (frequency and duration) using Travel 2.0 tools were used as classification variables.

In order to achieve these objectives, a convenience sampling method based in a personal online survey was conducted; in which 3,269 regular Internet users (connecting at least three times a week) were invited to participate. The users were aged 16–64 and belonged to an Internet community (http://webcim.ugr.es/polls) (Table 2).

Participation was voluntary. The final sample size comprised 616 valid questionnaires, with a sample error of 3.95% for a 95% confidence level. After sending an initial invitation and a follow-up reminder, the final response rate was 18.84%.

The questionnaire was administered in Spanish. In addition, the websites used in the study were either entirely in Spanish or available in a Spanish version in addition to other languages. Furthermore, the questionnaire contained a series of questions regarding the demographic characteristics of the tourists (gender, educational level, family status, age, employment status, place of residence, and income level). Additionally, we used a modified version of the Travel 2.0 applications expertise scale of Kim, Park, and Morrison (2008) and a modified version of the WOM scale developed by Muñoz-Leiva (2008).

Table 2. Technical specifications and sample characteristics

Population	Spanish tourists who use Internet as a source of information
Sample frame	Habitual Internet users
Sample size	n=616 valid questionnaires
Sampling type	Convenience sampling
Date of fieldwork	8-28th September, 2010
Sample error	±3.95% (for the estimation of a *ratio*, where P=Q=0.5 and a confidence level of 95%)
Response rate	18.84%

3.2. Suitability of the data analysis techniques

For the first and second objective, we used Student's t-tests of difference in means between two dependent samples (variables) to determine if there were significant differences in the extent of 1) the influence of WOM and eWOM, and 2) the use of three Travel 2.0 platforms (for which the comparison of means method was also used).

According to the study *Trends of the New Tourist* conducted by the Spanish Observatory of Travels and Internet (2010), in addition to personal recommendations from friends and acquaintances and from travel agents, the sources of information that tourists most take into account when choosing a destination are the official website of the destination (including the hotel site), recommendations posted on the Internet by other tourists, recommendations from friends and acquaintances via social networks and articles on travel blogs. It is clear that, nowadays, the Internet is the second most widely-used source of information when planning a trip since it is a medium in which tourists can share their travel experiences at any time (before, during and after the trip).

As mentioned above, the overall traffic to social networking (ISNs) sites and blogs has grown in the last three years. Globally, these tools are the most popular online category when ranked by average time spent at the end of 2009, followed by online games and instant messaging (Nielsen Company, 2009a). Hence, we have focused on the extent to which users utilize these tools (destination/hotel websites, travel blogs and travel social network sites) as a source of information when making travel arrangements.

As regards the third objective, segmentation can be used for two purposes: as a strategy or as a method of analysis. From a strategic perspective, market segmentation is useful for the classifying, targeting and positioning process, and for a manager to contact a concrete and controllable market (Kotler, 1997). The concept of market segmentation "involves viewing a heterogeneous market as a number of smaller homogeneous markets, in response to differing preferences, attributable to the desires of customers for more precise satisfactions of their varying wants" (Smith, 1956). Therefore, different market strategies are developed for customers in different markets to increase customer satisfaction and the expected profits or effectiveness of a company such that the economic benefits provided consumers exceed the costs of the segmentation process (Chiu, Chen, Kuo, & Ku, 2009; Hung & Tsai, 2008). Benefit segmentation has been widely used in travel and tourism research in general, and seems to have received wide approval by academics and practitioners (Frochot & Morrison, 2000). This methodology is based on the benefits different consumers look for in a product or service (mainly utilitarian benefits, rational benefits, and emotional benefits) and reflects the specific features of the destination or service, rather than

simply grouping consumers by traditional factors such as socio-demographic factors. But the definitions and the research methodologies involved in applying benefit segmentation vary largely (Frochot & Morrison, 2000). Very few studies have segmented tourists according to their behavior or conduct before deciding to take a trip. In our study we use this behavior or the manner in which tourists use communication channels jointly with classification variables.

In our review of the scientific literature on extracting consumer groups, we have found no studies that use data analysis techniques to classify tourists who consult various tourist information sources such as virtual communities and social networks. In order to extract the different groups of tourists, we used a statistical technique known as hierarchical segmentation based on the Chi-squared Automatic Interaction Detection algorithm. This technique develops a tree-based classification model to classify cases into groups. The results allow the values of a variable (criterion) to be predicted from a series of socio-demographic characteristics of tourists such as age, sex and experience with such channels.

Data analysis techniques such as cluster analysis (mainly the k-means partitioning method) have become a very popular way of identifying market segments based on survey data (Dolnicar, 2012; Frochot & Morrison, 2000). Dolnicar (2012) illustrates how data-driven segmentation studies are typically conducted in the field of travel and tourism research. Unlike other alternative analysis tools such as individual analyses of the difference of means based on the Student's t-test or analysis of variance, hierarchical segmentation permits the influence of different variables on the classification of tourists to be analyzed simultaneously. Although it is similar to cluster analysis since both techniques generate groups, hierarchical segmentation distinguishes a dependent variable as a criterion for forming groups and permits analyzing the statistical significance between the dependent variable and the explanatory variable. By doing so, hierarchical segmentation, unlike cluster analysis, is somewhat predictive in nature. Furthermore, the segments are functions of the predictor variables and can be used to classify other samples, which is not possible with cluster analysis (Luque & Muñoz-Leiva, 2012, p. 381).

Therefore, the results are especially useful for companies since it permits them to treat the identified segments differently or apply different marketing-mix strategies (Liñares & Muñoz, 2009; Luque & Muñoz-Leiva, 2012, p. 377).The procedure can, therefore, be used to segment, stratify, predict, reduce data and classify variables.

To do so, two decision trees were created with the following dependent variables: 1) influence of eWOM, and 2) sharing of travel experience by users. Using the values of the original scale (1-5 Likert scale), the dependent variables were grouped into three categories (high, medium and low) to obtain a homogeneous basis for comparing the two segmentation trees.

The SPSS 17 statistical software package was used in all cases.

4. FINDINGS

To answer *research issue 1*, the variables 'effect of WOM' and 'effect of eWOM' on tourists are compared (see Table 3). The results of the test show that when choosing a destination and/or hotel, the effect of WOM communication of friends and family is significantly higher (mean: 4.24) than the effect of online users or eWOM (mean: 3.47). The results show that the difference between the scores obtained for the WOM and eWOM effect is 0.765 (Student's t = 19.263, df = 615; sign= 0.000).

The results allow us to conclude that tourists are influenced to a greater degree by the recommendations and advice of friends and relatives (WOM) than by the information provided by known or anonymous online users (eWOM).

Table 3. Descriptive statistics for the T-test for dependent samples (variables)

When choosing a travel destination and/or hotel, evaluate the effect of the comments, opinions and experiences of "…"	**Mean**	**n**	**S.D.**	**S.E.M.**
"Friends and family"	4.24	616	0.775	0.031
"Other Internet users (known or not)"	3.47	616	0.921	0.037

Note: SEM, standard error of the mean

Table 4. Descriptive statistics for the T-test for dependent samples (variables)

Evaluate the extent to which you use"…" as a source of information when making travel arrangements	**Mean**	**n**	**S.D.**	**S.E.M.**
"Destination/hotel websites"	4.08	616	0.866	0.035
"Travel blogs"	3.31	616	1.170	0.047
"Travel social network sites"	2.60	616	1.157	0.047

Similar to the first analysis, in *research issue 2* we were interested in examining whether there are significant differences regarding the extent to which tourists use the three Travel 2.0 applications: blogs, social networks, or official hotel/destination websites where they can post comments. To do so, we also used the t-test for dependent samples (variables), and compared the use of the three tools.

At first glance, the findings demonstrate that the mean scores for extent of use of the three applications differ somewhat (see Table 4). Destination and/or hotel websites show the highest mean (4.08), followed by travel blogs (3.31) and travel social network sites (2.60).

As can be observed in the first comparison (blogs-social networks), the student's t-statistic is 12.67 (with 615 degrees of freedom) and the associated p-value shows less than 5% significance. Hence, we confirm that the mean scores are significantly different and that travel blogs are used more than travel social network sites. In the second comparison (blogs-websites), the t-statistic is -14.45 with a p-value of less than 5%. Hence, the mean scores are also significantly different and destination/hotel websites are used more than travel blogs. In the third comparison (social network sites-websites), the t-statistic is -26.33 with a p-value of less than 5%. Hence, the mean scores are also found to be significantly different in this last case and destination/hotel websites are used more widely than travel social network sites.

To sum up, when tourists seek travel information, they use official destination and/or hotel websites to a greater degree, followed by travel blogs and travel social network sites in that order.

To answer *research issue 3,* we used the hierarchical segmentation method. As regards the effect of eWOM, users' experience with the Travel 2.0 applications was found to be the best predictor of this variable (Chi-square = 38.430, df = 4, p-value = 0.000; see Figure 3). From this variable, the root node or total sample was divided into three child nodes (node 1: Never/rarely; node 2: Sometimes; Node 3: Whenever I travel).

Given that the best predictor for node 1 was age (Chi-square = 6.381, df = 2, p-value = 0.041), this node was divided into two more nodes (node 4: Over 24 years old; node 5: 16-24 years old). Node 2 was not divided in the second level and remains a terminal node. Finally, node 3 was decomposed according to monthly income level (Chi-square = 611.171, df = 2, p-value = 0.038) into two nodes (node 6: Less than 1,800 dollars + 1,800-2,700 dollars; node 7: More than 2,700 dollars + DK/NA).

Therefore, this tree contains five terminal groups of tourists:

- **Group 1** (node 2): This is the largest group and accounts for 34.1% of the total sample. It comprises users with an average level of experience ('sometimes') in travel websites. In this group, 44.5% of the members are strongly influenced by the feedback of other online users regarding travel (eWOM). Another 42.6% of its members are only somewhat influenced by this feedback.
- **Group 2** (node 4): This is a fairly small group which accounts for 7.3% of the total sample. The members of this group have very little or practically no experience in travel websites and are aged 24 years and older. Half of the members of this group are not influenced greatly ('medium' term) by the travel comments and opinions posted by other online users.
- **Group 3** (node 5): This is the smallest group of the sample, accounting for only 5.2% of the total. This group is comprised of younger users with very little experience in travel websites. In this case, 43.8% are influenced very little by the feedback and comments of online users regarding travel.
- **Group 4** (node 6): This group, which is the second largest in terms of size (32.8% of the total sample), comprises users with a fair amount of experience in travel websites and an income of less than $2,700. Two-thirds (67.7%) of the members of this group are significantly influenced by the comments and feedback of other users.
- **Group 5** (node 7): This group accounts for around one-fifth of the total population of users in the sample (20.6%). The members of this group have a fair amount of experience in travel websites and an income of over $2,700 or are those who did not respond to this question (DK/NA). Almost half (49.2%) of the members of this group are significantly influenced by the comments and feedback of other users regarding travel.

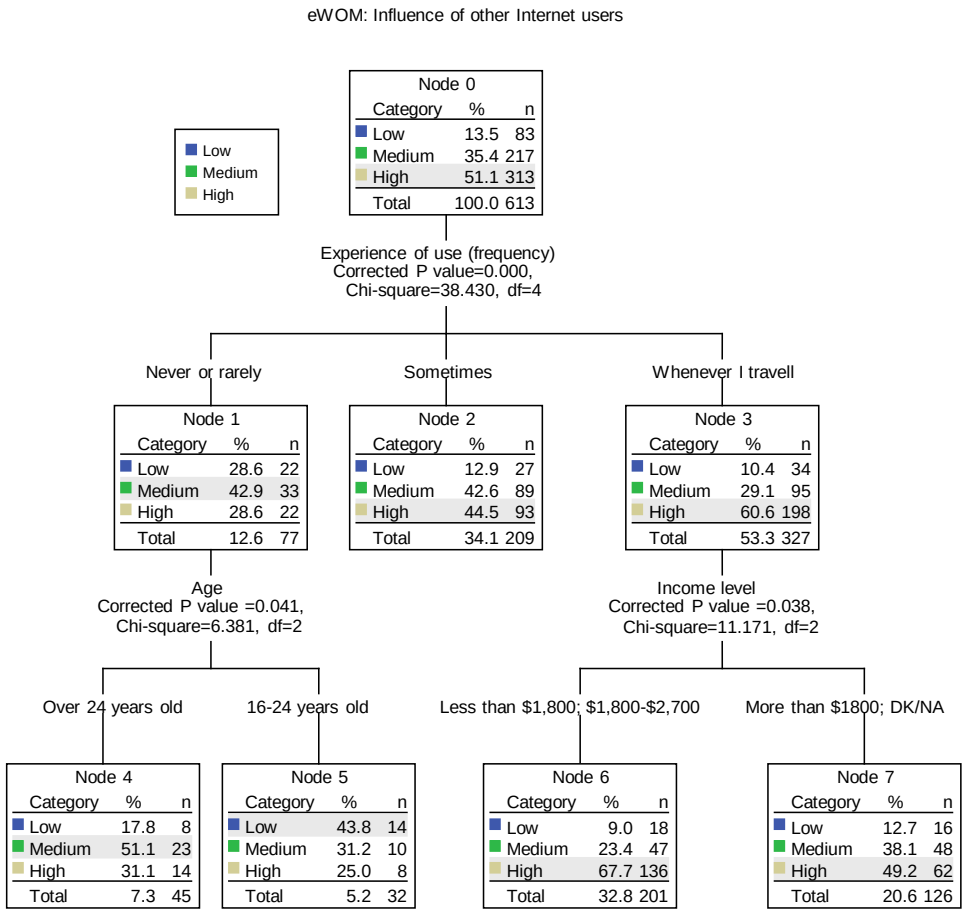

Figure 3. Segmentation tree for eWOM: Influence of other users (dep.)

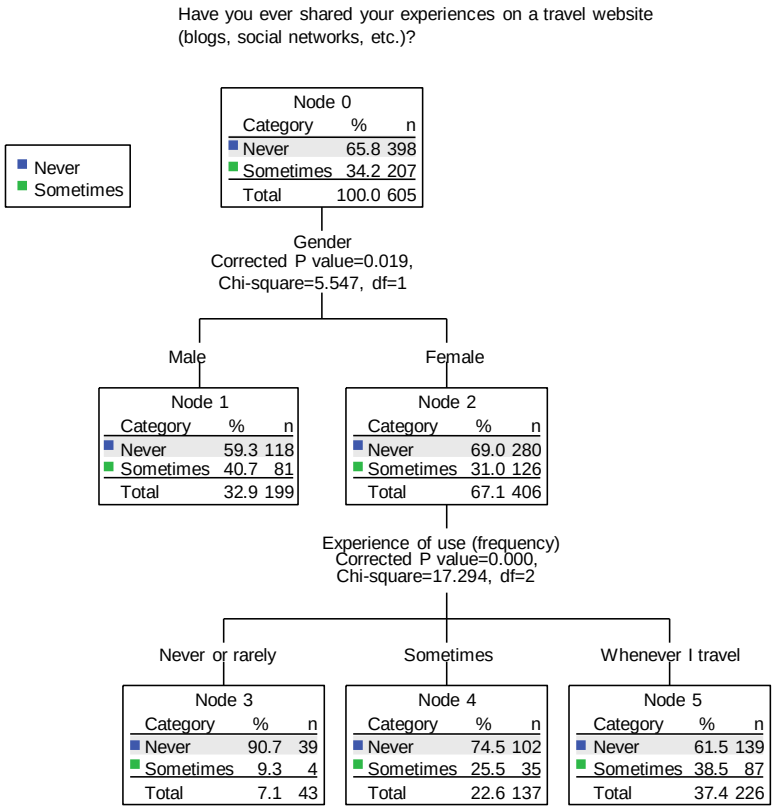

Figure 4. Segmentation tree for sharing experiences on the Internet (dep.)

The second tree diagram shows that the variables that best explain the dependent variable (sharing travel experiences on a website following the Web 2.0 philosophy) are gender (Chi-square= 5.547, df = 1, p-value = 0.019; see Figure 4) and tourists' experience (Chi-square = 17.294, df = 2, p-value = 0.000). Specifically, the root node is divided into two nodes (node 1: male; node 2: female). Node 1 has no subfamily node. For node 2, the best predictor is experience (frequency) using travel websites. This node is then further divided into three more nodes (node 3: never or rarely; node 4: sometimes and node 5: whenever I travel). The characteristic profile of the terminal nodes (nodes 1, 3, 4 and 5) is as follows:

- **Group 1** (node 1): This group accounts for approximately a third of the total sample (32.9%) and is comprised solely of males. Of the members in this group, more than half (59.3%) have never shared their experiences on a travel website (blog, social networks, etc.).
- **Group 2** (node 3): This is the smallest group (7.1% of the sample) and comprises women with very little or practically no experience using travel websites. The majority of the members in this group (90.7%) have never shared their experiences on travel websites due to their lack of expertise in using this type of medium.
- **Group 3** (node 4): This group accounts for 22.6% of the sample and is comprised of

women who sometimes use travel websites to find information when choosing a destination and/or hotel (medium level of experience). Around three-fourths (74%) of the members in this group have never shared their experiences on travel websites.

- **Group 4** (node 5): This is the largest group (37.4%) and is composed of females with broad experience in using travel websites. 61.5% of the members of this group state they have never shared their experiences on travel websites.

5. FINAL DISCUSSION

5.1. Main conclusions

The evolution of Web 1.0 to Web 2.0 has given rise to important changes in different sectors of activity, among them tourism. With the advent of Travel 2.0 applications, tourists have modified their travel planning behavior. Not only do tourists now have access to information on official destination and/or hotel websites, but also to numerous Internet platforms such as social networking sites or blogs where they can share their own experiences and read about those of others. These new platforms permit tourists to engage in online conversations or obtain information through eWOM communications. Given this context, this paper has attempted to analyze the effect of Travel 2.0 on tourist behavior. To do so, three main objectives were proposed.

The primary objective was to determine the effect of this new generation of tourism websites on sources of information that have been traditionally used by tourists when making travel arrangements, namely offline word of mouth or WOM communication. To this end, we compared the influence of opinions and recommendations by friends and family on tourists to the influence of other Internet users. The results of the study are consistent with those found in the review of the literature (Fotis, Buhalis, & Rossides, 2011; Murphy et al., 2007; Nielsen Company, 2009b; Park et al., 2007), showing that WOM of friends, family and acquaintances affects tourist behavior to a larger degree than communication with other users (whether they are known to the tourist or not).

The secondary objective was to determine which Travel 2.0 platforms or applications (blogs, social networks or official destination/hotel websites where users can post content) is used most widely by tourists when making travel arrangements. The results of our study show that tourists use official destination/hotel websites to a greater extent, followed by travel blogs and travel social network sites.

One explanation for this outcome is that users find that official tourism and hotel websites provide more complete information about the characteristics of the destination or hotel or logistical issues (transportation, schedules, etc.). In addition, many of these sites permit users to post their comments and share experiences, thus enriching the content and providing users everything they need without having to browse other websites.

Second, tourists use travel blogs for the same reasons they use official websites. For example, blogs on travel destinations or hotels not only contain information regarding the place itself, but offer travel trivia, ideas or tips, which can be quite useful for many users. In addition, blogs give users the opportunity to read feedback and comments by other users in the form of articles or specific sections on travel experiences, thus providing very complete content. However, consumers rely more on the website of the destination or hotel than on blogs as they are official and because nowadays anyone can create a travel blog.

Finally, travel social networks are used to a lesser degree mainly because they contain the opinions and experiences of other users and less space is devoted to posting information on the destination or hotel (type of destination/hotel, transportation, schedules, etc.). When this is the case, users who consult travel networks must search for further information on other websites (i.e. official websites or travel blogs) to ensure that they make the best possible choice.

The third objective was to identify the main factors affecting the extent to which tourists are influenced by the comments and opinions of other Internet users and share travel experiences on Travel 2.0 applications, specifically official tourism websites, travel blogs and travel social networks. This objective was aimed at classifying the tourists that were interviewed for the study according to their socio-demographic characteristics.

With regard to the influence of travel comments posted by other Internet users, we found that little over half of the sample (51%) is significantly influenced by such feedback. However, this feedback has a greater effect on individuals with more experience in using travel websites than those with less expertise (Zhu & Zhang, 2010).

We have also distinguished between age and income level, finding that people over the age of 24 ("young adults") are more influenced by the comments of other users' than younger people (Zhu & Zhang, 2010). Regarding the income level, individuals with lower incomes (less than $2,700) and those with higher income levels (more than $2,700) are significantly influenced by the comments of other users. In this case, however, a larger number of members in the group have lower incomes, thus permitting us to conclude that lower income individuals are more influenced by online WOM.

As for sharing travel experiences on websites, we have shown that two-thirds of the respondents (66%) have never published their travel experiences on a website, blog or social network and only 34% of Internet users have posted content on their own blogs or websites. For this case we have also distinguished between gender and experience in using travel websites. The results show that more than half of those in the sample (both men and women) have never shared their travel experiences online. However, a somewhat larger percentage of men have done so than women, thus suggesting that men are more likely to share their experiences than women. These results differ from the study of Chiappa (2011) which showed that women are more likely to share comments, opinions, photos and videos in an online medium. We have also shown that the effect of eWOM varies among women depending on their expertise in using travel websites. In general, more than half of all women (both with and without experience using travel websites) have never shared their travel experiences online. Nonetheless, as the level of expertise in the use of travel websites increases, the percentage of respondents who have never shared their travel experiences decreases. This is in line with the results of Lee and Ma (2012), who found that users who are more experienced in social media are more likely to share content in this environment. A comprehensive analysis thus allows us to deduce that women with greater experience in using travel websites are more likely to post travel content online.

5.2. Managerial implications

Tourism companies must seize the opportunities offered by Web 2.0 to boost business. Although the results of this study reveal that traditional WOM is used to a greater extent than eWOM in making travel arrangements, we should not overlook the fact that Travel 2.0 applications are becoming increasingly widespread and popular among tourists. Therefore, any business dedicated to tourism should be present in Travel 2.0 platforms in order to increase the number of visits to the site, and thus sales.

As we have shown in the conclusions, official destination or hotel websites where users can post their own comments and share experiences are the most widely used 2.0 Travel applications. Consequently, it would be interesting for tourism companies to include a section on their websites with the experiences and views of tourists. Secondly, tourists use travel blogs. For this reason, tourism companies should endeavor to publish a wide variety of articles on quality travel to ensure that clients will find all the necessary information to plan their trips. After doing so, tourists should be able to directly access the company website in order to reserve or purchase a product or service (book a flight or a hotel, etc.).

Of the three platforms analyzed, social networks were found to be the least frequently used tool for making travel arrangements. Nevertheless, it is important that companies create profiles on major social networks such as Facebook, Twitter or MySpace so that they can engage in conversations directly with their clients and thus obtain better information about their needs and concerns.

As regards the WOM effect, companies should be aware that manipulating user-generated content is not the only solution for dealing with negative feedback, but that there are a number of more ethical actions or measures that can be taken in situations of this kind that will not damage the company's reputation. For example, companies should respond to all types of consumer-generated feedback, whether it be positive or negative. Specifically, they should thank customers for taking the time to write about their experiences or share their opinions on the company's website. In the event that the feedback is negative, the company should first show surprise upon learning about a negative experience so that the customer perceives that the incident was an exception to the rule.

In this sense, companies should apologise for well-founded complaints and explain to customers what actions they will take to correct the problem as public acknowledgement of an error creates a very positive brand image. These actions will make clients feel like they are being listened to and increase their trust in the company (agencies, destinations, hotels and others). Moreover, steps of this kind will also increase trust among potential customers who visit the company website to find out information and ensure that they will view the company as a safe choice in the future.

In short, we conclude that if companies in the tourism sector make an effort to increase their visibility in the different Travel 2.0 applications and are capable of managing their profiles properly, their revenues and profits are likely to increase in a significant manner.

6. LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

Although we have examined the general use of destination/hotel websites, travel blogs or travel social network sites, in a rapidly changing environment such as the Internet, new networks are being launched to provide followers with different features and tools than those offered by the two networks studied. More specifically, microblogging networks such as Twitter have experienced spectacular growth in recent years, and are used by increasingly larger numbers of tourists to find travel information. It would therefore be interesting to replicate the model used in this study in the context of microblogging tools.

The second limitation of the study is that we have only analyzed the extent to which Travel 2.0 tools such as blogs, social networks, interactive destination/hotel websites are used, but have not studied how tourists behave when using them, that is, which behavioral variables (perceived usefulness, trust, etc.) influence the use of these platforms. This research problem will be addressed in future research.

The third limitation of this study is the use of a purely quantitative methodology. In recent years, qualitative research methods with great potential have been developed, among them netnography (Kozinets, 2002). Netnography (also known by other terms such as webnography, online ethnography, or virtual ethnography) is a technique that builds upon online observations and participation in publically available forums in an unobtrusive but participative manner and helps to reveal enriched data about how people behave and intermingle online (Seraj, 2012). Essentially, netnography is the application of ethnographic methods to an online context (Kozinets, 2002). Online community sites contain a considerable amount of data that researchers can usually analyze without having to intervene. This makes it a much more objective technique as information can be accessed in a more natural and spontaneous way (Prior & Miller, 2012). Moreover, nethnography permits collecting information that is more complicated to obtain through quantitative methods such as the heartfelt, emotionally rich responses that the anonymity of the internet facilitates and access to opinion leaders in consumer groups (Puri, 2009). We believe that the use of these new web data analysis methods could enrich the findings of our study.

Finally, this study was conducted primarily in one country (Spain), thus the generalisation of the results to other contexts may be limited.

7. APPENDICES

7.1. Appendix 1. Tables derived from the analysis.

Table 5 . T-Test for dependent samples (variables). "When choosing a destination and/or hotel, evaluate the influence of comments, opinions and experiences". 1st OBJECTIVE

Variable	Mean (dif.)	S.D.	S.E.M.	95% confidence interval for the difference		t	d.f.	Sign. (bilateral)
				Higher	Lower			
"Friends and family" (WOM) - "Other Internet users" (eWOM)	0.765	0.985	0.040	0.687	0.843	19.263	615	0.000

Table 6. Paired T-Test for dependents samples (variables). 2rd OBJECTIVE

Evaluate the extent to which you use "…"as a source of information when making travel arrangements	Mean (dif.)	S.D.	S.E.M.	95% confidence interval for the difference		t	d.f.	Sign. (bilateral)
				Higher	Lower			
"Blog" – "travel social network sites"	0.709	1.389	0.056	0.599	0.819	12.674	615	0.000
"Blog" – "Destination/ hotel websites"	-0.765	1.313	0.053	-0.869	-0.661	-14.449	615	0.000
"Travel social network sites" – "Destination/ hotel websites"	-1.481	1.396	0.056	-1.591	-1.370	-26.330	615	0.000

Table 7. Table of frequencies of the dependent variable Sharing travel experiences (categorical). 3rd OBJECTIVE

Categories*	Frequency	Percentage	Valid percentage	Accumulated percentage
Never	398	64.9	64.9	64.9
Rarely	96	15.7	15.7	80.6
Sometimes	100	16.3	16.3	96.9
Always	11	1.8	1.8	98.7
DK/NA	8	1.3	1.3	100
Total	613	100.0	100.0	--

**Note: In order to improve the goodness of fit of the segmentation tree and its capacity for generalization, it was necessary to recode the variable in the categories 'never' and 'sometimes'.*

7.2. Appendix 2. Scales used

SCALE FOR FREQUENCY OF USE					
Have you ever shared your travel experiences, given recommendations or posted opinions on travel websites (blogs, social networks, hotel websites, etc.) for other users to read?	**Never**	**Rarely**	**Sometimes**	**Whenever I travel**	**DK/NA**
	①	②	③	④	⑤

SCALE FOR INFLUENCE OF eWOM	**Not at all**				**Whenever I travel**
Evaluate the extent to which you use blogs and discussion forums as a source of information when making travel arrangements (where 1 is 'Not at all' and 5 is 'Whenever I travel').	①	②	③	④	⑤
Evaluate the extent to which you use social network sites as a source of information when making travel arrangements.	①	②	③	④	⑤
Evaluate the extent to which you use hotel and/or destination websites as a source of information when making travel arrangements.	①	②	③	④	⑤

SCALE FOR WOM/Ewom	**Not at all**				**A lot**
Evaluate the extent to which the comments, opinions and experiences of friends influence your choice of a travel destination and/or hotel (where 1 is 'Not at all' and 5 is 'A lot').	①	②	③	④	⑤

Evaluate the extent to which the comments, opinions and experiences of other Internet users (known to you or anonymous) influence your choice of a travel destination and/or hotel.	① ② ③ ④ ⑤

8. REFERENCES

Antezana, E., Kuiper, M., & Mironov, V. (2009). Biological knowledge management: The emerging role of the semantic web technologies. *Briefings in Bioinformatics*, *10*(4), 392-407.

Antón, S., & Villalta, E. (2004). La presencia en Internet de los principales destinos turísticos del litoral mediterráneo español. Retrieved November 17, 2012, from http://www.turismo.uma.es/turitec/turitec2004/docs/actas_turitec_pdf/1.pdf

Athanassopoulos, A., Gounaris, S., & Stathakopoulos, V. (2001). Behavioural responses to customer satisfaction: An empirical study. *European Journal of Marketing, 35*(5), 687-707.

Beerli, A.,& Martín, J.D. (2004). Factors influencing destination image. *Annals of Tourism Research, 31*(3), 657–681.

Bickart, B., & Schindler, R. M. (2001). Internet forums as influential sources of consumer information. *Journal of Interactive Marketing*, *15*(3), 31-40.

Blackshaw, P., & Nazzaro, M. (2006). *Consumer-generated media (CGM) 101,* word-of-*mouth in the age of the web-fortified consume*r, white paper, Intelliseek. Retrieved November 17, 20120, from http://www.nielsen-online.com/downloads/us/buzz/nbzm_wp_CGM101.pdf ,

Bronner, F., & de Hoog, R. (2011). Vacationers and eWOM: Who Posts, and Why, Where, and What?. *Journal of Travel Research, 50*(1), 15-26.

Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management. 20 years on and 10 years after the Internet –the state of eTourism research. *Tourism Management*, 29, 609-623.

Burgess, S., Sellito, C., & Cox, C. (2009). User-generated content (UGC) in tourism: Benefits and concerns of online consumers, 17th European Conference on Information Systems, ECIS, Verona.

Cameron, F., Cornish, C., & Nelson, W. (2006). A new methodology for segmenting consumers for financial services. *Journal of Financial Services Marketing*, *10*(3), 260-271.

Caso, R. (2010): *Diseño y comercialización de productos turísticos locales y regionales.* Trabajo Fin de Máster presentado en Julio de 2010, Departamento de Comercialización e Investigación de Mercados de la Universidad de Granada.

Castronovo, C., & Huang, L., (2012). Social media in an alternative marketing communication model. *Journal of Marketing Development and Competitiveness*, *6*(1), 117.

Cheema, A., & Kaikati, A. The effect of need for uniqueness on word of mouth. *Journal of Marketing Research*, *47*(3), 553-563

Chevalier, J., & Myazlin, D. (2003). The effect of word-of-mouth on sales: online book reviews. *Working paper. Yale School of Management.*

Chiappa, G.D. (2011). Trustworthiness of Travel 2.0 applications and their influence on tourist behaviour: an empirical investigation in Italy. In R. Low, M. Fuchs and F. Ricci (Eds.), *Information and Communication Technologies in tourism* 2011 (pp. 331-342). Vienna, Austria: Springer.

Chiu, C.Y., Chen, Y.F., Kuo, I.T., & Ku, H.C. (2009). An intelligent market segmentation system

using k-means and particle swarm optimization. *Expert Systems with Applications*, *36* (3), 4558–4565.

Davis, A., & Khazanchi, D. (2008). An empirical study of online word of mouth as predictor for multiproduct category e-commerce sales. *Electronic Markets, 18*(2), 130-141.

Diffley, S., Kearns, J., Bennett, W.,& Kawale, P. (2011). Consumer behaviour in social networking sites: Implications for marketers. *Irish Journal of Marketing*, *30*(2), 47-65.

Dolnicar, S. (2002): A review of data-driven market segmentation in tourism. *Journal of Travel & Tourism Marketing*, *12*(1), 1-22.

Domínguez, V., & Arújo, N. (2012). El fenómeno 2.0 en el sector turístico. El caso de Madrid 2.0. *Revista de Turismo y Patrimonio Cultural*, *10*(3), 225-237.

Durkin, M. (2004). In search of the internet-banking customer: Exploring the use of decision style. *The International Journal of Bank Marketing,* 22(6/7), 484-503.

Eichhorn, V., Miller, G., Michopoulou, & Buhalis, D. (2008). Enabling access to tourism through information schemes? *Annals of Tourism Research*, *35*(1), 189–210.

Fakharyan, M., Reza, M., Elyasi, M. (2012). The influence of online word of mouth communications on tourists' attitudes howard Islamic destinations and travel intention: Evidence form Iran. *African Journal of Business Management*, *6*(33), 9533-9542.

Fesenmaier, D., Cook, S., & Sheatsley, D. (2009). *Travelers' use of the Internet*. Retrieved November 17, 2012, from http://travel.utah.gov/publications/newsletters/files/2010_01_21/Travelers%20Use%20of%20the%20Internet%20-%202009.pdf

Filgueira, J. M. (2008). Los *Blogs* dentro del turismo 2.0. *ROTUR/Revista de Ocio y Turismo*, *1*, 135-152.

Fodness, D., & Murray, B. (1999). A model of tourist information search behavior, *Journal of Travel Research*, *37*(3), 220-230.

Fotis, J., Buhalis., D., & Rossides, N. (2011). Social media impact on holiday travel planning: The case of the Russian and the FSU Markets. *International Journal of Online Marketing*, *1*(4), 1-19.

Fotis, J., Buhalis., D., & Rossides, N. (2012). Social media use and impact during the Holiday travel planning process. In M. Fuchs, F. Ricci, & L. Cantoni (Eds.), *Information and communication Technologies in tourism 2012* (pp. 13-24). Vienna, Austria: Springer-Verlag.

Frochot, I., & Morrison, A. M. (2000). Benefit segmentation: A review of its applications to travel and tourism research. *Journal of Travel & Tourism Marketing*, *9*(4), 21-45.

Fuchs, C., Hofkirchner, W., Schafranek, M., Raffl, C., Sandoval, M. and Bichler, R. (2010). Theoretical foundations of the web: Cognition, communication, and co-operation. Towards an understanding of Web 1.0, 2.0, 3.0. *Future Internet*, 2(1) 41-59.

Fumero, A (2005). Un tutorial sobre *blogs*. El abecé del universo *blog*. *Telos. Cuadernos de Comunicación e Innovación, 65, 1-20*. Retrieved January 17, 2011, from http://www.campusred.net/telos/articulocuaderno.asp?idarticulo=1&rev=65

Garland, R. (2005). Segmenting retail banking customers. *Journal of Financial Services Marketing*, 10(2), 179-191.

Garrigos-Simon, F. J., Lapiedra-Alcamí. R., & Barberá-Ribera, T (2012). Social networks and Web 3.0: their impact on the management and marketing of organizations. *Management Decision*, *50*(10), 1880-1890.

Goldsmith, R.E., & Horowitz, D. (2006). Measuring motivations for online opinion seeking. *Journal of Interactive Advertising*, *6*(2), 1-16.

Gretzel, U. (2007). Role and Impact of online travel reviews. Retrieved November 17, 2012, from http://www.tripadvisor.com/pdfs/OnlineTravelReviewReport.pdf

Hendler, J. (2009). Web 3.0 emerging. *Computer*, *42*(1), 111-113.

Hennig-Thurau, T., Gwinner, K. P., Walsh, G., & Gremler, D.D. (2004). Electronic Word-of-Mouth: What motives for and consequences of reading customer articulations on Internet. *Internation Journal of Electronic Commerce*, *8*(2), 51-74.

Heung, V.C.S. (2003). Internet usage by international travellers: reasons and barriers. *International Journal of Contemporary Hospitality Management, 15*(7), 370-378.

Huang, Y., Hsu, M., Basu, Ch., & Huang, F. (2009). Toward developing a social network site-based model for knowledge sharing in the travel industry. *Issues in Innovation*, *3*(1), 57-73.

Huertas, A. (2008). Aplicación de la Web 2.0 a los destinos turísticos. Implantación y diferencias. Retrieved November 17, 2012, from http://www.turismo.uma.es/turitec/turitec2008/paginas/articulos/actas_turitec_pdf/L18_A17.pdf

Hung, C., & Tsai, C. F. (2008). Market segmentation based on hierarchical self-organizing map for markets of multimedia on demand, *Expert Systems with Applications*, 34, 780–787.

Interactive Advertising Bureau, IAB Europe (2009). Brand advertising and digital. White Paper. United Internet Media: WEB. Retrieved February 2, 2010, from http://www.IABEurope.eu

Jung, T.H., Ineson, E.M., & Green, E (2013). Online social networking: Relationship marketing in UK hotels. *Journal of Marketing Management*, 29(3-4), 393-420. doi: 10.1080/0267257X.2012.732597

Karjalouto, H., Mattila, M., & Pento, T. (2002). Factors underlying attitude formation toward online banking in Finland. *International Journal of Bank Marketing*, *20* (6), 261- 272.

Kaynak, E., & Harcar, T. D. (2005). American consumer's attitudes towards commercial banks. A comparison of local and national bank customers by use of geodemographic segmentation. *The International Journal of Bank Marketing*, *23*(1), 73-89.

Kim, D., Park, J., & Morrison, A. (2008). A model of traveller acceptance of mobile technology. *International Journal of Tourism Research*, *10,* 393-407.

Kotler, P. (1997). *Marketing management* (9th ed.). Upper Saddle River, NJ: Prentice Hall.

Kozinets R.V. (2002), "The field behind the screen: using netnography for marketing research in online communities," *Journal of Marketing Research*, *39*(1), 61–72.

Lange- Faria, W., & Elliot, S. (2012). Understanding the role of social media in destination marketing. *Tourism: An International Multidisciplinary Journal of Tourism*, *7*(1), 193-211.

Lee, C.S. & Ma, L. (2012). New sharing in social media: The effect of gratifications and prior experience. *Computers in Human Behavior*, *28*, 331-339.

Lee, E. J., Kwon, K. N., & Schumann, D. W. (2005). Segmenting the non-adopters category in the diffusion of Internet banking. *The International Journal of Bank Marketing*, 23 (4/5), 414-437.

Liang, A.W., Ekinci, Y., Occhiocupo, N., & Whyatt, G. (in press). Antecedents of travellers' electronic word-of-mouth communication. *Journal of Marketing Management*, iFirst, 1-23, online publication date: 4-Mar-2013.

Lin, P. J., Jones, E., & Westwood, S. (2009). Perceived risk and risk-relievers in online travel purchase intentions. *Journal of Hospitality Marketing and Management*, *18*(8), 782-810.

Lin, T.M.Y., & Fang, C.H. (2006).The effects of perceived risk on the word-of-mouth communication dyad. *Social Behavior and Personality*, *34*(10), 1207-16.

Liñares S., & Muñoz, F. (2009). El comportamiento del consumidor en las comunidades virtuales: tipologías de usuarios, *Congreso Nacional de Marketing (AEMARK, 2009)*, Bilbao (Spain), Septiembre.

Litvin,S., Goldsmith, R., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. *Tourism Management*, *29*(3), 458-468.

Lorente, A. (2010). El Wom tradicional ha muerto. Nace el Wom 2.0. Retrieved January 17,

2010, from http://www.yorokobu.es/2010/03/25/el-wom-tradicional-ha-muerto-nace-el-wom-2-0/

Luque, T., & Muñoz-Leiva, F. (2012). Segmentación Jerárquica, in T. Luque (Ed.), *Técnicas de análisis de datos en la investigación de mercados* (pp.377-417). Madrid: Ed. Pirámide.

Machauer, A., & Morgner, S. (2001). Segmentation of bank customers by expected benefits and attitudes. *International Journal of Bank Marketing*, *19*(1), 6-17.

Mack, R., Blose, J., & Pan, B. (2008). Believe it or not: Credibility of *blogs* in tourism. *Journal of Vacation Marketing*, *14*(2), 133-144.

Maser, B., & Weiermair, K. (1998). Travel decision-making: from the vantage point of perceived risk and information preferences. *Journal of Travel and Tourism Marketing, 7*(4),107-121.

Microsoft (2007). *Word of the web guidelines for advertisers*. Microsoft Digital Advertising Solutions. Retrieved January 17, 201, from http://advertising.microsoft.com/de-de/WWDocs/User/dede/NewsAndEvents/SocialNetworkingExecSummaryFINALApril2020 2007.pdf

Muñoz-Leiva, F. (2008). La adopción de una innovación basada en la Web. Tesis Doctoral. Departamento de Comercialización e Investigación de Mercados, Universidad de Granada.

Murphy, L., Mascardo, G., & Benckendorff, P. (2007). Exploring word-of mouth influences on travel decisions: friends and relatives vs. other travellers. *International Journal of Consumer Studies*, *31*(5), 517-527.

Nielsen, N. C., & Liburd, J. J. (2008). Geographical information and landscape history in tourism communication in the age of web 2.0. The case of the salt river bay national park in St. Croix of the U.S. Virgin Islands. Journal of Travel & Tourism Marketing, 25(3– 4), 282 – 298.

Nielsen BuzzMetrics (2006). *Consumer-Generated Media (CGM) 101, word-of-mouth in the age of the web-fortified consumer, a Nielsen BuzzMetrics White Paper by Pete Blackshaw and Mike Nazzaro* (2nd ed., Spring 2006). Retrieved November 10, 2012, from http://www.nielsen-online.com

Nielsen Company (2009a). *Global faces and network places*. Nielsen Report. Retrieved July 01, 2009, from http://es.nielsen.com/site/index

Nielsen Company (2009b). *Personal recommendations and consumer opinions posted online are the most trusted forms of advertising globally*. Retrieved November 17, 2012, from http://*blog*.nielsen.com/nielsenwire/wp-content/uploads/2009/07/pr_global-study_07709.pdf

Pan, B., MacLaurin, T., & Crotts, J. (2007). Travel *Blogs* and the Implications for destination marketing. *Journal of Travel Research, 46*(1)*,* 36-45.

Park, D., Lee, J. & Han, I. (2007). The effect of on-line consumer reviews on consumer purchasing intention: The moderating role of involvement. *International Journal of Electronic Commerce*, *11*(4), 125-148.

Parra, E., Bulchand, J., Gutiérrez, D., & Díaz, R. (2011). Intentions to use social media in organizing and taking vacation trips. *Computers in Human Behavior*, 27, 640-654.

Pons, J. (2007). Web 2.0 y Travel 2.0, in Resumen tecnologías sociales aplicadas al turismo. Retrieved November 17, 2012, from www.HostelTur.com

Prayag, G. (2009). Tourists'evaluations of destination image, satisfaction, and future behavioral intentions- The case of mauritius. *Journal of Travel and Toursim Marketing, 26*(8), 836-853.

Prendergast, G., & Ko, D. (2010). Online word of mouth and consumer purchase intentions. *International Journal of Advertising*, 29(5), 687-708.

Price, J. & Starkov, M. (2006). *Building a blog strategy in hospitality: Grow customer relationships and direct online revenue*. Retrieved November 17, 2012, from http://www.hospitalitynet.org/news/4026867.html

Prior, D.D. & Miller, L.M. (2012). Webethnography Towards a typology for quality in research design. *International Journal of Market Research*, *54*(4), 503-520.

Puri, A. (2009). Webnography: its evolution and implications for market research. *International Journal of Market Research, 51*(2), 273–275.

Rajshekhar G. J., & Dion, P. (1999). A life cycle segmentation approach to marketing financial products and services. *The Service Industries Journal*, *19*(3), 74-96.

Reza, J., Samiei, N., Dini., B., Yaghoubi, P. (2012). Examining the structural relationships of electronic word of mouth, destination image, tourist attitude toward destination and travel intention: An integrated approach. *Journal of Destination Marketing & Management* , *1* (1-2), pg. 134-143.

Reza, V., & Samiei, N. (2012). The impact of Electronic Word of mouth on a tourism destination choice: Testing the theory of planned behavior (TPB). *Internet Research, 5*(2), 591-612.

Schwaiger, M., & Locarek-Junge, H. (1998). Realizing customer retention potentials by electronic banking, *Electronic markets*, 8(4), 23-26.

Senecal, S., & Nantel, J. (2004). The influence of online product recommendations on consumers' online choices. *Journal of Retailing*, *80*(2), 159-169.

Seraj, M. (2012). We create, we connect, we respect, therefore we are: intellectual, social, and cultural value in online communities. *Journal of Interactive Marketing*, *26* (4), 209-222.

Smith, W. (1956). Product differentiation and market segmentation as alternative market strategies, *Journal of Marketing, 21*, 3–8.

Soper, S. (2002). The evolution of segmentation methods in financial services: Where next?. *Journal of Financial Services Marketing, 7*(1), 67-74.

Spanish Hotel Technology Institute (2007). Introducción al Travel 2.0 y últimas tendencias en la innovación hotelera. Retrieved January 17, 2011, from http://www.unionhotelera.com/asociacion/recursos/doc/Jornadas_TIC/23312_29129 12007101822.pdf

Spanish Observatory of Travels and Internet (2010). Estudio de Tendencias del Nuevo Viajero. Retrieved January 17, 2011, from http://www.minube.com/externos/observatorio/observatorio_sobre_viajes_e_interne t_estudio_de_tendencias_nuevo_viajero_junio_2010.pdf

Suárez Álvarez, L., Díaz Martín, A.M. & Vázquez Casielles, R. (2007). Relationship Marketing and Information and Communication Technologies: Analysis of Retail Travel Agencies. *Journal of Travel Research*, *45*(4), 453-463.

Trusov, M., Bucklin, T., Pauwels, K. (2008). Effects of word-of-mouth versus traditional marketing: findings from an Internet social networking site. Retrieved November 17, 2012, from, http://ssrn.com/abstract=1129351

Walker, L. J. (2001). The measurement of word-of-mouth communication and an investigation of service quality and customer commitment as potential antecedents. *Journal of Service Research*, *4*(1), 60-75.

Wang, H-Y., (2012). Investigating the determinants of travel blogs influencing readers' intention to travel. *The Service Industries Journal*, *32*(2), 231-255.

Westbrook, R.A. (1987). Product/Consumption-Based Affective Responses and Postpurchase Processes. *Journal of Marketing Research*, *24*(3), 258-270.

Wirtz, J. & Chew, P. (2002).The effects of incentives, deal, promeness, satisfaction and tie strenght on word-of-mouth behavior. *International Journal of Service Industry Management*, 13(2), pp. 141-162.

Wu, P., & Wang, Y. (2011). The influences of electronic word-of-mouth message appeal and message source credibility on brand attitude. *Asia Pacific Journal of Marketing and Logistics*, *23*(4), 448-472.

Ye, Q., Law, R., Gu, B., & Chen, W. (2011). The influence of user-generated content on traveler behavior. An empirical investigation on the effects of e-word-mouth to hotel online booking. *Computers in Human Behavior*, 27, 634-639

Zhu, F., & Zhang, X. (2010). Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of Marketing*, *74,* 133-148.

CHAPTER 3: GENERALISING USER BEHAVIOUR IN ONLINE TRAVEL SITES THROUGH THE TRAVEL 2.0 WEBSITE ACCEPTANCE MODEL

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1. INTRODUCTION

With the advent of Web 2.0-based sites, users not only obtain information, but can also provide information to others (Ridings *et al*., 2002). This has led to a participatory and collaborative online environment that has had an important impact on a wide range of sectors, particularly tourism. As a result tourist behaviour and habits have undergone major changes, giving rise to a new creature: the 2.0 Tourist.

In Web 2.0-based platforms of the tourism sector (hereafter "Travel 2.0 websites" or T2W), users not only take an active role in choosing and preparing their own trips, but also aid other tourists in forming an image or idea of their destination before travelling by posting their experiences, videos, etc. Thanks to these new applications tourists are now able to obtain more useful and personalised information tailored to their tastes and preferences (Doolin *et al*., 2002), thus allowing them to make faster and more effective searches for information about a hotel and/or destination (Brown and Chalmers, 2003).

Given this new scenario it is essential that tourism businesses take advantage of the different sites offered by Web 2.0 to enhance their reputation. Among the various actions that companies should take in light of this new web generation are listening to customer feedback, building a direct relationship with them to determine their needs firsthand, responding to constructive criticism of all kinds (positive or negative) and taking the appropriate measures to resolve complaints and follow through on negative comments from customers.

The overall aim of this study is to generalise the underlying behavioural model for explaining tourists' intention to use Travel 2.0 websites according to its main determinants. To achieve this objective we developed a behavioural model based on the original Technology Acceptance Model (TAM) of Davis *et al*. (1989). Our model, known as the Travel 2.0 Websites Acceptance Model (T2WAM), includes perceived "trust" towards these websites. Trust was included in the model as it is an important factor in measuring the behaviour of potential tourists for several reasons, i.e. it allows mitigation of uncertainty and lack of social presence and permits the creation of a

climate of mutual trust in these interactive and not face-to-face travel websites (Gefen *et al*., 2003a; Pavlou, 2003).

Therefore, the paper contributes to the stream of TAM and trust research focusing on the acceptance of Web 2.0-based tools that provide information about the tourism industry. This research is novel in that it integrates a variable associated with the uncertainty of behaviour and the environment (trust) with the constructs of technology acceptance (usability, ease of use and attitude) to explain which factors lead to the adoption of T2W by potential tourists. While some authors have also incorporated this construct in the context of electronic commerce (e.g. Gefen *et al*., 2003a, b; Pavlou, 2003), other studies that analyse the adoption of Web 2.0 or social networks (e.g. Willis, 2008; Casaló *et al*., 2009) do not include it. This work is also original in that it establishes a behavioural model that can be extrapolated to all Web 2.0 applications in the context of hotel websites.

2. THEORETICAL FRAMEWORK: CONSUMER BEHAVIOUR TOWARDS TRAVEL 2.0 WEBSITES

2.1. Development of the Technology Acceptance Model

Several theoretical models have been proposed in the scientific literature to gain a better understanding of internet user behaviour with regard to information searches and electronic transactions (e-commerce). The most important of these models are the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1991), and the Technology Acceptance Model (Davis *et al*., 1989). However, due to its validity and predictive capacity, the TAM is the most commonly used model to explain the acceptance of a system or information technology (e.g. Horton *et al*., 2001; Ramayah *et al*., 2003, Huang *et al*., 2009).

The TAM model has also been widely applied to the internet across different fields. For example it has been valuable in explaining user behaviour with regard to e-commerce

(e.g. Chircu *et al*., 2000, Gefen *et al*., 2003a, b; Pavlou, 2003; Shang *et al*., 2005), websites (e.g. Moon and Kim, 2001; Sánchez and Roldán, 2005; Castañeda *et al*., 2007a), online learning systems (e.g. Saad and Balhi, 2005), online banking services (e.g. Chau and Lai, 2003), the use of intranets (e.g. Horton *et al*., 2001), tourism and other related websites (e.g. Kaplanidou and Vogt, 2006), and travel social networking sites (e.g. Casaló *et al*., 2009).

In line with the TRA theory, the TAM model posits that perceived beliefs (usefulness and ease of use) determine users' attitudes towards the system or information technology. While subjective norms and attitude explain behavioural intention in the TRA, the subjective norms construct is not significant in the TAM (Davis *et al*., 1989).

In the context of the internet, and social networks in particular, Casaló *et al*. (2009, p. 5) defined perceived usefulness as "the degree to which a consumer believes that the information obtained from a travel social network will provide a range of benefits that would otherwise be difficult to obtain without participating in it". In extending the above definition to this work, perceived usefulness can be defined as the degree to which users believe that using Travel 2.0 websites will improve their performance when searching for information on a tourist destination and/or hotel.

Ease of use is related to website structure, that is, users find the site simple to use, easily understand its contents and functions and can find the information they want fairly quickly (Muñoz-Leiva, 2008). In our study perceived ease of use is defined as the degree to which users find it easy to search for information on travel websites such as blogs, social networks and virtual communities.

Davis *et al*. (1989) also introduced a direct relationship between perceived usefulness and intention to use, which implies that individuals will intend to use a technological innovation if they perceive that using the new technology will improve their job performance in an organisational context (Muñoz-Leiva, 2008).

In the classic formulation of the TAM, attitude is a construct that mediates the relationship between previous beliefs (usefulness and ease of use) and intended use. Sánchez and Roldán (2005), among others, argue that it is essential to include attitude

in the TAM in order to determine acceptance of a technological innovation (e.g. Moon and Kim, 2001; Izquierdo *et al*., 2009). From the standpoint of Travel 2.0, attitude can therefore be defined as tourist preferences for using interactive travel websites to find information about a particular destination and/or hotel.

Despite the importance of TAM several research studies have suggested that the theory should introduce further factors to improve its explanatory power regarding the acceptance of a technological innovation (Taylor and Todd, 1995; Shang *et al*., 2005). For this reason and in line with the theoretical foundations defended by Gefen *et al*. (2003a), Pavlou (2003) and Izquierdo *et al*. (2009), this study introduces a new variable in the original TAM: perceived trust towards the other party.

2.2. Importance of perceived trust

Several authors (e.g. Gefen and Straub, 2000; Gefen *et al*., 2003b; Pavlou, 2003) justify including the trust construct in the context of electronic services. In our study it was necessary to include this construct to measure the behaviour of potential tourists for several reasons. First the content of interactive travel websites is characterised, among other things, by being user generated. In order for users to post information and for others to consider the information reliable, it is necessary to create a climate of mutual trust. Second the main problem with the online environment is that interactions (transactions, communications, etc.) are not face-to-face and such a lack of social presence can lead to distrust of the medium (Gefen *et al*., 2003a; Pavlou, 2003). To reflect the uncertainty involved in accepting a system, Pavlou (2003) incorporated the trust variable in the TAM as an important factor in mitigating such feelings (Mayer *et al*., 1995). It has also been shown that trust is a variable that mediates between a website and the behavioural intentions of consumers (Sultan *et al*., 2002).

Trust has been studied and defined in many disciplines including economics, philosophy, sociology, psychology and marketing, among others. From a cognitive perspective Rotter (1967, p. 652) defined trust as “the belief that one party will reliably keep its word or promise and fulfil its obligations in an exchange relationship”. Gefen

et al. (2003a, p. 308) defined trust as "the expectations that other individuals or companies with which one interacts will not take improper advantage resulting from the dependence one has on them". In line with this definition, trust in Web 2.0 travel sites can be defined as the belief or expectation that the content generated by other users is reliable and that these users will fulfil their obligations. In this sense a user who reads web comments is the most vulnerable party, while trust is placed in the user who posts them.

3. RESEARCH HYPOTHESES RELATED TO THE PROPOSED BEHAVIOURAL MODEL

A review of the relevant literature has revealed the following relationships between constructs.

3.1. Usefulness-attitude

Several works have demonstrated the usefulness-attitude relationship in the context of tourism, among them, Luque *et al*. (2007) and Castañeda *et al*. (2007b), who studied the use of the internet to seek travel information, and Kim *et al*. (2008), who focused on the acceptance of mobile devices by tourists. In the context of Web 2.0 the findings of Shin and Kim (2008) and Hossain and Silva (2009) also confirmed that when users perceive social networks and virtual communities to be useful, they have a more positive attitude towards the use of and participation in these sites. Finally research on Travel 2.0, specifically the use of travel social networks, has also found that tourists will have a more positive attitude towards these networking websites if they perceive that they are useful (Casaló *et al*., 2009, Huang *et al*., 2009; Korvenmaa, 2009). This brings us to the following hypothesis:

H1. Usefulness has a positive effect on attitudes towards Travel 2.0 websites.

3.2. Usefulness-intention to use

The influence of usefulness on intention to use has been shown with regard to the search for tourist information on the internet (e.g. Luque *et al*., 2007; Castañeda *et al*., 2007b) and behavioural intention to participate in Web 2.0 virtual communities (Hossain and Silva, 2009). In addition, when tourists perceive that social networks and/or discussion forums are useful sites for finding travel information, their intention to use them will be greater (Huang *et al*., 2009; Casaló *et al*., 2009). We therefore establish the following research hypothesis:

H2. Usefulness has a positive effect on attitudes regarding intention to use Travel 2.0 websites.

3.3. Ease of use-usefulness

This relationship has been demonstrated empirically in the tourism sector with regard to the search for tourist information on the internet (Luque *et al*., 2007; Castañeda *et al*., 2007b; Ryan and Rao, 2008). It has also been shown in the context of Web 2.0 in studies on virtual communities (Hossain and Silva, 2009). In the context of T2W the influence of ease of use on perceived usefulness indicates that when users find T2W easy to use, information about a destination and/or hotel provided by others is perceived to be quite useful. Hence we establish that:

H3. Ease of use has a positive effect on the perceived usefulness of Travel 2.0 websites.

3.4. Ease of use-attitude

This effect has also been verified regarding the acceptance of Web 2.0 applications such as blogs and virtual communities (Hsu and Lin, 2008; Hossain and Silva, 2009). If we aggregate the results concerning the tourism sector and the Web 2.0 context, we can conclude that tourists will have a more positive attitude towards interactive travel systems when they perceive that such systems are not difficult to use (Korvenmaa, 2009). This gives rise to the following research hypothesis:

> *H4.* Ease of use has a positive effect on tourists' attitudes towards the use of Travel 2.0 websites.

3.5. Ease of use-intention to use

Although most studies find that perceived usefulness has a greater influence on the acceptance of new technology than perceived ease of use, Chau and Lai (2003) demonstrated that the latter construct is the most significant determinant of acceptance by online banking users. According to previous research, when users perceive an information or technological system to be easy to use, their intention to use it will be greater (e.g. Pavlou, 2003; Gefen *et al*., 2003a). In other cases both variables (perceived usefulness and ease of use) have been shown to exert a similar influence on the intention to use new online management programs in an organisational setting (e.g. Hernández *et al*., 2006). If we extend this relationship to Travel 2.0 it can be established that:

> *H5.* Ease of use has a positive effect on tourists' intention to use Travel 2.0 websites.

3.6. Ease of use-trust

A review of the literature on e-commerce shows that the easier a website is to use, the greater the trust in it (Koufaris and Sosa, 2004; Flavián *et al*., 2004). Fogg *et al*. (2001) also argued that perceived ease of use is one of the most important factors in increasing perceived credibility. User-friendly websites are therefore perceived as being more reliable. In the case of T2W it is more logical to establish a second relationship (ease of use on trust) given that when users perceive that these websites are easy to use, they will feel that they are in control of the situation and understand all the content posted on them, thus increasing user trust in the site. Our sixth hypothesis is therefore as follows:

> *H6.* Ease of use has a positive effect on trust in Travel 2.0 websites.

3.7. Attitude-intention to use

The relationship between attitude and intention to use has been empirically supported in studies on acceptance of participation in a network (Shin and Kim, 2008), a virtual community (Hossain and Silva, 2009) or a blog (Hsu and Lin, 2008), and finally, the use of social networks by tourists when searching for travel information (Huang *et al*., 2009; Korvenmaa, 2009; Casaló *et al*., 2009). Thus if tourists have a positive attitude towards interactive travel websites, they will be interested in using them in the future to find information about tourism products. Hence:

> *H7.* Attitude has a positive effect on tourists' intentions to use Travel 2.0 websites.

3.8. Trust-usefulness

According to previous research trust positively influences the perceived usefulness of e-commerce (Gefen *et al*., 2003b; Pavlou, 2003; Shin, 2008). As a result consumers will

be expected to complete the checkout process (Chircu *et al*., 2000; Pavlou, 2003). Trust allows the consumer to depend on e-retailers and the underlying infrastructure and so make the interaction more useful. Conversely, if e-retailers are trusted but behave differently from the beliefs instilled, the interface will become useless. This is due to the fact that excessive risk causes the consumer to reject the use of the system and, in this case, there is no reason to expect usefulness to be gained with use of the interface (Pavlou, 2002).

On the basis of the foregoing arguments a web system whose structure and content organisation is not modified can be expected to gain in trust regarding an initial state (with higher uncertainty), so that perceived usefulness will also increase and it will then depend on the people behind it. Furthermore, the greater the trust users have in a website, the more likely they are to use it and the less time and cognitive effort they must devote to examining the details of the site and the quality or updating of information. Hence:

H8. Trust has a positive effect on perceived usefulness of Travel 2.0 websites.

3.9. Trust-attitude

In the context of travel social networks the study of Casaló *et al*. (2009) revealed that trust has a positive influence not only on perceived usefulness, but also on the positive attitudes of consumers towards the information that can be obtained on these websites. We therefore establish the following hypothesis:

H9. Trust has a positive effect on attitude towards Travel 2.0 websites.

3.10. Trust-intention to use

Trust in online vendors and retail websites has a significant influence on internet purchase intent (e.g. Gefen *et al*., 2003a; Pavlou, 2003; Izquierdo *et al*., 2009). Moreover studies on the acceptance of Web 2.0 websites have found a relationship

between the trust construct and the TAM variables. For example Ridings *et al*. (2002) found that the higher the level of trust in a virtual community, the greater the intention to share information and accept the information provided by other members of the virtual community. In this context the results of the work by Casaló *et al*. (2009) reveal that trust in travel networks has a positive influence on consumer intention to follow advice obtained from the network. Therefore:

H10. Trust has a positive effect on intention to use Travel 2.0 websites.

4. METHODOLOGY: SCOPE OF STUDY, MEASUREMENT SCALES AND DATA COLLECTION

4.1. Research design: Travel 2.0 websites selected and visits to websites

According to the survey conducted at the World Travel Market Trade Fair held in London in 2010, 36 percent of tourists from the UK used social networks as a source of information for making travel arrangements. The main sites used were:

- Tripadvisor (66 per cent);
- Facebook (34 per cent);
- travel discussion forums (28 per cent);
- YouTube (21 percent);
- Twitter (17 percent); and
- blogs (9 percent) (Hosteltur, 2010).

Facebook is the world's largest social network in terms of volume of users and level of participation, attracting more than 850 million users in just seven years (Facebook, 2012). In addition Tripadvisor is the most popular travel community in the world with over 40 million monthly travellers, 20 million registered users and more than 50 million reviews and opinions from real travellers around the world (Tripadvisor, 2012). Finally travel blogs rank sixth in terms of sources of information most often taken into account by travellers when choosing a destination (Spanish Observatory on Travel and

the Internet, 2010). These reasons justify the decision to study the following three T2Ws:

(1) a Tripadvisor community;
(2) a Facebook profile; and a
(3) a hotel blog.

The specific tourism product that has been chosen for study is the Hotel Botanico and Oriental Spa Garden located in Tenerife (Canary Islands, Spain).

The sample was randomly divided into three scenarios for respondents to visit before completing the web questionnaire:

1) Scenario 1 (S1). Respondents who viewed the Hotel Botanico blog (see Appendix 1 or http://webcim.ugr.es/polls/design1_b.htm);
2) Scenario 2 (S2). Respondents who viewed the hotel's Facebook profile (see Appendix 1 or http://webcim.ugr.es/polls/design2_f.htm); and
3) Scenario 3 (S3). Respondents who visited the Tripadvisor website containing comments about the hotel (see Appendix 1 or http://webcim.ugr.es/polls/design3_t.htm).

Respondents were allowed to freely browse the different options available (menus, links, multimedia displays, etc.) on the three sites selected. Visits or web scenarios included a Java code (script) that automatically sent the web questionnaire to the respondents 60 seconds after they began to browse the website.

By evaluating different websites (scenarios) across three different samples and randomising the units, the causal relationships can be extrapolated to the population of internet users and potential travellers to the hotel. Experiments or scenarios of this kind conducted in a natural environment (field experiments) have high external validity (Luque, 1997, p. 153). With regard to internal validity 1) several factors taken into account in the research design such as time devoted to browsing, 2) the same object for comparison (the Hotel Botanico), or 3) the equivalence of measurement scales

across different scenarios, among others, guarantee the suitability of the design for drawing accurate conclusions regarding the effects of the scenario.

4.2. Development of the measurement scales

The questionnaire consisted of closed questions for the constructs, five-point Likert scales, and socio-demographic data (see Appendices 2 and 3). Specifically we adapted the scales previously used by Davis (1989) and Sánchez and Roldán (2005) to measure perceived ease of use of Travel 2.0 websites or applications (consisting of four items). The usefulness scale (consisting of four questions) was adapted from the work of Pavlou (2003) and Castaneda *et al*. (2007b). The trust scale (four items) was adapted from the scales of Flavián *et al*. (2004) and Muñoz-Leiva *et al*. (2010). The scale of attitude towards T2W (composed of three items) was adapted from the study by Castañeda *et al*. (2007b). Finally the intention to use scale (one item) was adapted from the work by Sánchez and Roldán (2005).

To verify the suitability of the measurement scales, the reliability and validity of the scales were analysed by means of both exploratory (SPSS 17.0) and confirmatory (AMOS 18) methods (see Data analysis section).

4.3. Data collection

To carry out the research a personal online survey was conducted of Spanish T2W users aged 16 to 64 who use the internet on a regular basis (more than three times a week). The sample consisted of 3,269 internet users belonging to an internet community who were invited to participate in the survey (http://webcim.ugr.es/polls).

Participation in the survey was voluntary and the data were collected from 8 to 28 September 2010 (see Table 8). The total number of valid questionnaires was 440 (n_{S1}=152; n_{S2}=140; n_{S3}=148). The final response or retention rate after sending the first invitation and a second reminder was 18.84 percent.

A representative sample of the population was obtained using data issued by the Spanish Statistics Institute (Spanish National Statistics Institute, 2010) relating to the socio-demographic profile of internet users between the age of 16 and 64. Specifically 45.9 percent were men (compared to 54.1 percent women), 44.8 percent were between the age of 25 and 44, 84.8 percent lived in an urban area, and 30.5 percent had a high household income of between 1,200 and 1,800 euros per month (see Table 11 in Appendix 3).

Table 8. Technical specifications and sample characteristics

Population	Spanish tourists who use the internet as a source of information; habitual internet users		
Sampling type	Simple random sampling		
Date of fieldwork	8-28 September 2010		
Sample	S1	S2	S3
Sample size (valid cases)	152	140	148
Sample error*	7.95%	8.28%	8.06%

** Note: For the estimation of a proportion where P=Q=0.5 and a confidence level of 95 percent.*

5. DATA ANALYSIS

5.1. Reliability and validity

Cronbach's alpha indicator was first used to measure the reliability of the scales, with 0.7 as the reference value (Nunnally, 1978; Hair *et al.*, 1995). All the variables obtained very good values in the three groups or subsamples ($\alpha > 0.8$).

To test the convergent and divergent validity of the scales, a confirmatory factor analysis was performed. In this analysis the items that contributed least to the explanatory power of the model were eliminated ($R^2 < 0.5$). Convergent validity was evaluated by means of the factor loadings of the indicators. The coefficients were significantly different from zero, and the loadings between latent and observed variables were high in all cases ($\beta > 0.7$). Consequently we can say that the latent variables adequately explain the observed variables (Bollen, 1989; Hair *et al.*, 1995).

With regard to discriminant validity the variances were found to be significantly different from zero. Moreover the correlation between each pair of scales did not exceed 0.8. Given the weak relationship among the constructs, we can therefore confirm that there are five constructs in each of the three models proposed.

The reliability of the scales can again be evaluated from a series of indicators drawn from the confirmatory analysis. The standard compound reliability and the average variance explained exceed the threshold used as a reference at 0.7 and 0.5, respectively, as well as other indicators of overall fit for the measurement model (Bollen, 1989; Hair *et al.*, 1995).

5.2. Structural equation model

After evaluating the reliability and validity of the measurement scales, the research hypotheses based on the review of the literature were tested. For this purpose a structural equation model was developed for each group. Considering the absence of normality of the variables, we opted for the maximum likelihood estimation method and bootstrapping technique (or bootstrap learning samples) for 1,000 consecutive steps or samples, and a significance level of 95 percent. The maximum likelihood is preferable in the case of small samples, as opposed to generalised or weighted least squares (West *et al*., 1995). In the bootstrapping technique we used the Bollen-Stine's corrected p-value, testing the null hypothesis that the model is correct. Through re-sampling, this technique permits the standard error of the constructs to be corrected.

Before evaluating each of the three models in further depth and examining the differences among them, the overall goodness of fit was verified to be satisfactory as the values of the goodness of fit indicators were within the levels recommended in the literature (Bollen, 1986, 1989; Lai and Li, 2005; Muñoz-Leiva, 2008): RMSEA < 0.08, Bollen-Stine's corrected p-value > 0.05, Normed Chi-squared < 2 or 3, SNCP → 0, RFI → 1, CFI, IFI and CFI > 0.9, GFI and AGFI > 0.8 (see Table 9).

Table 9. Goodness-of-fit indicators in the structural model

Coefficients	RMSEA	Chi-squared	d.f.	Bollen-Stine's p	Normed Chi-squared	SNCP	RFI	GFI	AGFI	NFI	CFI	IFI
Blog (S1)	0.067	114.37	68	0.052	1.68	0.31	0.91	0.910	0.861	0.936	0.972	0.973
Facebook (S2)	0.079	104.96	56	0.067	1.87	0.35	0.89	0.904	0.845	0.920	0.960	0.961
Tripadvisor (S3)	0.075	81.77	45	0.096	1.82	0.25	0.91	0.918	0.850	0.937	0.970	0.971

Note: RMSEA: Root mean square error of approximation; SNCP: Scaled noncentrality parameter; RFI: Relative fix index; GFI: Goodness-of-fit index; AGFI: Adjusted goodness-of-fit index; NFI: Normed fit index; CFI: Comparative goodness of fit; IFI: Incremental fit index.

The final blog, Facebook and Tripadvisor behavioural models are shown in Figure 5.

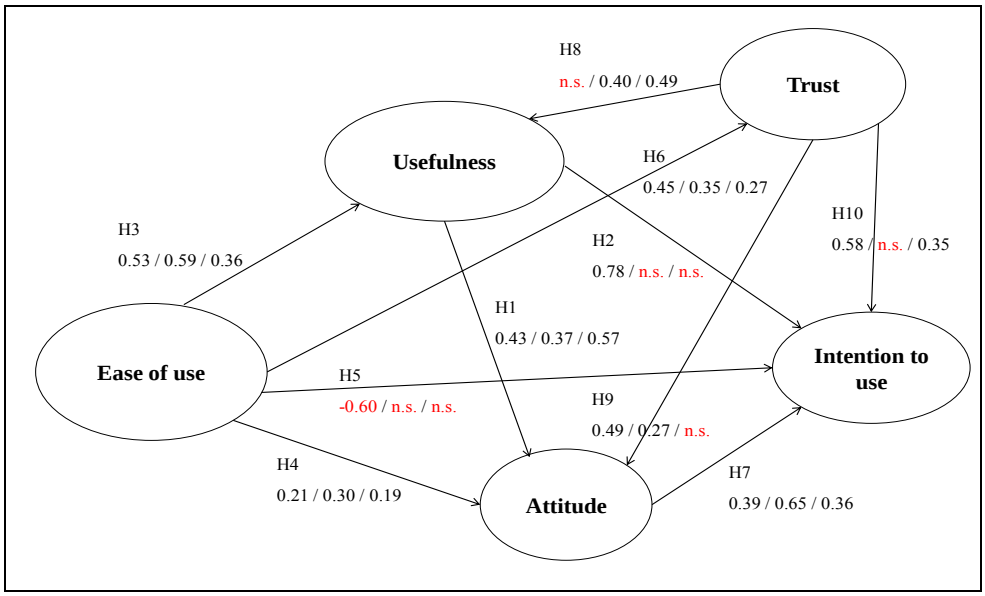


Figure 5. Behavioural models (standardised beta): Blog (S1)/Facebook (S2)/Tripadvisor (S3).

**Note: n.s.= not significant*

Regarding the hotel blog the empirical evidence verified all the causal relationships described in hypotheses *H1*, *H2*, *H4*, *H5*, *H6*, *H7*, *H9*, and *H10*.

Specifically we found that the intention to use blogs is influenced not only by the attitude (*H7*) and usefulness (*H2*) relationships of the TAM model, but also by ease of use (*H5*). Regarding the new relationships included in the TAM model, we find that

users will trust or rely more on hotel blogs that they perceive to be easy to use (*H6*) and that ease of use has a positive influence on the attitude of tourists (*H9*) and intention to use (*H10*).

The hypothesis that trust influences the perceived usefulness of these sites (*H8*) was not verified and therefore rejected (for non-standardised beta and other results see Table 12 in Appendix 4). Hence tourists believe that the content posted by others is useful for preparing their trips regardless of the level of trust in the content.

However, contrary to what was initially proposed in the hypothesis, the direction of the relationship between ease of use and intention to use (*H5*) was negative.

The Facebook behavioural model rejected hypotheses *H2*, *H5* and *H10*. No empirical evidence was found to reject the remaining hypotheses. Specifically the relationship between trust and usefulness proves to be very significant for tourists who use Hotel Botanico's Facebook profile (*H8*). Furthermore the relationship between perceived ease of use and trust (*H6*) is also fulfilled; trust has a positive influence on attitude (*H9*); and this construct has a positive influence on intention to use (*H7*). The same relationships are found with regard to Tripadvisor.

As with the Facebook model the Tripadvisor behavioural model rejected the hypotheses that usefulness and ease of use have a positive influence on intention to use (*H2* and *H5*). The model also rejected the hypothesis on the relationship between trust and attitude (*H9*). Howevehr the rest of the hypotheses were not rejected. For example the positive relationship between trust and intention to use (*H10*) was fulfilled for Tripadvisor (and the blog).

5.3. Comparison of models

To demonstrate the existence of a common model for the three T2Ws (blog, Facebook and Tripadvisor hotel website) after they were evaluated, we compare the regression coefficients or weights in pairs between the structural models using a modified version of the student's t-test for independent samples (Goodman and Blum, 1996; Chin,

2000). The evaluation was performed using the procedure suggested by Chin (2000) to develop a multi-group analysis based on the student's t-test according to the following formulation:

Ho: B1 = B2

$$t = \frac{B_1 - B_2}{\sqrt{SE_1^2 + SE_2^2}}$$

where Bi, denotes path weights and SEi is the standard error of the path in the structural model.

The results revealed significant differences (sign. < 0.05) in the relationships between certain variables of the three structural models (see Table 10).

Table 10. Differences in the non-standardised coefficients (B) of the models

Relationship	B1-B2	T (S1-S2)	Sign.	B1-B2	T (S1-S3)	Sign.	B1-B2	T (S2-S3)	Sign.
H1: Useful →attitude	0.06	0.43	0.6675	-0.14	-0.95	0.3429	-0.20	-1.37	0.1718
H2: Useful →int. use	0.44	1.88	0.0611	0.53	2.24	**0.0258***	0.09	0.34	0.7341
H3: Ease use → useful	-0.06	-0.42	0.6748	0.18	1.31	0.1912	0.24	1.71	0.0884
H4: Ease use→attitude	-0.09	-0.62	0.5357	0.02	0.20	0.8416	0.11	0.94	0.3480
H5: Ease use → int. use	-0.47	-2.12	**0.0349***	-0.60	-3.39	**0.0008***	-0.14	-0.69	0.4908
H6: Ease use → trust	0.10	0.88	0.3796	0.18	1.81	0.0713	0.08	0.77	0.4419
H7: Att.→int. use	-0.26	-1.10	0.2722	0.03	0.16	0.8730	0.29	1.13	0.2594
H8: Trust → useful	-0.25	-1.43	0.1538	-0.34	-1.83	0.0682	-0.10	-0.51	0.6104
H9: Trust → attitude	0.22	1.43	0.1538	0.37	2.28	**0.0233***	0.15	1.03	0.3039
H10: Trust → int. use	0.47	2.00	**0.0464***	0.23	0.96	0.3378	-0.24	-0.99	0.3230

** Note: Significant difference for a significance level of 5%*

These differences are especially pronounced in the relationships trust-attitude and usefulness-intention to use, which was found to be higher for the blog than for Tripadvisor (dif. = 2.28 and 2.24, respectively), the relationship trust-intention to use, higher for the blog than for Facebook (dif. = 0.47) and perceived ease of use-intention to use, higher in the case of Facebook than Tripadvisor and the blog (dif. = 3.39 and 2.12).

The results indicate that the model of tourist behaviour in Travel 2.0 is not fully generalisable. In other words the model can only be partially extrapolated in the best of cases to all the travel platforms and communities.

6. DISCUSSION AND IMPLICATIONS

6.1. Discussion of results

This paper has attempted to analyse the behaviour of tourists with regard to different Travel 2.0 websites, specifically blogs, social networks and virtual communities. With regard to the originality of the work we found that other authors have incorporated the trust construct into the TAM model, but have focused on the context of electronic commerce (e.g. Pavlou, 2003; Gefen *et al*., 2003a, b), while other works that analyse the adoption of Web 2.0 or social networks (e.g. Willis, 2008) do not include trust in their models.

The results of the study are consistent with those in the literature, namely that the original TAM is a robust and parsimonious underlying model for the study of T2W (see extended model T2WAM in Figure 6).

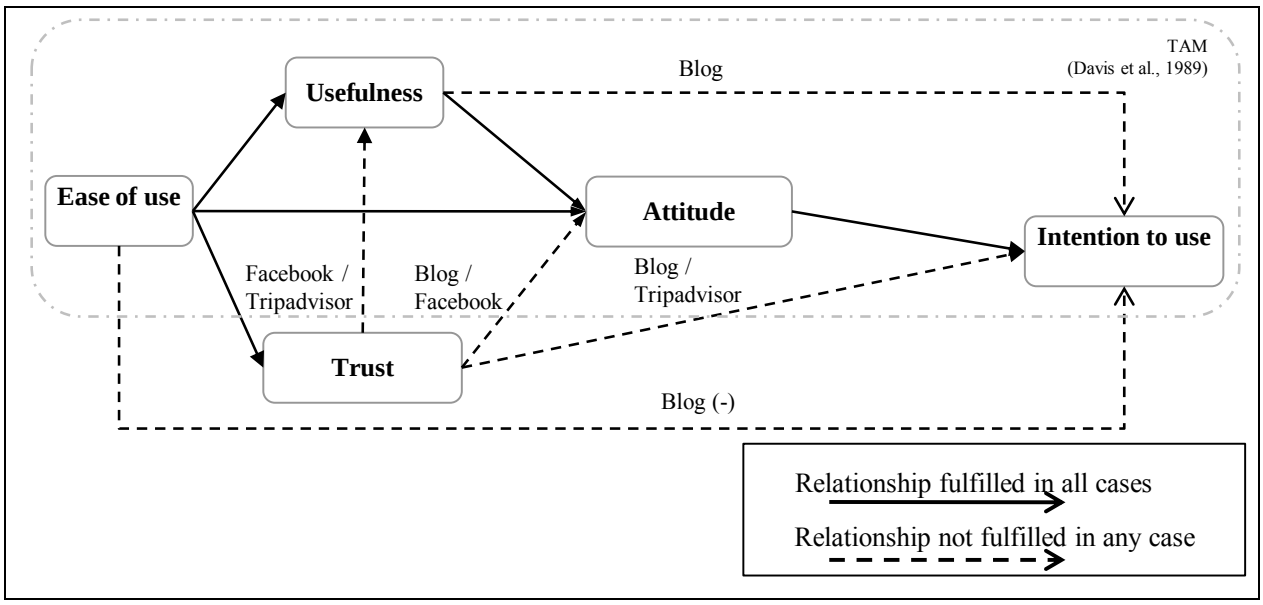


Figure 6. Extended model underlying all Travel 2.0 websites: the T2WAM model

A thorough analysis of the model obtained permits us to conclude that the classic TAM model is present in all the T2Ws, with the exception of the relationship between usefulness and intention to use, which clearly does not occur in the case of the

Tripadvisor forum or the Facebook profile. Some relationships such as trust and usefulness, attitude and intention to use, or ease of use and intention depend on the tool analysed.

The influence of perceived ease of use on trust is fulfilled in the three applications studied. In this sense users will trust or rely more on a T2W that they perceive to be easy to use. This is the case, for example, of blogs, which are easier to use.

Nonetheless certain differences in tourist behaviour have also been found depending on the T2W used.

First the causal relationship between trust and usefulness proves to be very significant for tourists who use Hotel Botanico's Facebook profile and the Tripadvisor page. It can therefore be said that, in general, when tourists trust the content posted by other users (comments, travel experiences, videos, etc.), they believe that these sites are useful for preparing their trips. However this relationship is not fulfilled in the case of blogs. This may be due to the fact that not only are articles about the personal experiences of other travellers posted on travel blogs, but also information about a given destination, things to do or travel tips. In these cases tourists find these websites useful, but do not lend credibility to the experiences posted by other users.

Second trust has a positive influence on the attitude of tourists in the case of blogs and Facebook, but not in the case of Tripadvisor. This may be due to the fact that although tourists rely on feedback from other users in this virtual community, they do not have a positive attitude towards the website itself and instead prefer to use other applications where they can find the opinions and experiences of other travellers in addition to other types of information such as flight information, hotels, travel competitions or reviews from friends: a fact that influences their choice of a destination and/or hotel.

According to the TAM intention to use blogs is influenced not only by attitude, but also by ease of use and usefulness. In the case of Facebook and Tripadvisor, however, intention to use is only determined by attitude. This may be because although many tourists feel that virtual communities and social networks are easy to use and useful,

they prefer to use other T2Ws such as blogs, which post the experiences of other travellers as well as a greater variety and amount of information. In the case of blogs the marked negative relationship between ease of use and intention to use is an important aspect that must be taken into account. This indicates that the greater simplicity and fewer options available on blogs make this tool less attractive as a source of information among internet users who have become increasingly accustomed to interacting with progressively more complex sites such as the previous two.

Finally the positive relationship between trust and intention to use was fulfilled for the blog and Tripadvisor, but rejected for Facebook. This may be due to the fact that many tourists do not rely on the feedback posted by other travellers on social networks as it can be manipulated by the company in question (in the case of positive feedback) or posted by the competition (negative comments). However this does not prevent tourists from showing intention to use travel social networks because the information on these sites may aid them in finding more reliable information on other websites.

6.2. Theoretical and practical implications

Today many companies use a variety of T2W tools (blogs, Facebook profiles, Tripadvisor, and others) to complement their marketing and communication strategies and ensure that such strategies are in line with the current demands of clients. In this sense it is important that companies maintain a profile in different social networks (particularly Facebook as it is the most well-known and widely-used tool) so that they can interact directly with their clients and gain information about their needs and concerns.

T2W can also be used by hotels to post their latest offers and ask users about their experiences in the hotel. This type of interaction permits hotels to learn what image tourists have of the hotel as well as writing quality articles that may be posted later on the blog.

As the results of this paper have shown, T2Ws must be perceived as being easy to use and useful if users are to have a positive attitude towards these tools and a greater intention to use them. The study has also revealed that when these platforms are easy to use, users will have greater trust in the content that is published on them. For this reason it is important that tourist company blogs post the full range of content travellers might need when travelling (travel tips, interesting facts, current news on travel and hotels, travel guides, experiences of other travellers, etc.) in a clear and orderly manner so that users perceive the website to be useful in searching for information on specific destinations and/or hotels. By doing so users will have a sense of "belonging" to the hotel, travel agency or tourism enterprise and visit the company's official website directly to book flights or holidays, make travel arrangements, or book a trip or excursion.

7. CONCLUSIONS AND FURTHER RESEARCH

7.1. Final conclusions

There is no doubt that the internet has become an important source of information for an increasingly large number of tourists when planning their trips and/or holidays. Because the internet offers numerous possibilities for finding and/or sharing information, companies must be aware not only of the different options the medium offers, but also the factors that determine its use.

When it comes to internet business in general, trust is a key factor. For this reason we propose an adaptation of the TAM that incorporates the trust variable. However the results are not sufficiently conclusive as trust was not found to have a significant influence on usability, positive attitude or intention to use in all the information sources considered.

More specifically, in the case of tools directly controlled by a company such as blogs, it is interesting to note that trust positively affects attitude and intention to use. For this reason companies should design more objective blogs that permit outsiders to post

content even when such content may be unfavourable or negative for the institution. In short such a strategy would involve transferring the traditional media advertising philosophy of two-sided messages (positive and negative) to the realm of social networks.

Regarding Facebook, the most widely used social network in the world, greater trust would lead to improved perception of use and positive attitudes. Given that companies have full control over their Facebook profiles and these profiles have a much greater potential than blogs, similar recommendations to those above also apply to the use of this tool.

As for Tripadvisor greater trust was found to improve both perceptions of usability and intention to use. In this case the system is in the hands of outside organisations (management) and tourists (comments), meaning that it is much more complicated for the company to control content with a view to building the trust needed to achieve the effects discussed above.

7.2. Strengths, limitations and further research

With regard to methodological issues it is important to note that the fieldwork and visits to the scenarios in a natural environment ensure high external validity. Additionally it is possible to generalise the causal relationships found to the population of internet users by simultaneously evaluating three T2Ws among three different samples and by the careful random assignation of the units to the experimental groups. However the study was based on a specific hotel. The conclusions can therefore not be extrapolated to other tourist destinations where, in addition to accommodation, tourists take into consideration other factors such as climate, the people, sightseeing, food or facilities.

With regard to internal validity it is important to highlight the thoroughness and care taken in establishing the experimental conditions (time, comparison of the same object of study, and equivalence of measurement scales). This approach has ensured

that the conclusions drawn provide an accurate account of the effects produced in the study, while mitigating the limitation of using a single context (a specific hotel).

Future research could be directed at conducting a more ambitious study that includes accommodation as an additional element of a much wider tourism context which takes into consideration factors such as those mentioned above.

We are also aware that, despite having used two of the largest networks worldwide such as Facebook (in a general context) and Tripadvisor (in the tourism context), in a rapidly changing environment such as the internet, new networks are being launched to provide followers with different features and tools than those offered by the two networks studied. More specifically microblogging networks such as Twitter have experienced spectacular growth in recent years, and are used by increasingly larger numbers of tourists to find travel information. It would therefore be interesting to replicate the model used in this study in the context of microblogging tools.

Finally, given that Web 2.0 applications are based on the socialisation and participation of users, it would be interesting to develop a behavioural model that includes other variables that have not been analysed here. In particular subjective or social norms such as the extent to which users perceive that others approve of their involvement in T2W, the sense of belonging to a community and perceived enjoyment as many people use these tools not only to search for information but also for entertainment and fun.

8. APPENDICES

8.1. Appendix 1. Scenarios

Figure 7. S1 – Blog

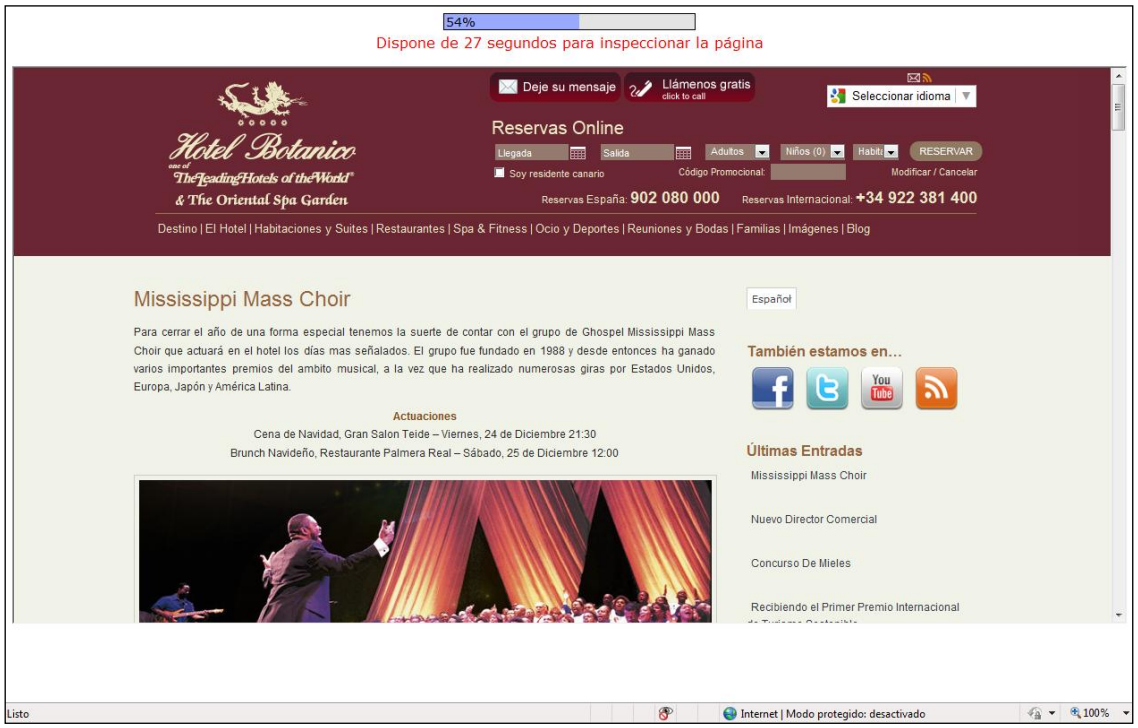
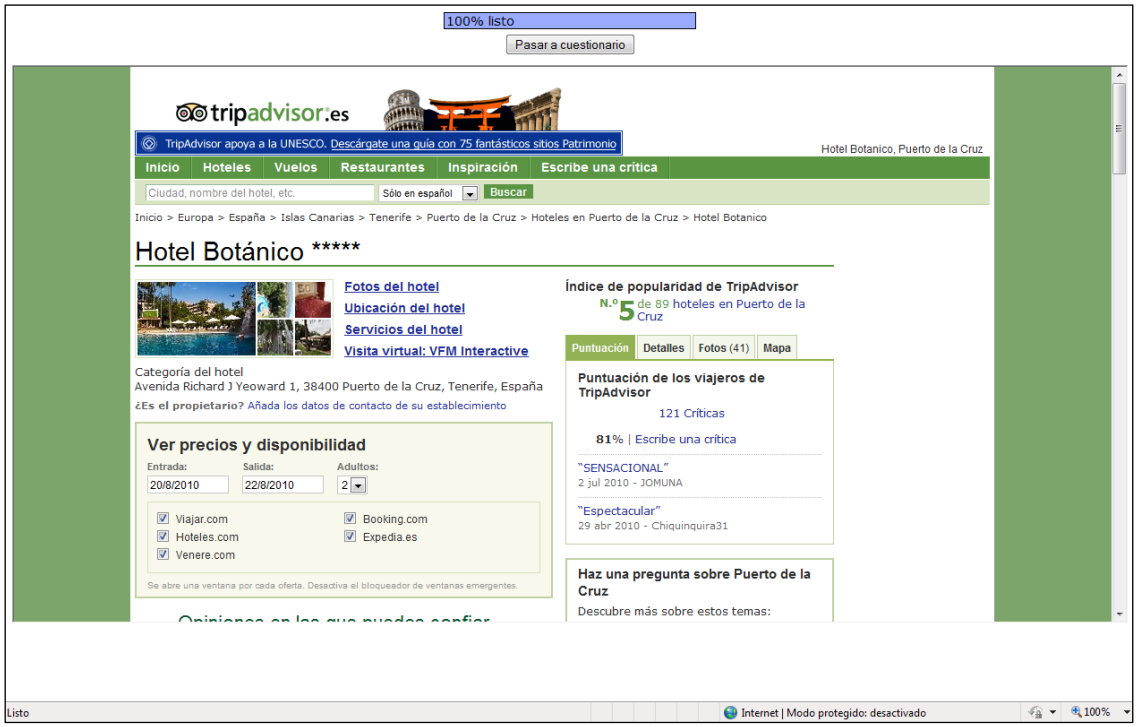


Figure 8. S2 – Facebook

Figure 9. S3 – Tripadvisor



8.2. Appendix 2. Questionnaire

Respond to the following statements on a scale of 1-5 (where 1 is completely disagree and 5 is completely agree):	**Completely disagree** **Completely agree**
The website you just visited (XXXXX) is clear and easy to understand.	① ② ③ ④ ⑤
Learning to use XXXXX is easy for me.	① ② ③ ④ ⑤
It is easy for me to become skilful at using XXXXX.	① ② ③ ④ ⑤
Overall, I find the XXXXX easy to use.	① ② ③ ④ ⑤
Using XXXXX makes it easier to find information about this hotel.	① ② ③ ④ ⑤
Using XXXXX enables me to search for information about this hotel more quickly.	① ② ③ ④ ⑤
Overall, XXXXX is useful when I am looking for information about the hotel.	① ② ③ ④ ⑤
The information offered on XXXXX is reliable and authentic.	① ② ③ ④ ⑤
False statements are never made on XXXXX.	① ② ③ ④ ⑤

XXXXX provides honest and clear information to users.	① ② ③ ④ ⑤
Overall, I think XXXXX is reliable.	① ② ③ ④ ⑤
Given that I have access to XXXXX, I will try to use it in the future to look for information about a hotel.	① ② ③ ④ ⑤

In general, your opinion about XXXXX is…

Bad	① ② ③ ④ ⑤	Good
Unfavourable	① ② ③ ④ ⑤	Favourable
Negative	① ② ③ ④ ⑤	Positive

Note: The tool changes in the three versions of the survey (a hotel blog, a Facebook profile and a Tripadvisor webpage). For this reason, we have used XXXXX to denote the different sites.

8.3. Appendix 3. Demographic profiles of the respondents

Table 11. Demographic profiles

Variable	**Category**	**N**	**%**
Gender	Male	202	45.91
	Female	238	54.09
Age	16-25 years	179	40.68
	25-44 years	197	44.77
	45-64 years	63	14.32
	DK/NA	1	0.23
Place of residence	Rural area	63	14.32
	Urban area	373	84.77
	DK/NA	4	0.91
Income	Less than €1,200	127	28.86
	€1,200-€1,800	134	30.45
	€1,800-€3,000	69	15.68
	More than €3,000	45	10.23
	DK/NA	65	14.77
Total		440	100.00

8.4. Appendix 4. Models proposed: Partial Travel 2.0 Websites Acceptance Models

Table 12. Causal relationships of the scenario or websites studied

Scenario	Causal relationship	Non-stand. beta	SE	Critical ratio	Sign.
Blog (S1)	H1: Usef.→attitude	0.44	0.10	4.42	0.000
	H2: Usef.→int. use	0.78	0.15	5.28	0.000
	H3: Ease use→ usef.	0.53	0.10	5.22	0.000
	H4: Ease use→ attitude	0.21	0.10	2.09	0.036
	H5: Ease use→int. use	-0.61	0.14	-4.21	0.000
	H6: Ease use→ trust	0.45	0.07	6.07	0.000
	H7: Attitude→int. Use	0.40	0.13	3.07	0.002
	H8: Trust → usef.	0.15	0.12	1.20	0.230
	H9: Trust→attitude	0.49	0.12	4.25	0.000
	H10: Trust→ int. Use	0.58	0.17	3.50	0.000
Facebook (S2)	H1: Usef.→attitude	0.37	0.10	3.69	0.000
	H2: Usef.→int. use	0.34	0.18	1.88	0.060
	H3: Ease use→ usef.	0.60	0.11	5.45	0.000
	H4: Ease use→ attitude	0.30	0.10	3.15	0.002
	H5: Ease use→int. use	-0.14	0.17	-0.84	0.402
	H6: Ease use→ trust	0.35	0.08	4.34	0.000
	H7: Attitude→int. Use	0.65	0.19	3.35	0.000
	H8: Trust → usef.	0.40	0.12	3.25	0.001
	H9: Trust→attitude	0.28	0.10	2.82	0.005
	H10: Trust→ int. Use	0.11	0.17	0.64	0.521
Tripadvisor (S3)	H1: Usef.→attitude	0.57	0.10	5.62	0.000
	H2: Usef.→int. use	0.25	0.18	1.39	0.164
	H3: Ease use→ usef.	0.36	0.09	4.08	0.000
	H4: Ease use→ attitude	0.19	0.07	2.78	0.005
	H5: Ease use→int. use	-0.003	0.11	-0.03	0.980
	H6: Ease use→ trust	0.27	0.06	4.35	0.000
	H7: Attitude→int. Use	0.36	0.17	2.17	0.030
	H8: Trust → usef.	0.49	0.14	3.48	0.000
	H9: Trust→attitude	0.12	0.11	1.07	0.286
	H10: Trust→ int. Use	0.35	0.18	1.99	0.047

9. REFERENCES

Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behavior & Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Bollen, K.A. (1986), "Sample size and Bentler and Bonett's non normed fit index", *Psychometrika*, Vol. 51 No. 3, pp. 375-7.

Bollen K.A. (1989), *Structural Equations with Latent Variables*, Wiley, New York.

Brown, B. and Chalmers, M. (2003), "Tourism and mobile technology", in *Proceedings of the Eight European Conference on Computer Supported Cooperative Work*, Helsinki, [online], available at: http://www.ecscw.org/2003/018Brown_ecscw03.pdf?CFID=101045291&CFTOKEN=14337300 (accessed 10 October 2011).

Casaló, L.V., Flavián, C. and Guinaliu, M. (2009), "Importancia de las redes sociales en turismo rural", *Facultad de Ciencias Económicas y Empresariales de la Universidad de Zaragoza*, [online], available at: http://www.unizar.es/centros/eueeh/master/CASALOetalt.pdf (accessed October 2010).

Castañeda, J.A., Muñoz-Leiva, F. and Luque, T. (2007a), "Web Acceptance Model (WAM): moderating effects of user experience", *Information & Management*, Vol. 44 No. 4, pp. 384-96.

Castañeda, J.A., Frías, D.M., Muñoz-Leiva, F. and Rodriguez, M.A. (2007b), "Extrinsic and intrínsic motivation in the use of the internet as a tourist information source", *International Journal of Internet Marketing and Advertising*, Vol. 4 No. 1, pp. 37-42.

Chau, P. and Lai, V. (2003), "An empirical investigation of the determinants of user acceptance of internet banking", *Journal of Organizational Computing and Electronic Commerce*, Vol. 13 No. 2, pp. 123-45.

Chin, W.W. (2000), "Frequently asked questions – partial least squares and PLS-graph", [online], available at: http://disc-nt.cba.uh.edu/chin/plsfaq.htm (accessed 1 November 2011).

Chircu, A.M., Davis, G.B. and Kauffman, R.J. (2000), "Trust, expertise and ecommerce intermediary adoption", in DeGross, J. (Ed.), *Proceedings of the Sixth Americas Conference on Information Systems*, ACM, New York, pp. 710-16.

Davis, F. (1989), "Perceived usefulness, perceived ease of use and user acceptance of Information Technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-40.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.

Doolin, B., Burgess, L. and Cooper, J. (2002), "Evaluating the use of the web for tourism marketing: a case of study from New Zealand", *Tourism Management*, Vol. 23 No. 5, pp. 557-61.

Facebook (2012), "Facebook users in the world", [online], available at: http://newsroom.fb.com/ (accessed 1 February 2012).

Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Addison- Wesley, Reading. MA.

Flavián, C., Guinalíu, M. and Gurrea, R. (2004), "Análisis empírico de la influencia ejercida por la usabilidad percibida, la satisfacción y la confianza del consumidor sobre la lealtad a un sitio web", *XVI Encuentros de Profesores Universitarios de Marketing*, Madrid, ESIC, pp. 209-26.

Fogg, B.J., Marshall, J., Kameda, T., Solomon, J. Ragnekar, A. and Boyd, A. (2001), "Web credibility research: a method for online experiments and early study results", in

Proceedings of CHI 2001 Extended Abstracts on Human Factors in Computing Systems, ACM, New York, pp. 295-6.

Gefen, D. and Straub, D.W. (2000), "The relative importance of perceived use of use in IS adoption: a study of e-commerce adoption", *Journal of the Association for Information Systems*, Vol. 1 No. 8, pp. 1-28.

Gefen, D., Karahanna, E. and Straub, D.W. (2003a), "Inexperience and experience with online stores: the importance of TAM and Trust", *IEEE Transactions on Engineering Management*, Vol. 50 No. 3, pp. 307-21.

Gefen, D., Karahanna, E. and Straub, D.W. (2003b), "Trust and TAM in online shopping: an integrated model, *MIS Quarterly*, Vol. 27 No. 1, pp. 51-90.

Goodman, J.S. and Blum, T.C. (1996), "Assessing the non-random sampling effects of subject attrition in longitudinal research", *Journal of Management*, Vol. 22 No. 4, pp. 627-52.

Hair, J.F., Anderson, R.E., Tatham, R.L. and William, C.B. (1995), *Multivariate Data Analysis with Readings*, Prentice-Hall, Inc., Englewood Cliffs, NJ.

Hernández, B., Jiménez, J. and Martín, M. (2006), "Análisis del efecto de la experiencia en TIC en el uso del B2B", Universidad de Zaragoza, [online], available at: http://www.aedem-virtual.com/articulos/122779009300.pdf (accessed 10 October 2010).

Horton, R.P., Buck, T., Waterson, P.E. and Clegg, C.W. (2001), "Explaining intranet use with the technology acceptance model", *Journal of Information Technology*, Vol. 16 No. 4, pp. 237-49.

Hossain, L. and Silva, A. (2009), "Exploring user acceptance of technology using social networks", *Journal of High Technology Management Research*, Vol. 20 No. 1, pp. 1-18.

Hosteltur (2010), "Las redes sociales influyen sobre el 36 % de los turistas", [online], available at: http://www.hosteltur.com/noticias/71884_redes-sociales-influyen-36-turistas.html (accessed 15 October 2011).

Hsu, Ch. and Lin, J. (2008), "Acceptance of blog usage: the roles of technology acceptance, social influence and knowledge sharing motivation", *Information & Management*, Vol. 45 No. 1, pp. 65-74.

Huang, Y., Hsu, M., Basu, C. and Huang, F. (2009), "Toward developing a social network site-based model for knowledge sharing in the travel industry", *Issues and Innovation*, Vol. 3 No. 1, pp. 57-73.

Izquierdo, A., Martínez, M.P. and Jiménez, A.I. (2009), "Análisis de las barreras en la compra de servicios turísticos por internet: implicaciones para la gestión comercial en el sector", *Observatorio (OBS*) Journal*, Vol. 3 No. 3, pp. 197-208.

Kaplanidou, K. and Vogt, C. (2006), "A structural analysis of destination travel intentions as a function of web site features", *Journal of Travel Research*, Vol. 45 No. 2, pp. 204-16.

Kim, D., Park, J. and Morrison, A. (2008), "A model of traveller acceptance of mobile technology", *International Journal of Tourism Research*, Vol. 10 No. 5, pp. 393-407.

Korvenmaa, P. (2009), "The growth of an online social networking service: conception of substantial elements", MSc in Technology thesis, University of Technology, Helsinki.

Koufaris, M. and Sosa, W. (2004), "The development of initial trust in an online company by new customers", *Information & Management*, Vol. 41 No. 3, pp. 377-97.

Lai, V.S. and Li, H. (2005), "Technology acceptance model for internet banking: an invariance analysis", *Information & Management*, 42 No. 2, pp. 373-86.

Luque, T. (1997), *Investigación de Marketing: Fundamentos*, Ariel, Barcelona.

Luque, T., Castañeda, J., Frías, D., Muñoz, F. and Rodríguez, M. (2007), "Determinants of the use of the internet as a tourist information source", *The Service Industries Journal*, Vol. 27 No. 7, pp. 1-9.

Mayer, R.C., Davis, J.H. and Shoorman, F.D. (1995), "An integrative model of organizational trust", *Academy of Management Review*, Vol. 20 No. 3, pp. 709-34.

Moon, J.W. and Kim, Y.G. (2001), "Extending the TAM for a World-Wide-Web context", *Information & Management*, Vol. 38 No. 4, pp. 217-30.

Muñoz-Leiva, F. (2008), "La adopción de una innovación basada en la web. Análisis y modelización de los mecanismos generadores de confianza", PhD thesis, University of Granada.

Muñoz-Leiva, F., Luque-Martínez, T. and Sánchez-Fernández, J. (2010), "How to improve trust toward electronic banking?", *Online Information Review*, Vol. 34 No. 5, pp. 907-34.

Nunnally, J.C. (1978), *Psychometric Theory*, 2nd ed. McGraw-Hill, New York.

Pavlou, P.A. (2002), "A theory of planned behavior perspective to the consumer adoption of electronic commerce", paper presented at the Academy of Management Conference, 11-13 August, Denver, CO.

Pavlou, P. (2003), "Consumer acceptance of electronic commerce integrating trust and risk with the technology acceptance model", *International Journal of Electronic Commerce*, Vol. 7 No. 3, pp. 101-34.

Ramayah, T., Jantan, M. and Noraini, I. (2003), "Impact of intrinsic and extrinsic motivation on internet usage in Malaysia", *Proceedings in the Third International Conference on Electronic Commerce Engineering*, [online], available at: http://ramayah.com/journalarticlespdf/impactofintrinsic.pdf (accessed 10 October 2011).

Ridings, C.M., Gefen, D. and Arinze, B. (2002), "Some antecedents and effects of trust in virtual communities", *Journal of Strategic Information Systems*, Vol. 11 No. 3-4, pp. 271-95.

Rotter, J.B. (1967), "A new scale for the measurement of interpersonal trust", *Journal of Personality and Social Psychology*, Vol. 35 No. 4, pp. 651-65.

Ryan, C. and Rao, U. (2008), "Holiday users of the internet – ease of use, functionality and novelty", *International Journal of Tourism Research*, Vol. 10 No. 4, pp. 329-39.

Saad, R. and Bahli, B. (2005), "The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model", *Information & Management*, Vol. 42 No. 2, pp. 317-27.

Sánchez, M.J. and Roldán, J.L. (2005), "Web acceptance and usage model: a comparison between goal-directed and experiential web users", *Internet Research*, Vol. 15 No. 1, pp. 21-48.

Shang, R.A., Chen, Y.C. and Shen, L. (2005), "Extrinsic versus intrinsic motivations for consumers to shop on-line", *Information & Management*, Vol. 42 No. 3, pp. 401-13.

Shin, D.H. (2008), "Applying the technology acceptance model and flow theory to Cyworld user behaviour", *CyberPsychology and Behavior*, Vol. 11 No. 3, pp. 12-20.

Shin, D.H. and Kim, W. (2008), "Applying the technology acceptance model and flow theory to Cyworld user behavior: implication of the web 2.0 user acceptance", *CyberPsychology & Behavior*, Vol. 11 No. 3, pp. 378-82.

Spanish National Statistics Institute (2010), "Population characteristics (census)", [online], available at: http://www.ine.es (accessed 1 January 2010).

Spanish Observatory of Travels and Internet (2010), "Estudio de tendencias del nuevo viajero", [online], available at: http://www.minube.com/externos/observatorio/observatorio_sobre_viajes_e_internet_estudio_de_tendencias_nuevo_viajero_junio_2010.pdf (accessed 15 October 2010).

Sultan, F., Urban, G., Shankar, V. and Bart, I. (2002), "Determinants and role of trust in e-business: a large scale empirical study", *MIT Sloan School of Management*, [online], available at: http://dspace.mit.edu/bitstream/handle/1721.1/1826/4282-02.pdf?sequence=2 (accessed 15 October 2010).

Taylor, S. and Todd, P.A. (1995), "Understanding information technology usage: a test of competing models", *Information Systems Research*, Vol. 6 No. 2, pp. 144-76.

Tripadvisor (2012), "Ficha informativa", [online], available at: http://www.tripadvisor.com.mx/PressCenter-c4-Fact_Sheet.html (accessed 1 February 2012).

West, S.G., Finch, J.F. and Curran, P.J. (1995), "Structural equations models with nonnormal variables: problems and remedies", in Hoyle, R.H. (Ed.), *Structural Equation Model: Concepts, Issues, and Applications*, Sage Publications, Newbury Park, CA, pp. 57-75.

Willis, T. (2008), "An evaluation of the Technology Acceptance Model as a means of understanding online social networking behaviour", PhD thesis, University of South Florida, [online], available at: http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1567&context=etd (accessed 15 January 2012).

CHAPTER 4: MEASURING ADVERTISING EFFECTIVENESS AND USABILITY IN TRAVEL 2.0 TOOLS FROM A NEUROMARKETING APPROACH. IMPLEMENTATION OF THE EYE-TRACKING METHODOLOGY.

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1. INTRODUCTION: ONLINE ADVERTISING IN TRAVEL 2.0 TOOLS

Communication media has changed considerably in recent years; consequently, a new online world of collaboration and communication has appeared: the Web 2.0 (Cheung, Chiu, and Lee 2011). Today's consumers are more connected than ever, with greater access and a more active, in-depth participation to content creation (Nielsen 2014). This development of the World Wide Web (WWW) has had an impact on all sectors of activity - including the tourism industry, on the one hand, and on tourist behaviors when planning trips on the other hand, due to the *Travel 2.0 tools* (Mendes- Filho and Tan 2008; Muñoz, Hernández, and Sánchez 2012). These tools (travel blogs, travel social networks, forums, etc.) allow tourists to take on a more active role in the decision-making and planning of their travel, as well as to help other travelers develop a vision about their destination prior to travel (Muñoz et al. 2012).

The media environment for advertising is changing without a doubt (Chiou, Wan, and Lee 2008), with different advertising formats used on new Web 2.0 tools, such as banners, promotional videos, sponsored links, etc. However, the oldest and most widely used form of online advertising keeps being the banner. The first banner appeared on www.hotwired.com in October 1994 (Hollis 2005; Abuín 2008), which led to the new "reign" of online advertising (Lohtia, Donthu, and Yaveroglu 2007). Since that time, advertisers have not stopped dedicating resources and efforts to create banners that not only catch the user's attention, but also inspire trust (Gong and Maddox 2003). Once the banners have caught the user's attention, the aim is for them to click on the advertisement and be redirected to the advertiser's website (Abuín 2008). At the same time, with the growing saturation of advertising, the concept of "banner blindness" has arisen, leading to a decrease in clicks on banners (click-through rate, CTR). In consideration of this issue, advertisers continue to search for solutions to improve the effectiveness of their advertising.

The goal of this study is to assess the advertising efficacy of three specific *Travel 2.0 tools*: a travel blog, a social network, and a virtual community with tourism-related content, by measuring the psychophysiological variables of visual attention and

cognitive processing, along with post-hoc measures of spontaneous and guided (or suggestive) memory. More specific objectives were also established, in particular: (i) to identify the viewing pattern of these tools, (ii) to confirm whether banner blindness exists for each *tool*, (iii) to determine users' memories of the banner. To achieve these objectives, an experiment was performed with a sample of 60 participants using the eye-tracking technique or methodology, in addition to a self-administered questionnaire including memory measures.

2. THEORETICAL BACKGROUND: RESEARCH FOCUS AND JUSTIFICATION OF THE RESEARCH QUESTIONS

2.1. The eye-tracking technique for measuring visual attention

In the Internet context, the companies want to know mainly: a) how consumers process commercial messages and b) how can make their online advertising strategies more effective (Varadarajan and Yadav 2009). Most of the tools that measure the level of attention consumers pay to a set of stimuli based on self-reporting always have a problematic task and a series of limitations for research studies. For the last decade, several techniques or methodologies are used to solve these problems based on cognitive neuroscience and psychology, such as eye-tracking (e.g. Drèze and Hussherr 2003) or biofeedback gauges and facial coding (Hill 2003). These tools can use to gauge marketing efforts measuring the nonverbal body responses. From this 'neuromarketing' approach, the application of these methodologies opens an infinite number of possibilities for studying the attention consumers pay to online advertising and marketing in general.

Eye-tracking is a technique that allows recording the user's eye movement while a scene or image is viewed (Ehmke and Wilson 2007; Hassan and Herrero 2007). There are two types of eye-tracker devices: 1) those that are set on the participant's head (helmet-mounted or glasses-mounted system) and 2) those that record remotely the ocular movement (camera placed under the PC screen). The first ones are more useful for tasks requiring more freedom of movement (Goldberg and Wichansky 2003).

Consumers move their eyes with the aim of obtaining information and they stop when they see something that catches their attention. The eye is an extremely complex organ, capable of moving at high speeds; the ability to collect rapid eye movement data (saccades or saccadic movements) and fixations offer a very interesting option for studying an individual's processing of information (Russo 1978). For navigating on-screen websites, saccades or rapid eye movements (Hassan and Herrero 2007) can last from 20 to 200 milliseconds and have visual angles from 3 to 5 degrees (Pan and Zhang 2010). The saccades occur in both eyes at the same time and each saccade is followed by a fixation (Goldberg and Wichansky 2003). Fixations occur when the eye stabilizes for a duration of 200 to 300 milliseconds (Pan and Zhang 2010; Holmqvist, Nyström, Andersson, Dewhurst, Jarodzka, and Van de Weijer 2011: 381), 200 to 400 milliseconds (Salvucci and Goldberg 2000), or 200 to 500 milliseconds for reading tasks (Rayner 1998; Goldberg and Wichansky 2003). During stabilization, the eye can process visual information (Goldberg and Wichansky 2003) and provide valuable information to interpret the data (Hassan and Herrero 2007).

The "scanpath" is the pattern the eye follows during movement (saccades and fixations), through visual stimuli (Noton and Stark 1971). The eye paths and fixations are captured by the most innovative eye-tracking systems by capturing the reflection of a beam of infrared light in the center of the pupil (infrared corneal reflection). The eye-tracking system also records the coordinates of the fixation (x,y) in conventional ranges between 30Hz and 250Hz (Goldberg and Wichansky 2003). The study of these movements and fixations can be applied to the design of stimuli involved in visual marketing (*bottom-up factors*[3]) that is intended to catch consumers' attention as well as to determine their impact on an individual's specific characteristics (*top-down factors*) in the voluntary attention process.

In this context, Wedel and Pieters (2008) have found a relative scarcity in scientific literature of applications based on the eye-tracking methodology that examine the possible impact of visual marketing stimuli and their effects on consumers. This fact could be the result of three fundamental beliefs (Wedel and Pieters 2008): 1) attention

[3] *Top-down* factors are based on a cognitive theory or theoretically-supported hypotheses. *Bottom-up* factors are based on observations of the data without theoretical support (Jacob and Karn 2003).

is merely a pre-condition, 2) catching and retaining attention are considered to be relatively simple reactions, and 3) the use of these methodologies is rather complicated.

Finally, the problem of measuring attention when exposed to visual marketing stimuli results in measures that are too closely related to others, such as memory or expressed emotional response. Nevertheless, attention can often be paid with a low level of awareness. In other words, the information can be actively processed by consumers, in interaction with internal knowledge representations already present in their memory or with external information (e.g. brand name, endorsement, etc.). Thus, external information may be ‘‘enriched’’ or misinterpreted due to (spontaneous) associations co-activated in the brain (Van Trijp 2009).

There is a clear need for more research on consumer attention and perception of marketing stimuli or information in more market-relevant conditions, as attention may be an important bottleneck in further information processing. Such research should rely on experimental and behavioral observation methods rather than on purely memory-based survey research, as it used to be (Van Trijp 2009). In the present case, eye-tracking methodologies provide a solution to overcome this difficulty and allow comparing the subjects’ attention results with self-reported memory.

2.2. What do users look at and what are their viewing patterns when entering a website

In regards to the first research objective, studies conducted with the eye-tracking technique usually model the user’s viewing path (if they look from left to right or vice versa, what they focus on in the first place, how many areas of interest they cover and which are the most frequent, etc.).

Lindgaard, Fernandes, Dudek, and Brown (2006) conducted three studies to determine how much time users take to form an opinion about the visual attractiveness of a website, and discovered that Internet users can make a reliable decision of whether they like or not a website in 50 milliseconds. Web designers therefore have to make a good impression about the website in such short time.

Therefore, tourism companies should know users' ocular movement and fixation patterns through *Travel 2.0 tools,* in order to appropriately place the content they want to highlight the most, as well as to identify usability problems with these sites.

After an in-depth literature review on users' viewing patterns on a website (see table 13), the conclusion is that people primarily focus on the top and middle of the page, and their eyes generally move from left to right. In other words, the bottom and right side of the website are the areas on which users focus least. However, this also depends on the type of website.

Table 13. Literature review on visual patterns

Direction of visual patterns	**Main results**	**Authors**
From middle-left side to right side of the website	- Both experienced and new users first look at the middle of the website, followed by the left side and finally the right side. - Users hardly ever focus on the lower visible part of the screen.	Namahn (2001)
	- Users first focus on the middle and top part of the website. - Users see logos in their first few fixations.	Djamasbi, Siegel, and Tullis (2010a)
From left to right	- Users mainly focus on the upper left side of the page. Next, eye movements go from left to right and finally they look at the lower part of the screen.	Castellucio (2004)
	- Users have a left to right viewing pattern, since the participants completed the task requiring information from the left side faster than the task requiring information from the right side.	Djamasbi, Siegel, Tullis, and Dai (2010b)
	- Participants primarily focused on the main menu located on the left side of the website, and then searched for content.	Mazman, Akbal, Tüzün, and Yeniad (2010)
F-shape viewing pattern	- First, users read the top part of the content with a horizontal movement, forming the top line of the "F". - Next, users' eyes move a little lower, to read a usually shorter area than the previous section with a second horizontal movement. - Finally, users view the left side of the content with a vertical movement.	Nielsen (2006)
	- This visual pattern doesn't apply to image-based websites. In this case, the participants focused their view primarily on the pictures that appear on the initial screen, without scrolling down the navigation bar.	Shrestha and Lenz (2007)

Visual patterns depend on certain factors	Main results	Authors
User's task	- The study results show that when Internet users browse a website, they focus more on its central part. - However, when they are searching for specific information, they pay more attention to the left side.	Djamasbi , Siegel, and Tullis (2011)
Website content	- When viewing a website, users focus more on the primary images (e.g. faces of famous people, etc.), thus paying less attention on the parts of the website containing a lot of text.	Djamasbi et al. (2010a)
	- Websites with images of people are not only perceived as more attractive, but they also allow people to complete the task at hand more quickly.	Djamasbi et al. (2010b)

The present study, in particular, provides an answer to the following research question: **What is the viewing pattern in travel blogs, travel social networks and virtual travel communities?**

2.3. Causes and consequences of banner blindness

In regards to the second proposed objective of banner efficacy in terms of attention, the literature review revealed that many users do not recall banners after viewing a website. Moreover, there are users who avoid banners (Drèze and Hussherr 2003; Nielsen 2007). Users not only learn a website's structure quickly (Lapa 2007), but also use their prior navigation experience to avoid banners, thereby focusing their attention on the main content (Hsieh and Chen 2011). This is known as "banner blindness" or the fact that users ignore and/or do not pay attention banner content (Benway 1998; Burke, Hornof, Nilsen, and Gorman 2005; Margarida 2013).

This aspect of online advertising that distracts users from the website content may be considered as intrusive and can lead to negative perceptions from Internet users, not only towards the advertised products and services, but also the brand, format, and the website itself (Abuín 2008).

The majority of fixations on banners occur in the first few ocular movements, in order to avoid them during the navigation (Burke et al. 2005). Furthermore, users' peripheral vision allows them to skim over the website content and, since advertisements usually

appear in a graphic format, users can quickly filter them from the editorial content (León 2009).

Usually when advertisements are published in traditional media, such as television and radio, the entire space available is used to catch the spectators' attention. However, banners occupy less than 10% of the webpage. According to Drèze and Hussherr's study (2003), users ignore at least half of the visible banners. In this case, not only do users not pay attention to the banners, but they also avoid looking at them, which confirms the existence of banner blindness.

Table 14. Literature review on banner blindness

Factors	Main results	Authors
Editorial content vs. banner	- Users do not focus on elements with a similar design to an advertisement, even if they have no promotional purpose.	Nielsen (2007)
	- If advertising is integrated in the website content, users cannot quickly identify it, as they consider them to contain irrelevant information.	Abuín (2008)
	- On Facebook, subjects pay more attention to their friends' recommendations than to banners. - Therefore, advertisements are also ignored on social media and banner blindness occurs.	Margarida (2013)
The position of the banner	- In this study, most of participants never fixated on the advertisement, while those who fixated, did it for a very short time. - Those who did see it spent little time looking at it because the advertisement was located too low on the page.	eVOC Insights (2009)
	- Banner blindness occurs more frequently when the advertisement is on the right side of the page than if placed on the top.	Owens, Chaparro, and Palmer (2011)
	- In order to increase users' fixation time, the banners should be placed very close to the main text of the news story or even inside the news in online newspapers.	Mosconi, Porta, and Ravarelli (2008)
Type of tasks	- When users use the Internet for simple searches, they do not have to pay so much attention and can therefore perceive and process other stimuli. - On the contrary, searches with a greater degree of difficulty require more attention, thus reducing the amount of time users need for processing irrelevant objects, which are therefore ignored.	Burke et al. (2005)
	- Only advertisements that are closely related to the subject's purpose achieve positive results, since users avoid all content that does not correspond to their purpose.	León (2009)

In contrast to the aforementioned studies (see table 14), banner blindness does not occur in the study conducted by Hervet, Guérard, Tremblay and Chtourou (2011), whose results showed that at least 82% of the participants focused on one of the four banners on the page during website navigation. In this case, they looked more at the first advertisement they saw during navigation than at the rest of them.

Additionally, the IAB Spain Research and The Cocktail Analysis study (2009) revealed that 75% of the banners analyzed during the experiment received a visual impact from at least 50% of the participants.

Based on this review, in our study we will check whether users pay attention to the banners located in different *Travel 2.0 tools* or, on the contrary, they ignore them (banner blindness).

2.4. Banner recognition memory

Effective advertising not only catches the public's attention, but also remains in their short or long-term memory (Margarida 2013). Therefore, advertisers should not only strive to make people pay attention to their advertisements, but also to make them remember them. After reviewing the relevant literature on this topic, it was confirmed that participants to research studies do not recall many of the advertisements (Bayles and Chaparro 2001; Bayles 2002; Drèze and Hussherr 2003; Burke et al. 2005). Finally, according to Crespo (2011), what people most recall about the banner is the brand advertised.

The results of the study conducted by Drèze and Hussherr (2003) revealed that 46.9% of the subjects claimed to recall some advertising on the website. Besides, two real and two false ads were shown to them, without identifying any difference between the false and the real ones in terms of recognition.

The results from different studies about the factors that affect banner recall are shown in Table 15.

Table 15. Literature review on banner recall and recognition

Factors	Main results	Authors
Duration of website visit	- The longer a person remains on a website, the more likely they are to recall the advertisement.	Danaher and Mullarkey (2003)
Performing a task	- Subjects who have the objective of performing a task on the website are less likely to recall banners than people who surf without any specific purpose.	Danaher and Mullarkey (2003)
Exposure level	- The banner repetition leads to greater recall of a brand and greater intention to click on the advertisement in an online environment.	Yaveroglu and Donthu (2008)
	- Authors prove that even one additional exposure to a banner improves brand recall in Chinese users.	Gong and Maddox (2003)
Position of the ad	- Banners located on the top of the screen are more frequently recalled than those on the inside or on the bottom of the page.	Burke et al. (2005) Nihel (2013)

Therefore, our last objective is to check whether users recall the content of the advertisement concerned. In particular, this study seeks to answer the following question: **Do travel blogs, travel social networks and online travel community users recall the advertisements they have been shown?**

3. EXPERIMENT DETAILS

3.1. Fieldwork and eye-tracking system used

Our fieldwork was carried out from November 15-22 at the University of Granada's Mind, Brain and Behavior Research Center (CIMCYC). The final sample was integrated by 30 male and 30 female participants, and was also split according to the average age, with 30 participants aged between 18-34 and 30 participants aged 35 or older. Participants were recruited by the "snowball" sampling method, contacted by e-mail and telephone, and paid €15 for their participation.

Participation in this experiment took place one participant at a time in a quiet room, isolated from outside noise, with an ambient light of 200 Lux, as recommended in International Telecommunication Union (2002) to simulate a "home environment". Eye movements were recorded by an infrared eye-tracker system with 60-

Hz sampling frequency (Tobii T60, Tobii Technology AB, Sweden; see Figure 10). This system has a typical accuracy level of 0.5°, a head movement error of 0.2°, and is integrated into a 17" TFT monitor, with a screen resolution of 1280 x 1024 pixels, with a maximum vertical sync frequency of 75 Hz and a horizontal frequency of 60 Hz. The user camera is built in frame rate 640 x 480 pixels and 30 fps.

Figure 10. Eye-tracking system used. Source: http://www.tobii.com

3.2. Experimental design

The experimental design with repeated measures or within-subjects (comparison between analyzed tools) was based on a replica of three *Travel 2.0 tools* for Hotel Jardín Tropical (located in Adeje-Tenerife, Spain): its blog, a social network page (Facebook) and a virtual community profile (TripAdvisor), as previous studies have also analyzed (e.g. Hoy and Milne 2010; Leung 2012; Muñoz et al. 2012; Margarida 2013) or justified (e.g. Buhalis and Law, 2008; Rejón, Sánchez, Fernández, and Muñoz 2012; Muñoz et al. 2012). The only common part among them was that each tool additionally included an Air Europa banner embedded in each site (Figure 11), featuring three famous celebrities (area of interest, AOI). The design was based on different ocular parameter measures on this advertising banner, from a different advertiser than the company that created the *Travel 2.0 tool.* The banner contains text ("We fly just for you! Visit" + URL + "for the chance to win prizes every week") as well as a composed image (people and plane).

Figure 11. Banner for the airline used in the experiment

The final design therefore consisted of the following presentation formats for *Travel 2.0 tools:*

Table 16. Experimental design

EG1: B F T ; n=20
EG2: F T B ; n=20
EG3: T B F ; n=20

Where
B = Hotel blog with airline banner (url: http://webcim.ugr.es/polls/EP_ET/B.html).
F = Hotel Facebook page with banner (url: http://webcim.ugr.es/polls/EP_ET/F.html).
T = Hotel TripAdvisor profile with banner (url: http://webcim.ugr.es/polls/EP_ET/T.html).

The participants were randomly assigned to the counterbalancing groups, and each participant saw the pages displayed in three different ways. The different displays were chosen to present the experimental scenarios in order to mitigate the eventual influence of the presentation order, thus creating three experimental groups (EG). Once created, these three groups were coordinated or counterbalanced based on gender and different age ranges.

This design guarantees adequate internal validity as a result of the possibility to control the impact of the independent variables, as well as a greater control of the research scenario (Zikmund 2003). However, errors may occur due to the artificial nature of the environment, which could lead to lower external validity than in field experiments. For this reason, three different *Travel 2.0 tools* were considered to increase the possibilities of generalizing the results of the *Travel 2.0 tools* set, and therefore the external validity of the results.

During navigation, participants were assigned a task which consisted in searching for information about the room views offered by the hotel, in text format integrated in the editorial content. This mechanism is intended to achieve a certain degree of implication with the experiment and goal-oriented navigation similar to what would occur in a normal situation using *Travel 2.0 tools.*

Although some authors support goal-oriented navigation in contrast to exploratory or free navigation, the former generates less recognition of advertising in the navigation environment (Danaher and Mullarkey 2003). Furthermore, in our specific case, the relevant information for the task at hand was not located at the same position on the page as the advertising, which led to expectations of relatively low efficacy rates. However, the fact of participants focusing on conducting a normal task in searching for information about a hotel should not be considered an impediment or difficulty for recall or recognition of advertising messages.

3.3. Data collection and recording process

The following is a description of the process conducted with each participant:

1. Stage of reception and explanation of the steps to follow. The participant was seated in front of a computer and the steps he/she would have to follow were explained: ethical issues, calibration, navigation and final questionnaire or post-test.

2. *Ethics toward participant*. The subject had to sign a 'consent form', i.e., a written statement with the basic information about the research project, what the experiment was about and personal information (name, surname and signature). The possibility to

check the objectives and methodology of the research project containing the study was also proposed to them. This way, the participant is fully informed about the study purpose and the consequences of signing the rights to their personal information (according to Holmqvist et al. 2011: 115). The consent form was signed before data recording.

3. Calibration process. A nine-point calibration process was conducted at the beginning of each experimental scenario, i.e. three times per participant. Specifically, for the calibration procedure, the subject is instructed to successively focus on the center of nine separate red dots (of radius 1 cm) displayed on a 3x3 grid mounted on a screen at a normal viewing distance of about 80 cm. This allowed us to recalibrate the system in case of any miscalibration.

4. Navigation through the experimental scenarios. Next, the participant automatically moves into an inspection of the three *Travel 2.0 tools* for a total duration of four and a half minutes (90 seconds for each tool). The order of the tools differed between experimental groups (see previously described design).

5. Post-test. Finally, the participants were moved to another computer located outside the room with the eye-tracker to answer a questionnaire (see Appendix A) with different classification questions and others regarding control of the experimental manipulation and memory (spontaneous and suggested).

3.4. Eye movement analyses and statistical analyses

Data on fixations were extracted from the raw eye coordinate data with the Tobii Studio software v. 1.2.3.

To test how attention was distributed across the stimuli, we divided the *Travel 2.0* tools into several areas of interest (AOIs): header of the tool, posts, ad banner, customer's comment with the hotel view (task), bottom of the page and other areas... (see Appendix B). The AOIs were defined by drawing rectangles over different parts of the stimulus page in the software.

The number of fixations or fixations count (FC) on an area of interest is a very general measurement (Holmqvist et al. 2011: 413) which needs to be completed with others, such as fixation duration (Holmqvist et al. 2011: 377). Therefore, the following measures or metrics of fixations and gaze durations were additionally included: Time to First Fixation on the AOI (TFF), Number of Fixations Before getting to the AOI (FB), Fixation Duration (FD) and Total Fixation Duration (TFD). They were calculated for every AOI.

In order to describe on what subjects focus when navigating on the different *Travel 2.0 tools*, the most representative subject was extracted for every tool. Then, a traditional repeated measures analysis of variance (ANOVA) was carried out, according to AOI type and tool 2.0 as within-subject factors. Following Simola, Kivikangas, Kuisma, and Krause (2013) methodology to study the sequence at which the different specific areas (AOIs) were fixated, the proportion of participants that had fixated them was calculated during the first 100 ordinal positions from the beginning of the trial. And then other repeated measures ANOVA was computed, with AOIs, tools and fixation order (fixations were averaged into series or ranges of 10 fixations) as within-subjects factors.

Furthermore, from a descriptive analysis we measured the degree of banner recognition memory as key area of interest from the data obtained in the post-test.

4. RESULTS

4.1. What do users look at when they enter Travel 2.0 tools?

To show the viewing pattern of all the participants for every *Travel 2.0* tool concerned, the most representative participant of each group was selected. The viewing pattern of the three individuals selected is explained below through gaze plots, heat maps and visual metrics (TFF, FB, FC, TFD and FC).

In the case of the blog, the most frequent viewing patterns show that participants start viewing the blog header, featuring the hotel logo and a picture of the hotel facilities

(see Figure 12). Next, the subjects directed their gaze to the first post, containing the image of a girl lying down in a massage room and the corresponding text.

After viewing the top part of the page, users followed a left-to-right viewing pattern, probably to read the text displayed on the website and thereby find the information required for the task. With this viewing pattern it was confirmed that participants focused on the banner subject to this study.

According to the heat map, the areas that show a higher number of user fixations (the "hottest" areas) are: the description of the hotel located on the right side of the page, the top part of the screen (blog header) and the content of the first post (see AOIs in Figure 18 in Appendix B).

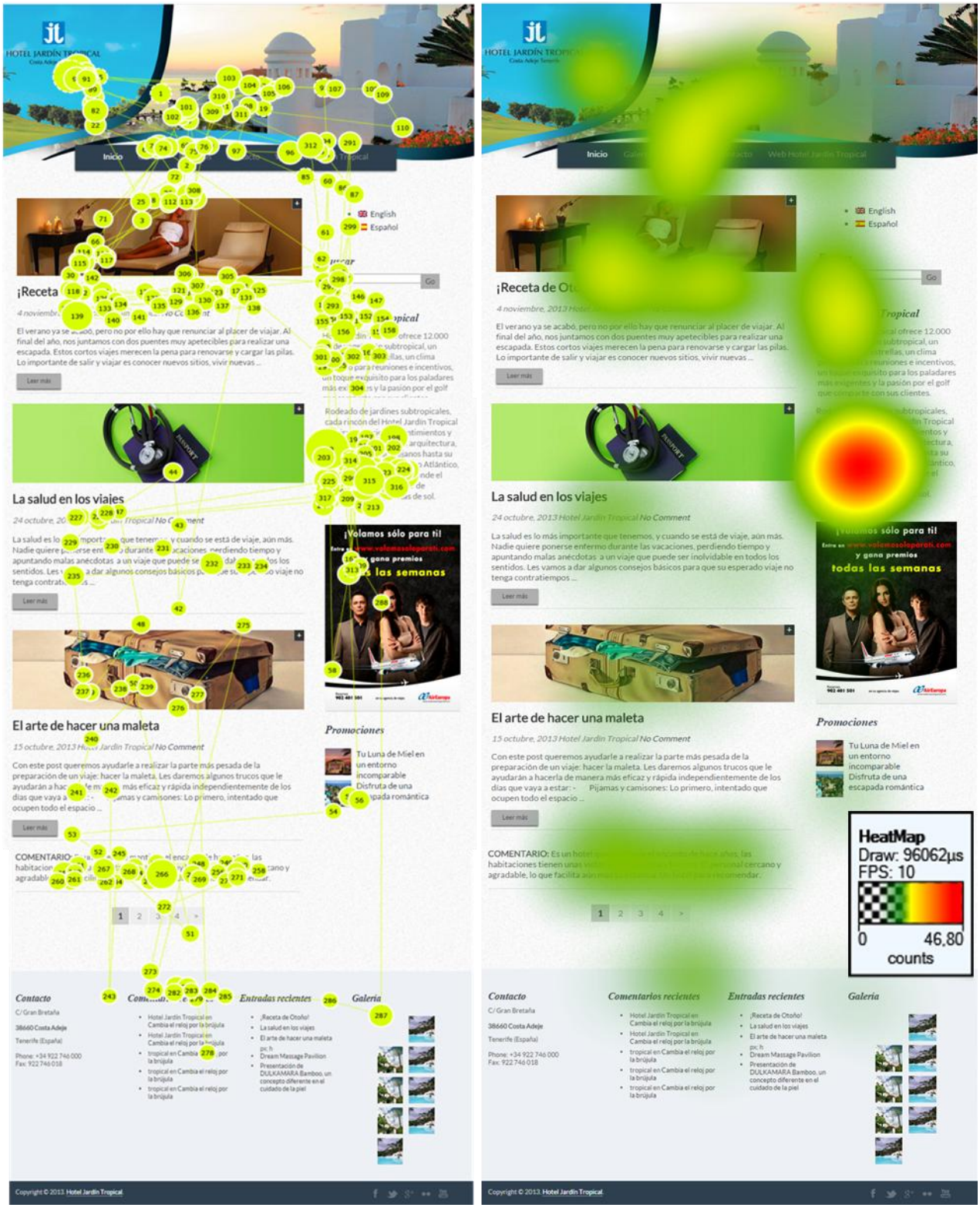

Figure 12. Gaze plot and heat map of a representative participant on the hotel blog

Table 17. Means of fixation frequency and duration measures for representative participant on the blog

AOI		TFF (sec.)	FB (times)	FD (sec.)	TFD (sec.)	FC (count)
Blog header		0.02	0	0.24	15.67	64
Posts	**1st post**	0.5	2	0.19	11.44	59
	2nd post	9.78	42	0.19	2.85	15
	3rd post	9.68	41	0.18	2.57	15
Banner		12.91	56	0.19	1.93	10
Customer's comment		66.83	243	0.22	5.98	27
Bottom of the blog		66.69	242	0.18	2.38	13
Other AOIs	**Hotel description**	13.49	58	0.29	20.44	70
	Picture Gallery	76.79	286	0.42	0.42	1
	Promotions	12.15	53	0.23	0.68	3
	Search engine	8.3	34	0.20	3.6	18

When users viewed the Facebook page of the hotel, they first focused on the top left part of the screen, where the cover and profile pictures are located. Specifically, these two pictures receive the most general attention, followed by pictures of the exterior facilities of the hotel (see Figure 13).

After viewing this area for a significant amount of time, the participants moved to the first post on the page referring to a golf course promotion. Next, they focused on the banner, located just below the first post. Thirdly, the participants paid attention to the last post on the page, which featured a picture of the hotel. In this case, users fixated their gaze for a longer time and even read the content located below the picture, as it contained the information required for the task assigned to them at the beginning of the experiment (see Figure 19 in Appendix B).

In summary, we could say that the viewing pattern for Facebook users follows a top-to-bottom direction on the one hand; on the other hand, the top part of the screen (Facebook header) and the post containing the information required to complete the experiment task are the areas the users pay more attention to on Facebook (customer's comment). These are the "hottest areas".

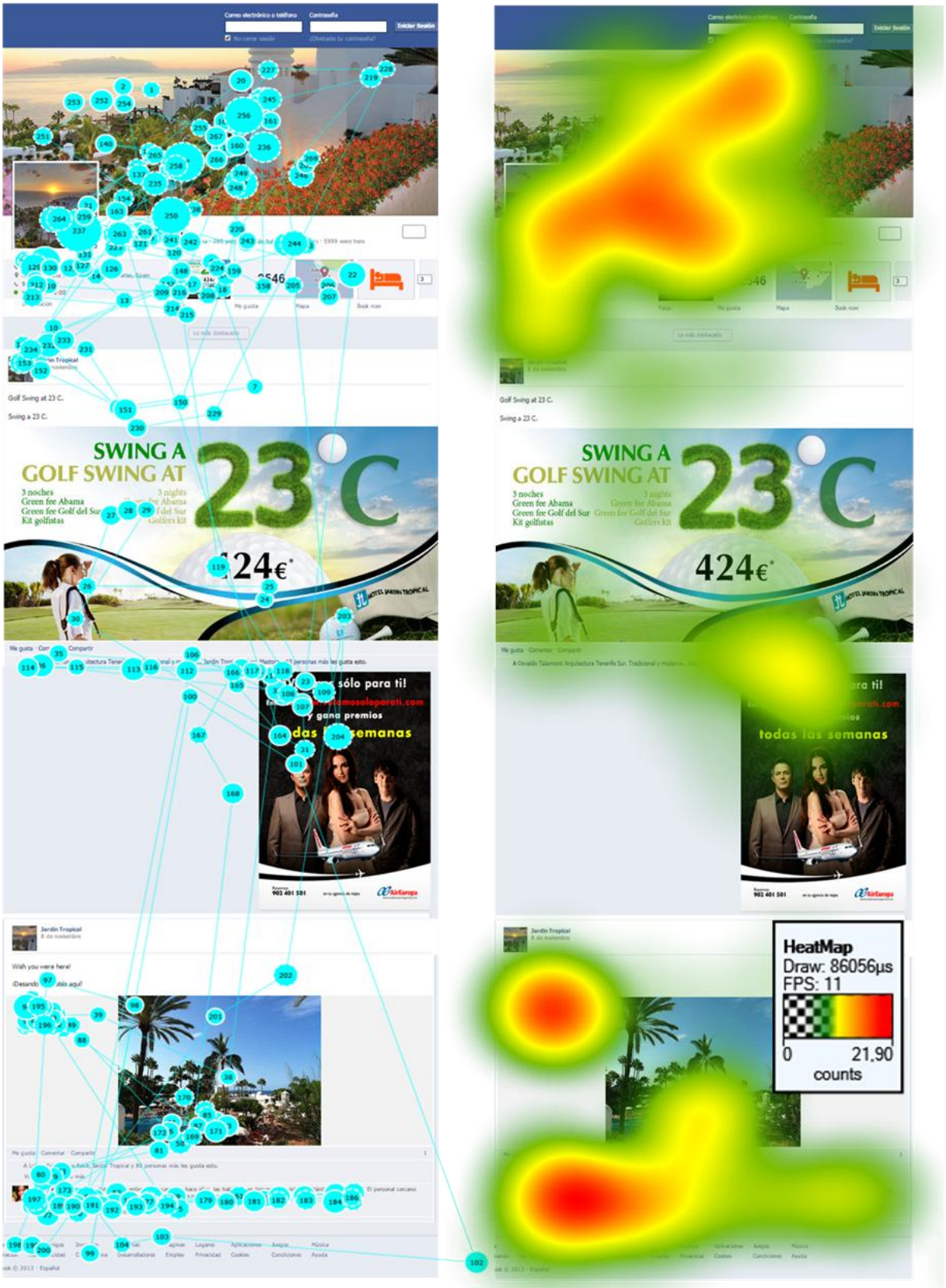

Figure 13. Gaze plot and heat map of a representative participant in the Facebook page of the hotel

Table 18. Means of fixation frequency and duration measures for representative participant on Facebook

AOI		TFF (sec.)	FB (times)	FD (sec.)	TFD (sec.)	FC (times)
Facebook header		0	0	0.24	27.44	114
Posts	**1st post**	1.34	6	0.19	5.38	28
	2nd post	10.53	37	0.18	8.68	47
Banner		6.73	22	0.22	3.46	16
Customer's comment		14.49	54	0.23	10.51	46
Bottom of the Facebook page		27.17	98	0.16	0.97	6
Other AOI	**Profile picture**	5.97	20	0.58	2.9	5

Like it was the case with the rest of tools, on the TripAdvisor site participants first focused on the top left part of the screen, where the hotel name and pictures are located, including both professional pictures and pictures uploaded by other travelers. However, the gaze often went directly to the room availability area, where the dates and the booking logo are located (AOI containing hotel information), as happened with the participant in Figure 14.

Next, the participants directed their gaze to the right, where the travelers' hotel ratings are listed, on the one hand, and just below, a list of "Recommended Hotels". After, they explored the left side to read the comments submitted by other travelers and, finally, they directed their gaze to the right side to focus on the content regarding other hotels in the area ("Hotels near Adeje" and "High-rated hotels in or near Adeje").

In this case, we verified that the "hottest area" on the heat map is located on the area containing other travelers' comments. This is due to the fact that the main objective of users when they enter the TripAdvisor page is to read the experiences of other tourists, and secondly, because one of these comments contained the information required for users to complete the task at hand (see Figure 19 in Appendix B).

In this case, the participants' viewing patterns go back to the left-to-right direction, paying special attention to the area where the other travelers' comments are located.

It is also important to note that users barely focus on the TripAdvisor header, the hotel pictures (located on the right side) and the lower part of the screen.

Figure 14. Gaze plot and heat map of a representative participant on the TripAdvisor profile of the hotel

Table 19. Means of fixation frequency and duration measures for representative participant on TripAdvisor

AOI		TFF (sec.)	FB (times)	FD (sec.)	TFD (sec.)	FC (times)
TripAdvisor header		a	a	a	a	a
Posts Group		1.12	2	0.20	41.31	208
Banner		22.47	82	0.18	0.18	1
Customer's comment		25.45	91	0.21	5.26	
Bottom of the TripAdvisor page		67.91	248	0.16	0.65	4
Other AOIs	**Explore Adeje**	55.15	202	0.20	0.2	1
	Hotel rating	4.36	14	0.21	7.88	37
	Hotel information	0.4	0	0.20	11.14	55
	Other hotels in Adeje	60.43	221	0.16	1.75	11
	Hotel pictures	a	a	a	a	a
	Similar hotels	1.28	3	0.19	0.93	5

a: The participant doesn't carry out any fixation in this AOI.

4.2. Factors that influence visual attention paid to the different elements of Travel 2.0 tools

To conduct a more in-depth analysis of the second research question, it was also verified how the classification variables and the type of advertisement influence or moderate the attention paid to the area of interest (banner). For this purpose, a repeated measures ANOVA was computed, with two intra-subjects factors based on the five visual measures (TFF, FB, FD, TFD and FC) as dependent variables. In particular, it was verified whether the type of *Travel 2.0 tool* (Blog, Facebook, TripAdvisor) and the type of AOI in which each *Travel 2.0 tool* is divided (see Appendix B) have a significant impact on the participants' attention.

First, the results of the multivariate tests of the ANOVA showed that both factors type of AOI (Wilks' Λ=.037; F=65.78; d.f.1=20; d.f.2=770.41; p=.000), type of tool (Wilks' Λ=.588; F=6.93; d.f.1=10; d.f.2=228; p=.000) and its interaction effect (Wilks' Λ=.291; F=16.74; d.f.1=40; d.f.2=2,042.76; p=.000) – had a significant impact on visual attention in general.

Next, we analyzed what happened with every visual measurement by adopting a univariate approach. This cross-check required verifying the assumption of sphericity for the error variances, i.e., a condition where the variances of the differences between all possible pairs of groups (i.e., levels of the independent variable) are equal. This was done through Mauchly's sphericity test. The test results proved that for the type of AOI (and its interaction with the type of tool) has a significant effect on all visual metrics ($p<.05$ in all the cases), thus indicating the compliance of the assumed sphericity[4] for which transformation should be used (e.g. Greenhouse-Geisser). However, there is sphericity for the type of tool, since the result of test is not significant ($p>.05$).

Therefore, considering the type of AOI, users fixate first on the posts (TFF=1.77 sec. and FB=4.28; see table 23 in Appendix C), then on the header (TFF=4.81 sec. and FB=16.14), next on the banner (TFF=20.49 sec. and FB=65.57), on the customers' comments (TFF=25.53 sec. and FB=84.36) and, finally, on the lower part of the *Travel 2.0* tool (TFF=30.99 and FB=103.64). The same applies to the TFD and FC, although in these measures, the banner is the area with the shortest fixation duration (TFD= 2.41) and the lowest frequency count (FC= 11.44), with an average fixation duration of 169 milliseconds.

For our study, we first confirmed whether banner blindness existed across each *Travel 2.0 tool.* The results of the participant's gaze analysis revealed that 95% of the participants fixated at least once on the banner located on the blog, 98% of the participants on the banner on Facebook, and finally, 67% of the participants focused their attention on the banner located on TripAdvisor. Although on a different level, we can confirm that banner blindness does not occur on the websites under study here.

Below, a comparison of the different levels of advertising efficacy in terms of attention paid to the banner, between the different *Travel 2.0 tools*. The analysis of mean difference for the dependent variables with a higher effect (time to first fixation –TFF; fixations before reaching the banner – FB; average fixation duration and number of fixations) reveals the following:

[4] It test the null hypothesis that the error covariance matrix of the dependent variables transformed is proportional to the identity matrix.

- Participants take less time to focus on the banner when viewing Facebook (14.16 sec.), followed by the blog (23.10 sec.) and finally by TripAdvisor (38.56 sec.), with TFF: $F(2, 153) = 17.977$, $p < .001$. This proves that they somehow recognize the advertisement with their peripheral vision, but spend very little or no time to focus on it. Although these are average values, it was confirmed that the first fixation on the banner does not coincide with the first ocular movements (as Burke et al. 2005 determined).
- The total fixation duration is higher for the banner on Facebook (4.08 sec.), followed by the one on the blog (2.43 sec.) and lastly by TripAdvisor (1.23 sec.), with TFD: $F(2, 153) = 15.864$, $p < .001$.
- Participants focus more times on the banner on Facebook (19.05), followed by the one on the blog (11.72), and finally by TripAdvisor (6.08), with FC: $F(2, 1534) = 18.578$, $p < .001$.

Table 20. Means and standard deviations in TFF, TFD and FC for Travel 2.0 tools

Tool	TFF (sec.)		TFD (sec.)		FC (times)	
	Mean	**St.dev.**	**Mean**	**St.dev.**	**Mean**	**St.dev.**
Facebook	14.16	13.26	4.08	3.12	19.05	12.58
Blog	23.10	18.42	2.43	1.91	11.72	8.27
TripAdvisor	38.56	28.34	1.23	2.50	6.08	10.32

The following profile graphs (Figure 15) show the impact of every AOI in each type of website where it is integrated on the visual measures.

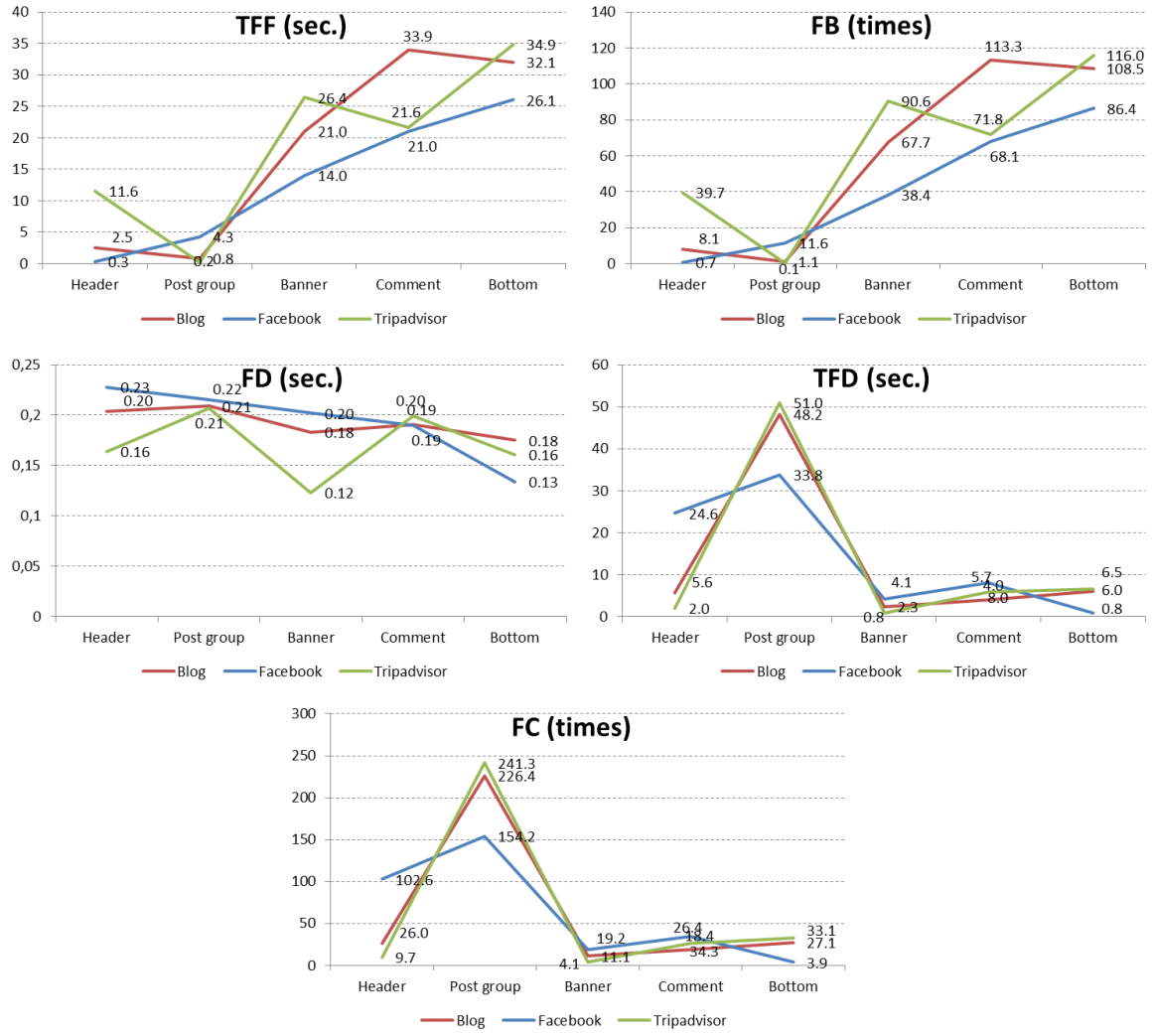

Figure 15. Profile graphs. Interaction between type of AOI and type of tool

The following results were obtained from these graphs:

- Participants fixated first (in terms of time and frequency), for longer and more often on the header (TFF=.3 sec., FB=.7, FD=0.23 sec. and FC=102.6) and the banner (TFF=.14 sec., FB=38.4, FD=.20 and FC=19.2) on Facebook as compared to the rest of websites. Efficacy is lower on the blogs and, finally, on TripAdvisor.
- With regard to the posts and the lower part of the *Travel 2.0 tool*, the subjects paid more attention on TripAdvisor, followed by the blog and finally by Facebook.

- Customers' comments are viewed before and for a longer time on Facebook, followed by TripAdvisor and then by the blog.

In summary, we can conclude that not only do participants spend less time to locate the banner on Facebook, but also their fixations are more frequent and longer. In terms of advertising efficacy, Facebook is followed by the blog and, finally, by the TripAdvisor site. Perhaps due to a lesser amount of editorial content on Facebook, banners achieve the greatest advertising efficacy with this *Travel 2.0 tool*. The explanation may lie in the greater simplicity of the editorial content posted by companies on Facebook.

4.3. Efficacy of the different elements of a Travel 2.0 tool, measured in percentage of participants who focus on the AOIs at different latencies

Now that it is clear on which AOI from every *Travel 2.0* tool users focus first, it would be useful to know what AOI is more effective in time and, on the contrary, which one becomes less effective first. To this end, the proceeding proposed by Simola et al. (2013) will be applied.

In particular, to study the sequence of fixations for the different AOIs on each tool, we subjected the participants who had fixated on a specific AOI to repeated measures ANOVA with the AOI, tool and fixation order or decile (as fixations averaged into ranges of 10) as within-subjects factors. In this case, an incomplete factorial design was identified, including the interaction AOI-tool. The results showed that the fixation order (Wilks' Λ=0.71.; F=2.32; d.f.1=9; d.f.2=51; p=.028), the AOIs (Wilks' Λ=.09; F=145.81.; d.f.1=4; d.f.2=56; p=.000), the tool (Wilks' Λ=.49; F=30.01.; d.f.1=2; d.f.2=58; p=.000) and the AOI-tool interaction (Wilks' Λ=.14; F=39.39.; d.f.1=8; d.f.2=52; p=.000) had all a significant impact on the percentage of subjects that fixated on each AOI and/or tool as measure of efficacy.

In particular, two different graphs were created for each *Travel 2.0 tool*, illustrating the proportion of participants who fixate on the different AOIs. The first graph shows the

first 100 fixations, while the second graph displays fixations averaged in ranges of 10 from the beginning of the test.

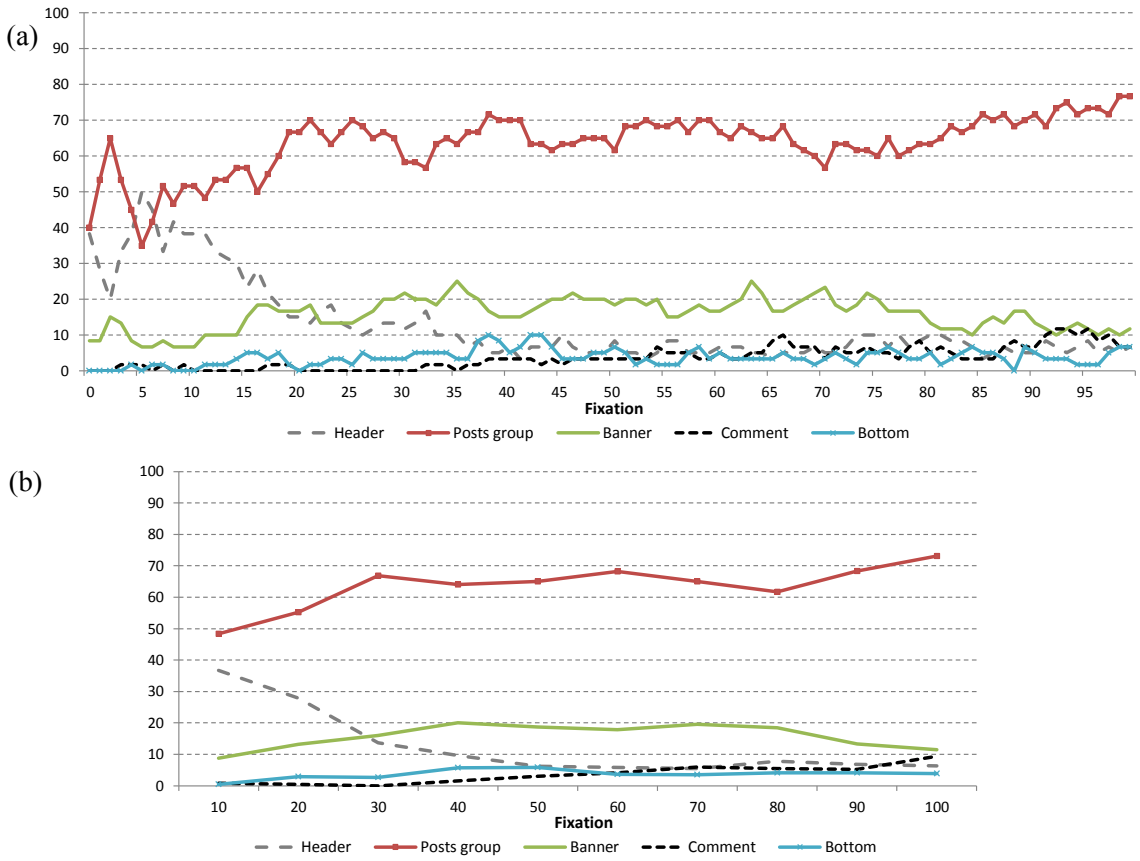

Figure 16. Proportion of participants fixating on a specific AOI on the blog (Header, Posts, Banner, Customer's comment and Bottom. (a) Fixations of the first 100 ordinal positions and (b) fixations averaged in ranges of 10 fixations from the beginning of the trial.

At the beginning, participants fixate mainly on the posts and the blog header (see Figure 16). In this case, the efficacy of the posts increases with time, while on the contrary, the efficacy of the header decreases. After 20 fixations, fixation on the banner is more and more frequent and the bottom of the blog also starts gaining significance. The difference between these two elements is that fixations on the bottom of the blog follow a constant trend from the beginning of the test, while the subjects pay less and less attention to the banner after approximately 75 fixations. Furthermore, although participants take more time to fixate on the customers'

comments (task) and sometimes they don't even do it, they follow an ascendant trend once the number of fixations starts to increase.

Therefore, the area of the blog with the greatest efficacy is the one containing the posts.

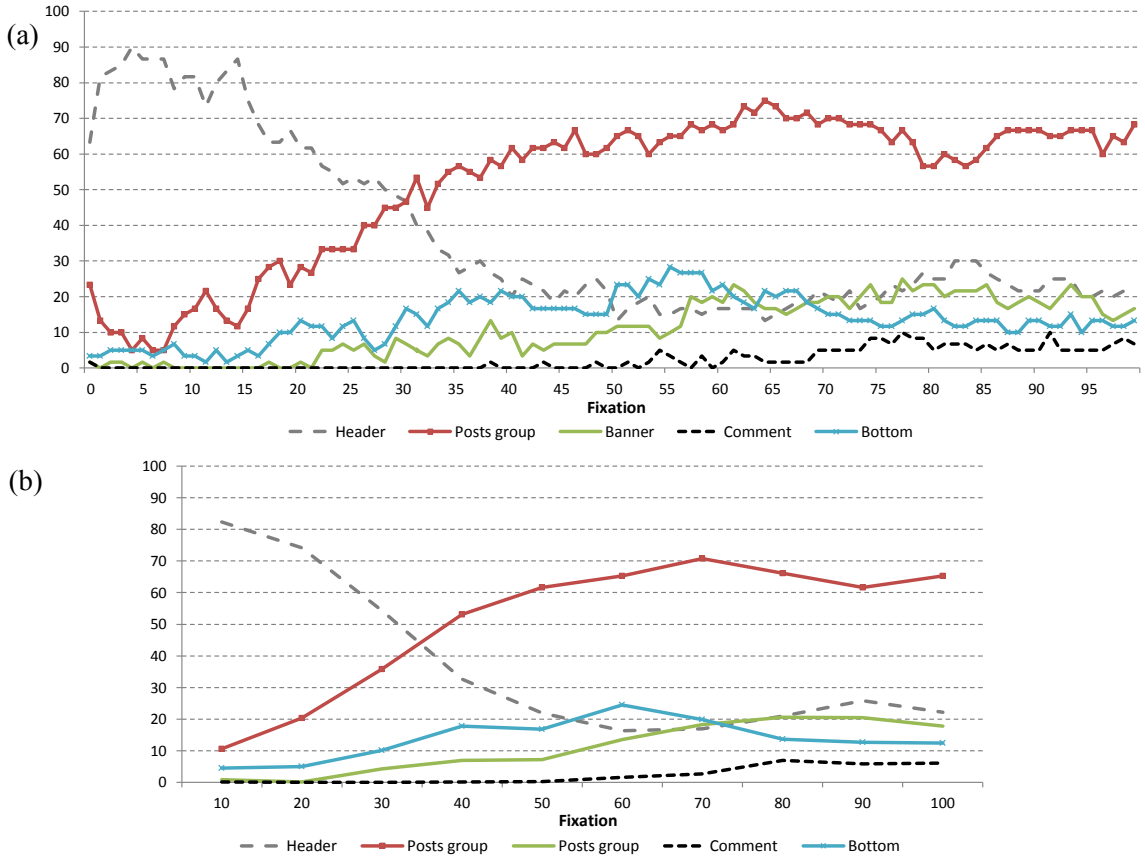

Figure 17. Proportion of participants fixating on a specific AOI on Facebook (Header, Posts, Banner, Customer's comment and Bottom)(a) Fixations on the first 100 ordinal positions and (b) fixations averaged in ranges of 10 fixations from the beginning of the trial.

On Facebook, participants focus mainly on the header; although in this case, as opposed to the previous one and to a lesser extent, they also pay attention to the posts and the banner at the beginning of the trial (see Figure 17).

In this case, the header also starts losing efficacy with time, while the posts and the banner gain it, especially the posts. Likewise, although participants take some time to look at the customers' comments, the first maximum is reached during the first 75-80

fixations; after that moment, visual attention remains constant. The same applies to the bottom of the Facebook page.

Therefore, the area containing the posts is the most effective one also on Facebook.

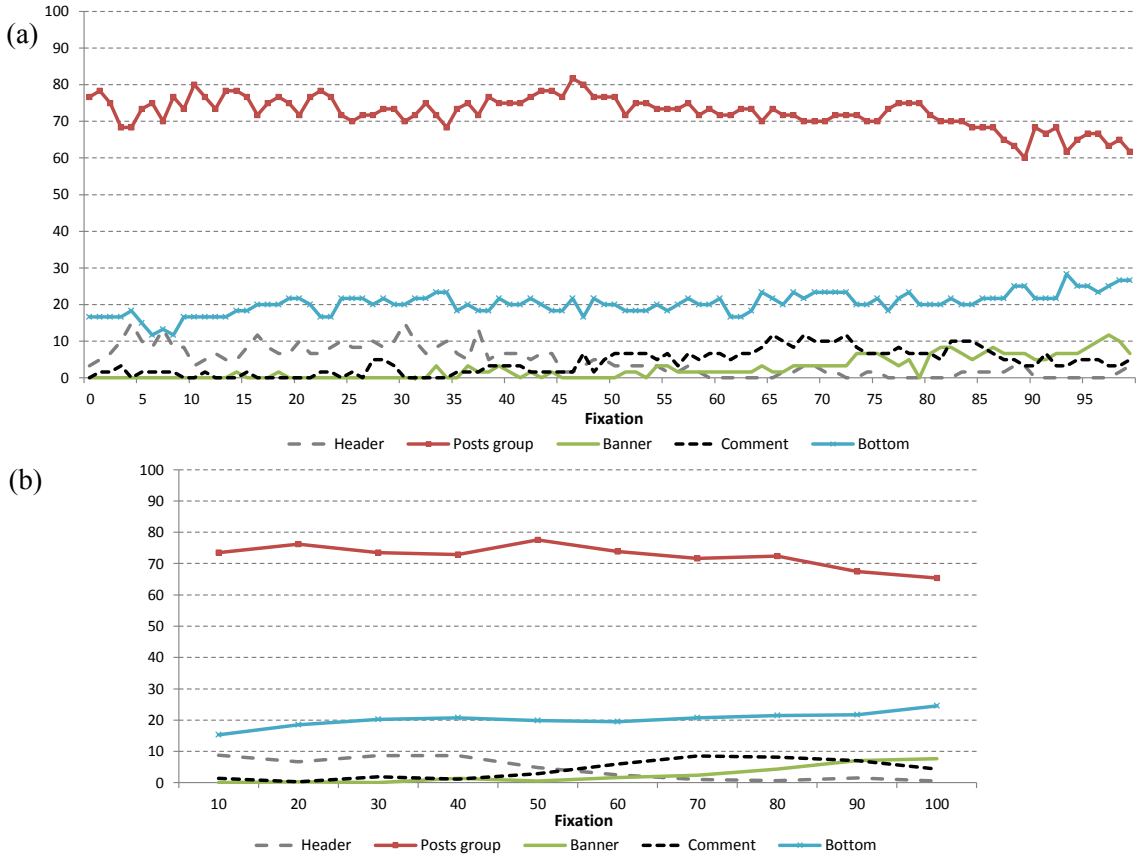

Figure 18. Proportion of participants fixating on a specific AOI on TripAdvisor (Header, Posts, Banner, Customer's comments and Bottom). (a) Fixations of the first 100 ordinal positions and (b) fixations averaged in ranges of 10 fixations from the beginning of the trial.

On the TripAdvisor profile, from the beginning of the test participants also focus mainly on the posts (see Figure 18). In this case, less sudden changes in the trend were observed than in the previous case. The bottom of the blog, the banner and the customer's comment adopt a slightly ascendant behavior as fixations increase. In the case of the comment, the highest efficacy level for the goal of the test (comment) is reached between the 40th and the 50th fixation on the header. The same thing applies to the banner, between the 75th and 85th fixation. However, in spite of these small variations, the second graph reveals that the behavior of the different AOIs remains

quasi-constant, without sudden changes. Therefore, the different elements of the TripAdvisor profile are quite effective as fixations increase.

To sum up, the area containing the posts is the most significant part of the three *Travel 2.0 tools*, since is it the area to which most attention is paid as the number of fixations increases. This can be due to the fact that participants suppose that the information they need for completing the assigned task is located in this area, as might happen in a realistic scenario.

4.4. Banner recognition memory

After viewing the hotel's *Travel 2.0 tools*, the participants answered a self-administered questionnaire which allowed us to analyze whether they were able to recall the banner concerned during their visits to the different online tools (see Appendix A).

The results revealed that, in general, 62% of the participants recalled having seen an advertisement during their visits to the three websites, while the other 38% could not remember any advertisement. Based on this information, we wanted to delve further into the issue, so the participants that indicated that they remembered an advertisement had to answer two specific questions to measure their spontaneous recall of the banner in question.

Firstly, the subjects had to indicate which brand/company the advertisement was for. The results showed that over half of the participants (55%) did not remember the brand or company in the advertisement and only 10% of the subjects indicated that the advertisement was about the airline (Air Europa). Other responses of participants associated the advertisement to other companies, such as Iberia, Spanair, Booking, etc., advertisements for rental cars, promotions for other hotels, or an airline without a brand.

Secondly, participants had to describe the content of the image in the advertisement they had viewed. The results showed that 28% of the sample could not recall the image and only 3% remembered accurately its whole composition: a plane

superimposed on three celebrities on a black background. 10% of the participants remembered the name of some of the celebrities.

Other participants recalled that the banner included people or couples (30%) without specific names, and referring to the advertisement concerned, 5% of them recalled that there was an airplane in it, 10% recalled a golf course (on Facebook) and only one person (1.7%) made a reference to the slogan of the advertisement, although they got the expression wrong (viajeconnosotros.com). We can therefore deduce that the advertisements the participants recalled were different from the banner in question (for instance, the golf course promotion on the Facebook page, the image of a girl in a massage room on both the blog and TripAdvisor, etc.).

To complete the previous analysis, the participants' suggestive memory was analyzed by showing them a list of companies (Iberia, Air Europa, Booking and Don't know/No response) with a slogan for a recent campaign, after which they had to select the correct option. In this case, 40% of the participants responded that they didn't know/no response and 37% of the sample selected the correct option: Air Europa.

The following table displays the main results ranked by goals:

Table 21. Summary of results

Objetive	**Main results**
What do users look at? Viewing patterns (Objective 1)	Participants began by viewing the blog header, then they directed their gaze at the first post. After having viewed the top part of the page, they followed a left-to-right viewing pattern to find the information required for the task (customer's comment).
	The "hottest" areas of the blog are: the description of the hotel located on the right side of the page, the header and the content of the first post.
	On Facebook, users follow a top-to-bottom viewing pattern from the upper part of the screen (header) to the post containing the information required to complete the task.
	The "hottest" areas on Facebook are: header with profile picture and content of the last post (task). In all the cases, the profile picture of the Facebook user who posted the comment is paid a lot of attention.
	On Tripadvisor, participants first focus on the upper left part with the hotel's name and pictures, including those from other travelers. After that, they explore the left side to read the comments submitted by others. Finally, they direct their gaze to the right side, with information about other hotels in the area.
	The "hottest" area on Tripadvisor is the one where other travelers' comments are located. Users barely focus on the TripAdvisor header, the hotel's pictures (located on the right side), the banner or the bottom of the page.

Banner blindness and factors that influence visual attention (Objective 2)	From a behavioral approach, banner blindness does not occur with the *Travel 2.0* tools analyzed in our study (Blog, Facebook and hotel profile on Tripadvisor).
	Users take approximately 14 sec. to focus on the banner on Facebook, 23 sec. on the blog, and 38 sec. on TripAdvisor.
	Participants fixate on the banner more times and for longer on Facebook, followed by the blog and finally by Tripadvisor.
	Although banner blindness was not detected in our study, the banner is one of the parts in *Travel 2.0 tools* on which users focus the least and for a shorter time.
	The area containing the posts is the most significant one in *Travel 2.0 tools*, since it is the area that gets most attention as the number of fixations increases. This part contains relevant information for planning trips (including task completion).
Banner recognition (Objective 3)	Over half of the participants (55%) did not remember the brand or company in the advertisement.
	Only 3% of the participants remembered the image in the advertisement.
	The advertisements the participants recalled were different from the banner in question. For example, the golf course promotion on the Facebook page, the image of a girl in a massage room on both the blog and TripAdvisor, etc.
	For the analysis of the participants' suggestive memory, it was found that 37% of the sample remembered the company name correctly (Air Europa) from a list of different companies.

5. DISCUSSION

The development of the Web 2.0 has not only affected all sectors of activity, including the tourism industry, but has also changed tourists and companies' Internet use behavior. Tourists have therefore adopted a more active role in managing their travel plans, and tourism companies have taken advantage of this opportunity to adapt their marketing strategies to the new *Travel 2.0 tools*.

The scientific literature review led to a series of interesting findings concerning website advertising, which helped us specify our research questions and complete our results. No prior studies were identified that analyzed the advertising efficacy of a banner in terms of visual attention paid to different websites of the Web 2.0 tools, or the results were inconclusive. However, considering that most of the studies analyzed involved banner blindness, users either avoided or ignored the banners during navigation (e.g. Benway 1998; Burke et al. 2005; Nielsen 2007; Drèze and Hussherr, 2003; Margarida 2013).

In regards to banner recall, some authors confirm that many users do not recall banners after viewing a website (Bayles and Chaparro 2001; Bayles 2002; Drèze and Hussherr 2003; Burke et al. 2005). Nevertheless, in this case, the results were inconclusive and sometimes even contradictory.

In this context, the goal of this article is to determine the advertising efficacy of different *Travel 2.0 tools* (blog, Facebook and TripAdvisor). Three specific objectives were established for this purpose: i) to determine users' viewing patterns when using with these tools; ii) to analyze on which *Travel 2.0 tool* users pay more attention to the banner; iii) to study users' degree of banner recall or recognition through suggestive or spontaneous memory.

Concerning the first objective, the results of our study revealed that the users' viewing patterns depend on the *Travel 2.0 tool* analyzed. When viewing the hotel's blog and TripAdvisor profile, users follow a left-to-right viewing pattern (similar to the results of the studies conducted Castelluccio 2004; Djamasbi et al. 2010b) and pay special attention to the area where the first post is located (IAB Spain Research and The Cocktail Analysis 2009). In the case of TripAdvisor, participants pay special attention to the area where the other travelers' comments are located, disregarding the top part of the website.

In the case of Facebook, users explored the website with a top-to-bottom movement, focusing more on the upper left part of the screen, as confirmed in the literature review (Castellucio 2004; Djamasbi et al. 2010a). However, in the case of TripAdvisor, users hardly see the lower part of the screen (as found in other studies, e.g. Namahn, 2001; Shrestha and Lenz, 2007; Mazman et al. 2010). On the contrary, users focus for a significant amount of time on the lower part and right side of the blog and social network pages, especially when information of interest for potential clients is located in this area.

Concerning the second objective, using the eye-tracking methodology we can confirm that banner blindness does not occur in the case of *Travel 2.0 tools*, in line with the outcomes of other studies (e.g. Hervet et al. 2011; IAB Spain Research and The Cocktail Analysis 2009). That could be due to the fact that the image of the banner in our study illustrated three famous celebrities that might have caught their attention during

navigation. The results of the study conducted by Djamasbi et al. (2010a) show that, when viewing a website, users focus more on the primary images, such as faces of famous people.

Another reason for which participants probably look at the banner is because it is integrated within the editorial content of the three *Travel 2.0 tools* analyzed. In this case, when the subjects viewed each of the pages, they focused on the advertisement because it was integrated in the area where the solution to the task we assigned to them might have been. According to Abuín (2008), if advertisements are integrated in the website content, users cannot quickly identify them as irrelevant information. In our case, the degree of efficacy from a behavioral viewpoint may indicate that the information contained in the ad is relevant for the tourist. In other words, the subjects looked at the banner during their first fixations, meaning that they quickly learnt the site structure, thus avoiding in subsequent fixations the areas with no interest, since they did not provide the information they were searching for.

Furthermore, it was confirmed that advertising on Facebook is more effective, followed by the blog and lastly by TripAdvisor with more amount of information. We could say that participants not only focused on the banner sooner, but also more times and for longer, although it was located in the same position on all the web tools. This may be due to the fact that the complexity of a website's design (text size and format, position of images, etc.) can have an effect on the viewing patterns of the different subjects who explore it (Pan, Hembrooke, Gay, Granka, Feusner, and Newman 2004; Djamasbi et al. 2011). In our case, the Facebook profile had less editorial content than the rest. Besides, if users have a better memory or more experience of how a Facebook page is structured, in contrast to a new blog, for example, it would increase banner blindness. This would make Facebook's advertising efficacy even stronger.

Therefore, unlike Simola et al.'s (2013) study which proved that attention to the different elements of a website (ads, logos and headers) improved recall of these elements, our researched revealed that there are differences between attention measures and banner recall. On one hand, after the eye-tracking test it was confirmed that most of participants fixated at least once on the banner (so banner blindness did not apply) for the reasons already mentioned. On the other hand, the results of the

survey did not reveal that the subjects barely recalled the content or the brand of the advertisement concerned. In fact, more than half of the subjects did not recall the brand/company in the banner concerned, while more than a third of the users selected the correct answer about the brand and slogan advertised.

This means that the total fixation duration for the banner is notably lower than for other areas in the three tools analyzed (posts, header, etc.). Once the participants looked at the banner, they probably recognized it was an advertisement and deduced that the information they needed for completing the task was not there, so they did not spend more time on it.

Besides, users immediately learnt the tool structure and used their navigation experience to quickly filter the banners from the editorial content (Lapa 2007; León 2009) or avoid them during future visits (Drèze and Hussherr 2003; Burke et al. 2005).

Another reason may be related to the user's type of navigation, which in the present case was goal-oriented. When they are searching for specific information on the Internet (as in this study) and the content they are searching for is not in the advertisement, subjects will most likely avoid the areas of the screen containing banners (Pagendarm and Schaumburg, 2001). In this case, users could perceive advertising as an obstacle in their information search (Ha and McCann 2008). These results are coherent with those obtained by Danaher and Mullarkey (2003), who found that subjects with a task-related objective during online navigation (like is our case), they are less likely to remember the banners than those who are surfing the Internet without a purpose.

For all these reasons, like in many other cases, visual attention to the banner was paid at a low level of awareness, which explains why the associations did not activate their recall later.

6. IMPLICATIONS

We start out from a situation where online advertising can annoy users, thereby decreasing their performance for the task assigned to them (Brajnik and Gabrielli

2010). In spite of this, our study can help advertisers and marketing companies choose the best *Travel 2.0 tool* for placing their advertisements and know what is the perfect position for banners on each tool.

First of all, concerning attention paid to the banner, it was confirmed that those *Travel 2.0 tools* that are not overloaded with editorial content – such as Facebook and simple blog – are more effective in terms of investment in advertising. Besides, the efficacy of a banner increases from the 50th fixation, meaning that the banner could appear after a reasonable time-lapse to allow information search. This time-lapse can vary from a few seconds on Facebook to a few more on the blogs and around half a minute on TripAdvisor.

However, as high recall rates were not obtained in this study for none of the tools analyzed, we recommend advertisers to conduct a prior study of the website on which they want to display their advertisements, as well as of the type of task users carry out the most on that website (for instance, purchase of a given product, particular information search, etc.). This way, both the design and the content of the banner will be oriented to the user's goal, thus avoiding their annoyance, improving attention rates and enhancing banner recall.

Another recommendation to advertisers is to include celebrities in the banner image, as this generally catches users' attention immediately. Of course, as explained above, the characters have to be related to the editorial content and to the main task users normally perform on that website. This way, they will feel more engaged toward the banner and will be able to recall it. It is proved that the advertisements in coherence with the editorial content are more easily recognized than the incoherent ones (Simola et al. 2013). For instance, if we want to insert advertising in a travel blog, we can use the image of a relevant celebrity, such as an actor of a movie filmed in a pleasant place.

Finally, the results obtained in our study can help advertisers choose the most effective areas on the *Travel 2.0 tools* for placing their banners. On one hand, on blogs and virtual communities (e.g. TripAdvisor), users' viewing pattern goes from left to right, while in the case of social networks, i.e. Facebook, the viewing pattern is normally from top to bottom. Therefore, advertisements should be placed on the

upper left side, which is normally more visible. We also recommend to integrate the banner within the editorial content for the three types of tools (Mosconi et al. 2008). On the blog and on Facebook, the most effective option is to place it among the first publications, while on TripAdvisor it should be inserted in the central part whenever possible, or very close to the first travelers' comments.

7. LIMITATIONS AND FUTURE LINES OF RESEARCH

Our study analyzes advertising efficacy considering three specific *Travel 2.0 tools* (Blog, Facebook and TripAdvisor). It would be interesting to complete this research with other social networks that have experienced significant growth in recent years, such as Linkedin, Twitter, Pinterest, Instagram, etc.

A specific experimental design was also developed using the eye-tracking technique, in order to evaluate the participants' fixation behaviors. The strict, careful application of the experimental design achieved an improvement in the internal and external validity of the results obtained. However, the small sample size of the experimental groups did not allow a stronger and more complex experimental design combining other factors – between groups– like experience with different levels. In the future, we hope to replicate this design with a larger sample of individuals in order to analyze the interactions between factors, reducing the margin of error and obtaining more robust results.

In our experiment, we only used computers to analyze advertising efficacy, although due to the importance of mobile devices nowadays, it would also be interesting to analyze advertising efficacy on different social network mobile applications.

Finally, it would be interesting to compare advertising efficacy in a context of free Internet navigation with *Travel 2.0 tools* and compare the results with the task or goal-oriented navigation. Prior studies claim that banners attract less attention during reading-oriented tasks or information search than during free navigation (Simola, Kuisma, Öörni, Uusitalo, and Hyönä 2011; Resnick and Albert 2014).

Acknowledgments

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8. APPENDICES

8.1. Appendix A. Questionnaire

1. Did you know about the Hotel Jardín Tropical*** (located in Tenerife) before this study?
   - Yes
   - No
   - I don't know/No answer

2. Do you remember having seen any advertisement during your visit to the websites?
   - Yes
   - No
   - I don't know/No answer

3. In case you remember any advertisement on the website, please indicate the brand or company name :

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4. In case you remember any advertisement, please describe the elements present in the image:

---

5. What ad do you remember having seen during your visit on the websites?
   - Iberia: Campaign "5% discount on all our flights"
   - AirEuropa: Campaign "¡We fly just for you!"
   - Booking: Campaign "Book a hotel now!"

8.2. Appendix B. Areas of the Travel 2.0 tools

Figure 19. Areas of the hotel's blog, Facebook page and TripAdvisor profile

8.3. Appendix C. Tables resulting from the repeated measures ANOVA analysis

Table 22. Global marginal means

1. Global average

Measure	Average	Stand. error	Confidence interval 95%	
			Lower limit	Upper limit
TFF	16.72	.74	15.24	18.19
FB	54.80	2.91	48.98	60.61
FD	.19	.01	.18	.20
TFD	13.57	.47	12.62	14.51
FC	62.50	1.77	58.95	66.05

Table 23. Marginal means for the type of AOI

Measure	Type of AOI	Average	Stand. error	Confidence interval 95%	
				Lower limit	Upper limit
TFF	Header	4.81	0.91	2.98	6.63
	Posts	1.77	0.28	1.21	2.34
	Banner	20.49	1.69	17.11	23.86
	Bottom	30.99	1.93	27.13	34.86
	Customer's comment	25.53	1.60	22.32	28.74
FB	Header	16.14	3.20	9.73	22.55
	Posts	4.28	0.59	3.09	5.47
	Banner	65.57	5.8	53.96	77.19
	Bottom	103.64	6.74	90.15	117.12
	Customer's comment	84.36	5.81	72.74	95.99
FD	Header	.20	0.01	0.19	0.21
	Posts	.21	0.01	0.20	0.22
	Banner	.17	0.01	0.16	0.18
	Bottom	.16	0.01	0.14	0.17
	Customer's comment	.19	0.01	0.18	0.21
TFD	Header	10.73	0.74	9.24	12.22
	Posts	44.32	1.72	40.89	47.75
	Banner	2.41	0.21	2.00	2.82
	Bottom	4.45	0.53	3.39	5.51
	Comment	5.92	0.53	4.86	6.99
FC	Header	46.08	2.94	40.20	51.97
	Posts	207.27	6.57	194.11	220.42
	Banner	11.44	.86	9.72	13.17
	Bottom	21.35	2.35	16.64	26.06
	Customer's comment	26.35	2.04	22.28	30.42

9. REFERENCES

Abuín, Natalia (2008), *La publicidad en periódicos electrónicos: Creación y evaluación de un modelo de eficacia*. Universidad Complutense de Madrid, http://eprints.ucm.es/7958/ , (accessed November 13, 2014).

Bayles, Michelle E. and Barbara Chaparro (2001), "Recall and recognition of static vs. animated banner advertisements," In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 45, No. 15, pp. 1201-1204). SAGE Publications.

Bayles, Michelle E. (2002), "Designing online banner advertisements: Should we animate?," In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Minneapolis, MN, April 2002, ACM Press, New York, 363-368.

Benway, Jan Panero (1998), "Banner blindness: The irony of attention grabbing on the World Wide Web," In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 42, No. 5, pp. 463-467). SAGE Publications.

Buhalis, Dimitrios and Rob Law (2008), "Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism research," *Tourism Management*, 29, 4, 609-623.

Brajnik, Giorgio and Silvia Gabrielli (2010), "A review of online advertising effects on the user experience," *International Journal of Human-Computer Interaction* 26, 10, 971-997.

Burke, Moira, Anthony Hornof, Nilsen Lewis, and Nicholas Gorman (2005), "High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten," *ACM Trans.Comput.-Hum. Interact.*, 12, 4, 423–445.

Castelluccio, Michael (2004), "How We Read Web Pages," *Strategic Finance* 53, Institute of Management Accountants Inc., http://www.highbeam.com/doc/1G1-127980114.html, (accessed October 31, 2010).

Cheung, Christy MK, Pui-Yee Chiu, and Matthew KO Lee (2011), "Online social networks: Why do students use facebook?," *Computers in Human Behavior,* 27, 4, 1337-1343.

Chiou, Wen-Bin, Chin-Sheng Wan, and Hsin-Yi Lee (2008), "Virtual experience vs. brochures in the advertisement of scenic spots: How cognitive preferences and order effects influence advertising effects on consumers," *Tourism Management*, 29, 1, 146-150.

Crespo, Esmeralda (2011), *Eficacia de la promoción de ventas on-line. Influencia del tipo de incentivo promocional y la experiencia de uso web*. Departamento de Comercialización e Investigación de Mercados. Universidad de Granada.

Danaher, Peter J. and Guy W. Mullarkey (2003), "Factors affecting online advertising recall: A study of students," *Journal of Advertising Research*, 43, 03, 252-267.

Djamasbi, Soussan, Marisa Siegel and Tom Tullis (2010a), "Generation Y, web design, and eye tracking," *International Journal of Human-Computer Studies*, 68, 5, 307-323.

Djamasbi, Soussan, Marisa Siegel, Tom Tullis, T., and Rui Dai (2010b), "Efficiency, trust, and visual appeal: Usability testing through eye tracking," In *System Sciences (HICSS), 2010 43rd Hawaii International Conference on* (pp. 1-10). IEEE.

Djamasbi, Soussan, Marisa Siegel, and Tom Tullis (2011), "Visual hierarchy and viewing behavior: An eye tracking study," In *Human-Computer Interaction.*

Design and Development Approaches, (pp. 331-340). Springer Berlin Heidelberg.

Drèze, Xavier and François-Xavier Hussherr (2003), "Internet advertising: is anybody watching?," *Journal of Interactive Marketing*, 17,4, 8-23.

Ehmke, Claudia and Stephanie Wilson (2007), "Identifying web usability problems from eye-tracking data," In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it-Volume 1*(pp. 119-128). British Computer Society.

Evoc Insights (2009), "Methodology Spotlight," http://evocinsights.com/methodology-spotlight/, (accessed November 11, 2014).

Goldberg, Joseph H. and Anna M. Wichansky (2003), "Eye tracking in usability

evaluation: A Practitioner's Guide." To appear in: Hyona, J., Radach, R., Duebel, H (Eds.). The mind's eye: cognitive and applied aspects of eye movement research (pp.573-605). Boston, North-Holland / Elesevier.

Gong, Wen and Lynda M. Maddox (2003), "Measuring web advertising effectiveness in China," *Journal of Advertising Research*, 43, 01, 34-49.

Ha, Louisa and Kim McCann (2008), "An Integrated Model of Advertising Clutter in Offline and Online Media*," International Journal of Advertising*, 27, 4, 569–592.

Hassan Montero, Yusef and Víctor Herrero Solana (2007), "Eye-tracking en interacción persona-ordenador," *No solo usabilidad*, 6. http://www.nosolousabilidad.com/articulos/eye-tracking.htm , (accessed June 10, 2012).

Hervet, Guillaume, Katherine Guérard, Sébastien Tremblay, and Mohamed Saber Chtourou (2011), "Is banner blindness genuine? Eye tracking internet text advertising," *Applied Cognitive Psychology*, 25, 5, 708–716.

Hill, Dan (2003), "Tell Me No Lies: Using Science to Connect With Consumers," *Journal of Interactive Marketing*, 17, 4, 61-72.

Hollis, Nigel (2005), "Ten years of learning on how online advertising builds brand," *Journal of Advertising Research*, 45, 255-268.

Holmqvist Kenneth, Marcus Nyström, Richard Andersson, Richard Dewhurst, Halszka Jarodzka, and Joost van de Weijer (2011), *Eye Tracking: A comprehensive guide to methods and measures*, Oxford University Press, Oxford.

Hoy, Mariea Grubbs and George Milne (2010), "Gender differences in privacy-related measures for Young adult Facebook users," *Journal of Interactive Advertising*, 10, 2, 28-45.

Hsieh, Yu-Chen and Kuo-Hsiang Chen (2011), "How different information types affect viewer's attention on internet advertising," *Computers in Human Behavior*, 27, 2, 935- 945.

IAB Spain Research and The Cocktail Analysis. (2009), "Claves sobre la Interacción visual con la publicidad web. Aplicación de la técnica eye tracking," https://www.google.es/search?q=iab+claves+para+la+interacci%C3%B3n+visal+con+la+publicidad+web&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:es-ES:official&client=firefox-a, (accessed November 10, 2014).

International Telecommunication Union, ITU (2002), "Methodology for the subjective assessment of the quality of television pictures." *ITU-R BT.500-11*. http://www.itu.int/rec/R-REC-BT.500/en , (accessed March 12, 2012).

Jacob, Robert JK. and Keith S. Karn (2003), "Eye tracking in human-computer interaction and usability research: Ready to deliver the promises," *Mind*, *2*, 3, 4.

Lapa, Chad (2007), “Using eye tracking to understand banner blindness and improve website design”. Thesis. Rochester Institute of Technology.

León, José Luis (2009), "Nuevos Soportes y mercados de la publicidad digital. Transiciones y experiencias." *Pensar la Publicidad. Revista internacional de investigaciones publicitarias* 3, 2, 17-30.

Leung, Xi Yu (2012), *The Marketing Effectiveness of Hotel Facebook Pages: From Perspectives of Customers and Messages*, University of Nevada, Las Vegas.

Lindgaard, Gitte, Gary Fernandes, Cathy Dudek, and J. Brown (2006), “Attention web designers: You have 50 milliseconds to make a good first impression!,” *Behaviour & Information Technology*, 25, 2, 115-126.

Lohtia, Ritu, Naveen Donthu, and Idil Yaveroglu (2007), “Evaluating the efficiency of Internet banner advertisements,” *Journal of Business Research*, 60, 4, 365-370.

Margarida, Ana (2013), “Do users look at banner ads on Facebook?,”*Journal of Research in Interactive Marketing*, 7, 2, 119-139.

Mazman, S.Güzin, Sedat Akbal, Hakan Tüzün, and Mustafa Yeniad (2010), “Usability testing of departmental websites: a case study with authentic users and authentic tasks,” *Proccedings of ICERI2010 Conference*, 15th-17th November 2010, Madrid.

Mendes-Filho, Luiz Augusto Machado and Felix B. Tan (2008), “An overview on User-Generated Content and the empowerment of Online” Travellers,” *FARN Journal*, 7, 2, 17-30.

Mosconi, Mauro, Marco Porta, and Alice Ravarelli (2008), “On-line newspapers and multimedia content: an eye tracking study,” In *Proceedings of the 26th annual ACM international conference on Design of communication* (pp. 55-64). ACM.

Muñoz, Francisco, Janet Hernández, and Juan Sánchez (2012), “Generalising user behaviour in online travel sites through the Travel 2.0 website acceptance model,” *Online Information Review*, 36, 6, 879 – 902.

Namahn (2001), “Use eye tracking for usability testing,” *Research Document*, TechGig, Bussels, 1-12.

Nielsen, Jakob (2006), “F-shaped pattern for Reading web content,” http://www.nngroup.com/articles/f-shaped-pattern-reading-web-content/, (accessed November 11, 2014).

Nielsen, Jakob (2007), “Banner blindness: old and new findings,” http://www.nngroup.com/articles/banner-blindness-old-and-new-findings/, (accessed November 11, 2014).

Nielsen (2014). “The digital consumer,” http://www.nielsen.com/content/dam/corporate/us/en/reports-downloads/2014%20Reports/the-digital-consumer-report-feb-2014.pdf, (accessed November 11, 2014).

Nihel, Ziadi (2013), “The effectiveness of internet advertising through memorization and click on a banner,” *International Journal of Marketing Studies*, 5, 2, 93.

Noton, David and Lawrence Stark (1971), “Eye movements and visual perception,” *Scientific American*, 224, 34-43.

Owens, Justin W., Barbara S. Chaparro, and Evan M. Palmer (2011), “Text advertising blindness: the new banner blindness?," *Journal of Usability Studies*, *6*, 3, 172-197.

Pagendarm, Magnus and Heike Schaumburg (2001), “Why are users banner-blind? The impact of navigation style on the perception of web banners,” *Journal of Digital Information*, 2, 1, http://journals.tdl.org/jodi/article/view/36/38, (accessed November 10, 2014).

Pan, Bing, Helene A. Hembrooke, Geri K. Gay, Laura A.Granka, Matthew K. Feusner, and Jill K. Newman (2004), "The Determinants of web page viewing behavior: An eye-tracking study," In A. Duchowski (Ed.), *Proceedings of Eye Tracking Research & Applications Symposium (ETRA 04)* (pp. 147-154). New York: ACM.

Pan, Bing and Lixuan Zhang (2010), "An eyetracking study on online hotel decision making: The effects of images and number of options" *Travel and Tourism Research*, *Association Annual Conference*, San Antonio, June 20-22.

Rayner, Keith (1998), "Eye movements in Reading and information processing: 20 years of Research," *Psychological Bulletin,* 124, 3, 372-422.

Rejón, Francisco, Juan Sánchez, and Francisco Muñoz (2012), "Improving the Effectiveness of Advertising in Internet Social Networking", In M.M. Cruz-Cunha, P. Gonçalves, N. Lopes, & E.M. Miranda, Putnik, G.D. (Eds.), *Handbook of Research on Business Social Networking: Organizational, Managerial, and Technological Dimensions* (pp. 756-785). IGI-Global, Hershey (USA).

Resnick, Marc and William Albert (2014), "The impact of advertising location and user task on the emergence of banner ad blindness: an eye-tracking study," *International Journal of Human-Computer Interaction* 30, 3, simo 206-219.

Russo, J. Edward. (1978), "Eye fixations can save the World: A critical evaluation and a comparison between eye fixation and other information processing methodologies, *Advances in Consumer Research*, 5, 1, 561-570.

Salvucci, Dario D. and Joseph H. Goldberg. (2000), "Identifying fixations and saccades in eye-tracking protocols," In *Proceedings of the 2000 symposium on Eye tracking research & applications* (pp. 71-78). ACM.

Shrestha, Sav and Kelsi Lenz (2007), "Eye gaze patterns while searching vs. browsing a Website," *Usability News*, 9, 1, 1-9.

Simola, Jaana, Jarmo Kuisma, Anssi Öörni, Liisa Uusitalo, and Jukka Hyönä (2011), "The impact of salient advertisements on reading and attention on web pages," *Journal of Experimental Psychology: Applied*, 17, 2, 174.

Simola, Jaana, Markus Kivikangas, Jarmo Kuisma, and Christina M. Krause (2013), "Attention and memory for newspaper advertisements: effects of ad–editorial congruency and location,"*Applied Cognitive Psychology*, 27, 4, 429-442.

Van Trijp and Hans C.M. (2009), "Consumer understanding and nutritional communication: Key issues in the context of the new EU legislation," *European Journal of Nutrition*, 48, 1, 41-48.

Varadarajan, Rajan, and Manjit S. Yadav (2009), "Marketing Strategy in an Internet-Enabled Environment: A Retrospective on the First Ten Years of JIM and a Prospective on the Next Ten Years," *Journal of Interactive Marketing*, 23, 11-22.

Wedel, Michel and Rik Pieters (2008), "A Review of Eye-Tracking Research in Marketing", In Naresh K. Malhotra (ed.) *Review of Marketing Research*, vol. 4 (pp.123 – 147), Emerald Group Publishing Limited, Armonk, NY (USA).

Yaveroglu, Idil and Naveen Donthu (2008), "Advertising repetition and placement issues in on-line environments," *Journal of Advertising*, 37, 2, 31-43.

Zikmund, William G. (2003), *Fundamentos de investigación de mercados*. Thomson, Madrid.

CHAPTER 5: WHAT TYPE OF ONLINE ADVERTISING IS MOST EFFECTIVE FOR eTOURISM 2.0? AN EYE TRACKING STUDY BASED ON THE CHARACTERISTICS OF TOURISTS

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1. INTRODUCTION

1.1. The online advertising in the tourism industry

Online advertising has experienced spectacular growth since its creation in October of 1994 (Robinson, Wysocka, & Hand, 2007). The first banner went live on hotwired.com and 44% of those who saw it, clicked on it. Originally, the main objective was to direct the attention of Internet users through a click to the website of the advertised company. As a result, the user learned about a product or service, and the organization's website received more visits (Margarida, 2013). Different types of advertisements have been created since that time. The six most recognized formats are (Burns & Lutz, 2006): banners, pop-ups, floating ads, skyscrapers, large rectangles, and interstitials. However, banners continue to be one of the most widely used advertising formats on the Internet (Rejón, Sánchez, & Muñoz, 2012). A variety of advertising formats exist on the Internet (Zeff & Aronson, 1999).

Online advertising presents various benefits, such as reduced costs, the possibility of segmenting the audience, the existence of numerous monitoring tools to analyze the visits, etc. Nevertheless, despite its rapid growth, online advertising has not replaced traditional types of advertising, since the two methods are complementary (Margarida, 2013). Consequently, companies have taken advantage of this opportunity, adapting their advertising to new advances in technology. In this regard, different advertising formats can be found in new 2.0 tools, such as animated banners, promotional videos, sponsored links, etc.

In the last decade, the Information and Communication Technologies (ICTs) have revolutionized the tourism industry (Buhalis & Deimezi, 2004). People are increasingly aware of the benefits of the new technologies for planning leisure activities (Sebastia, García, Onaindia, & Guzmán, 2009). As a result, touristic companies and organizations have adopted innovative business and e-commerce models to improve communications with clients, their distribution channel and their value chain. In this

regard, the new term "eTourism" emerges to describe the whole range of ICT applications in the tourism area and the implications for the tourism value chain (Buhalis & Deimezi, 2004).

1.2. The relevance of eTourism

Through eTourism, tourists obtain recommendations about the place they want to visit, based on their personal tastes, demographic characteristics, places they have visited on previous trips and their current preferences (Sebastia et al., 2009). In the same way, an electronic travel agent must have the capacity to plan and manage the most important aspects of a trip: how to travel from the place of origin to the destination, the accommodation and local transport options to destination, and lastly, how to go back to the starting point (Camacho, Borrajo, & Molina, 2001).

When developing an eTourism website, web designers have to take into account different usability attributes, such as navigation, customization and structure design. It is therefore recommended that these websites have a fluid navigation, be clearly organized and have interactive content (Muhtaseb, Lakiotaki, & Matsatsinis, 2012).

Similarly, the development of ICTs has led to a new version of the *World Wide Web*: Web 2.0, which is mainly characterized by fomenting users' participation and collaboration in an online environment. This web development has affected various sectors of activity, such as the hospitality and tourism industry, and tourists' behavior while traveling, leading to so-called "eTourism 2.0" or "Travel 2.0 tools," which include travel blogs, travel social networks and forums (Muñoz, Hernández, & Sánchez, 2012). These new tools are characterized by their 1) transparency, 2) collaboration, 3) better basics, 4) speed and 5) predictability (Bray, 2006; Wolf, 2006). User-generated content (UGC) and community are certainly hot topics and cornerstones of eTourism 2.0. UGC is a rapidly emerging growth engine of many e-businesses and an important component of the new knowledge society. Online social networks are particularly changing the way people access information and, therefore, tourists' behavior (Xiang &

Gretzel, 2010). Through these networks, other people's opinions on potential tourist destinations and corresponding services can be found (Casaló, Flavián & Guinaliu, 2009). These eTourism 2.0 tools allow tourists to create their ideal trip (Wolf, 2006), to take on a more active role when planning and preparing their trips, as well as helping other tourists to form an initial idea of the destination they plan to visit (Muñoz et al., 2012) by word-of-mouth –WOM– (Hernández, Muñoz, & Sánchez, 2013).

In this regard, the effect of recommendations or WOM can be very important in the hotel industry and, therefore, the use of virtual communities is becoming fundamental, as its impact has been estimated at over 10 billion dollars per year (Garrido & Lockett, 2013). Certain virtual communities, such as tripadvisor.com or minube.com, allow users to either plan their trip (reserve flights, book hotels, plan activities or visits, etc.) with the aid of browsers on the site, or participate in forums where tourists can post their views and opinions about their trips or view information provided by other users. In fact, TripAdvisor (www.tripadvisor.com) is so popular, it is considered to be the most successful social networking/virtual community for tourism that allows users to review hotels around the world through discussion forums (Buhalis & Law, 2008), with over 4 million businesses and properties (hotels, vacation rentals, restaurants and other attractions) at over 140,000 destinations (TripAdvisor, 2014).

The growth of advertising in social networks has driven social network administrators to invest in the development of various advertising formats, not only permitting advertising campaigns, but also facilitating the role of vendors in reaching their target audience (Margarida, 2013).

Similarly, marketing through social networks is becoming increasingly more important in the hotel industry and, consequently, an increasing number of hotels are using social networks to promote their business (Leung, 2012).

1.3. Research problem, objectives and structure

It is increasingly important to measure the effectiveness of the web design and web-integrated advertising considering its saturation and the relevance of WOM. This way, programmers and advertisers will be able to create a web/advertisement design that is appealing to users and, therefore, able to get their attention.

After the appearance of the new Web generation, few studies have been carried out for measuring the effectiveness of banners in the eTourism 2.0 tools. And it seems clear that there are different patterns of fixation on banners according to their content and type, and to tourists' characteristics (as gender, age or experience level) when navigating on eTourism 2.0 tools.

Therefore, the aim of this article is: a) to provide a deeper and more comprehensive insight into the effectiveness of advertising according to the two types of commonly-used banners (static and dynamic) for three specific eTourism 2.0 tools (travel blogs, travel social networks and tourist communities) in terms of attention; b) to discover which banner content users fixate on the most (image or text); and lastly, c) to explore the influence of certain socio-demographic variables (gender and age) and experience level (measured by the frequency of use) with these new systems applied. To do so, an experiment was conducted using an eye tracking methodology in addition to a self-administered questionnaire, applied to 60 adults and potential users of eTourism 2.0 tools.

Before presenting the methodology and results of this study, an extensive review of the scientific literature was conducted, concerning the already mentioned research goals.

2. THEORETICAL BACKGROUND: JUSTIFICATION OF THE HYPOTHESES

2.1. The importance of measuring web design and advertising effectiveness

A website's homepage or *home* is the first point of contact for users and the visible face of the brand/company. The interface becomes the façade of the online store, and users' impressions of the website are based on this façade (Wolfinbarger & Gilly, 2003). Visitors make instantaneous judgments about the website based on their initial impressions, and they usually make the decision to either stay or leave the website within the first two minutes (Dahal, 2011). Therefore, programmers must dedicate the majority of their efforts to a user-oriented design to meet visitors' potential needs and get them to stay on the site for longer periods of time.

The same occurs with banner design. The advertiser's objective is to create a favorable, lasting impression of online advertising on users; in other words, influencing users to have a positive attitude towards the banner (for example, clicking on it) and be able to remember the brand/company advertised during the website visit (Burke, Hornof, Nilsen, & Gorman, 2005).

In order to stay on the website for longer periods of time, it is necessary to have well-structured and available information that is not only easy to find, but also offers opportunities for interacting with the brand (Dahlén, Rasch, & Rosengren, 2003). Therefore, before posting a banner on a website, an in-depth study must be conducted of the site based on specific questions of who is performing the searches (León, 2009). In this regard, a banner's effectiveness improves if it is posted on websites with relevant content and the appropriate repetition strategy is chosen (Yaveroglu & Donthu, 2008).

2.2. Basic banner elements: Text vs. image

Studies have demonstrated that website users' first impressions are based on various design factors, such as: text colors, fonts and size; the use of images, etc. (Namahn, 2001). This occurs with the design of banners. Therefore, some authors have focused on analyzing which elements users fixate on more frequently: text or images. Nevertheless, the literature review did not lead to conclusive results and some are even contradictory; showing that the findings are highly determined by the context of the research. It can only be affirmed that the formats combining texts and images generate more effective memories and positive attitudes towards the advertisement and the brand (Beerli & Martín, 2010).

Hughes, Wilkens, Wildemuth, and Marchionini (2003) explored the role of text in subtitles and images in videos that appear on a search results page. This study confirmed that participants fixated more on titles and descriptions (text) than images. Most subjects first looked at the text to make judgments about the search results and later observed the images to confirm their selections.

A study by Rayner, Stwewart, Keir, and Duffy (2001) showed similar results. Despite the fact that the experiment participants indicated that they did not like advertisements with a lot of text, the results demonstrated that they tend to spend more time looking at the text component of an advertisement than the image. This study also confirmed that users do not usually read the entire text, but rather the parts with larger letters or the left-hand side of the advertisement. When the text is brief and concise, they read it in its entirety.

In the eTourism sector, Pan and Zhang (2010) studied how consumers make decisions when booking a hotel through an online travel agency. They demonstrated that when the search results page shows text and images, subjects spend more time assessing a series of hotels than when there is just text alone. Images therefore help the subjects see more hotel options; which has a positive effect on them choosing a hotel through an online travel agency.

Despite the fact that the advertising literature shows a recurring idea that people remember images more than words, Leung (2012) demonstrated that when a hotel adds images to its Facebook page status posts, it doesn't always fare better than text alone. Specifically, when the content of the post is focused on the brand in question, posts with images generate more positive attitudes towards the hotel's Facebook page than posts with a website link. However, Leung observed a greater intention to book the hotel when the post content focuses on the product supported by text and a website link, rather than posts with images.

Based on these premises, the following research hypothesis is proposed:

> *H1*: Users pay more attention to the images in banners posted on eTourism 2.0 tools than to the text.

2.3. Types of banners: static vs. animated

The features and options of the banner advertisement have gradually improved, moving from traditional units of graphics to those that showed a sequence of animated or rotated images in a dynamic manner (Rejón et al., 2012). Furthermore, banners compete with other components on the website, specifically the editorial content, other banners, etc. In this struggle to attract the website users' attention, web designers have used various strategies: large-size font, bright colors, animation, etc. (Chandon, Hutchinson, Bradlow, & Young, 2007).

Different researches, such as Lohtia, Donthu, and Hersherger (2003) has studied the impact of a banner's content and design on clicking behavior, demonstrating that animation increases the percentage of clicks on advertisements for consumers and decreases the percentage of clicks on advertisements for companies.

Hamborg, Bruns, Ollermann, and Kaspar (2012) found that the fixation frequency for banners increases with the intensity of the animation, however, the fixation duration is independent of said intensity. Furthermore, the results of a study by IAB Spain Research and The Cocktail Analysis (2009) revealed that animated banners receive more attention than static banners, as more users look at them for longer periods of time.

But various studies have shown that animated advertisements are not an effective tool, since they can have a negative impact on the attitude and response to the advertisement (Baltas, 2003), and although animation reduces *banner blindness* (Bayles, 2000), it also makes users remember or recognize it less (Bayles 2002; Hong, Thong, & Tam, 2004). In this regard, said studies determined that less attention is paid to animated banners than static banners (Chandon et al., 2007) and their content is remembered even less (Pieters & Wedel, 2004).

Thus, advertisements with simpler backgrounds (no animation or colors, etc.) have a more positive impact on the attitude towards the advertisement and the brand, the intent to purchase, and the attitude towards the website (Stevenson, Bruner, & Kumar, 2000). The reason may be that animated advertisements require readers to use more cognitive resources than static images; consequently, animated banners may alert users of the existence of an advertisement in that spot, and therefore lead them to adopt a behavior of rejection (Chandon et al., 2007) or psychological "reactance" (Edwards, Li, & Joo-Hyun, 2002). This aversive affective reaction happens in response to regulations or impositions that affect to freedom and autonomy (Brehm & Brehm, 1981; Wicklund, 1974). Furthermore, not only do animated advertisements generate a negative response from the audience, they are also more costly for advertisers to produce (Robinson et al., 2007).

Based on these premises, the following research hypothesis is proposed:

> *H2*: Users pay less attention to animated banners on eTourism 2.0 tools than to static banners.

2.4. Variables for classifying tourists: Demographic characteristics and user experience

2.4.1. Gender

Regarding the influence of gender on the effectiveness of advertising in a website, a study by San José, Gutiérrez, and Gutiérrez (2004) showed that men have a greater tendency to contact an advertised company and buy an advertised product than women. However, Grubbs and Milne (2010) demonstrated that although both genders reject the use of online social network profiles for behavioral advertising, women reject it even more. It would therefore be convenient for vendors to design two types of advertisements, one geared towards men and the other aimed at women; for example, high risk products should be advertised to women through objective and subjective advertising, but only objective advertising is recommended for men (Wolin, 2003).

On the other hand, men and women seem to behave similarly regarding banners on websites (Drèze & Hussherr, 2003). A study by Margarida (2013) concluded that women look at more banners than men, but statistically there are no significant differences between men and women in regards to advertisements they have seen and/or clicked on.

Nonetheless, other authors have demonstrated the opposite. Wells and Chen (1999) proved that men show a more positive attitude towards advertising than women. Besides, the results obtained by Goodrich (2014) revealed that men pay more attention to banners than women.

Based on these premises, the following research hypothesis is proposed:

H3: Men pay more attention to banners on eTourism 2.0 tools than women.

2.4.2. Age

Usually when advertising and text dominate a website's content, users tend to make shorter visits to the website; however, this does not happen among older users, who stay on websites with advertisements for longer periods of time. Therefore, website advertising is probably more appropriate for older people than for younger people (Danaher, Mullarkey, & Essegaier, 2006). Similarly, Drèze and Hussherr (2003) confirm that older people look at the same number of areas as younger people, however, they fixate on a greater number of areas, thereby producing a longer fixation duration.

In this case, the following research hypothesis is proposed:

> *H4*: Older users pay more attention to banners on eTourism 2.0 tools than younger users.

2.4.3. Experience of use

In recent years, the saturation of advertising online has had a negative impact on the emotional effectiveness of advertisements, and even more so as the users' frequency of use increases on a website. However, the frequency of use of blog sites does not have an impact on the effectiveness of advertisements, since this type of website still has not been saturated with advertising (Beerli & Martín, 2010).

It was also proved that expert internet users tend to be more efficient in processing information on a website as they make fewer fixations, look at fewer areas, and spend less time on each area than novices; however, this does not mean they see fewer banners (Drèze & Hussher, 2003).

It has been confirmed that users with less experience on the Internet are more prone to click on banners than users with more experience (Dahlen, 2001).

In contrast to the abovementioned study, Thorbjørnsen, Supphellen, Nysveen, and Egil (2002) confirmed that new users are less likely to interact with advertising, since they pay more attention to elements that are complementary to the advertisement, such as the website environment. Therefore, it has been shown that users with more Internet experience are more active with promotional banners than newer users (Crespo, 2011).

Therefore, the following research hypothesis is proposed:

> *H5*: Expert users pay more attention to banners on eTourism 2.0 tools than novel users.

All these hypotheses have been established based theoretical background and outcomes of studies mainly focused on the website environment. However, there are very few studies focused on eTourism 2.0 tools. The present paper will verify if the same factors apply to these tools among potential tourists.

2.5. The present study

Thus, the review of the scientific literature allows to establish the following hypotheses:

H1: Users pay more attention to the images in banners posted on eTourism 2.0 tools than to the text.

H2: Users pay less attention to animated banners on eTourism 2.0 tools than to static banners.

H3: Men pay more attention to banners on eTourism 2.0 tools than women.

H4: Older users pay more attention to banners on eTourism 2.0 tools than younger users.

H5: Expert users pay more attention to banners on eTourism 2.0 tools than novel users.

3. METHODOLOGY

3.1. Measuring effectiveness of web design and ads with eye tracking systems

Recently published studies introduce different techniques for measuring the effectiveness of website designs and advertisements, which are especially useful for designers/advertisers to determine how to allocate their resources and efforts for this task.

In last years, interest has been focused on physiological and semi-physiological measurement techniques. These methodologies, based on the experimental psychology and the cognitive neuroscience, analyze the subject and employ magnetic resonance techniques (Braidot, 2009), electroencephalography (EEG), facial recognition, and eye tracking mechanisms (Hervet, Guérard, Tremblay, & Chtourou, 2011; IAB Spain Research & The Cocktail Analysis, 2009; Kuo, Hsu, & Day, 2009).

The present paper is focused on the last of these measurement techniques: eye tracking, a technique that allows researchers to determine eye movement and fixation patterns.

Specifically, the primary movement patterns used to study the relationship between the human and the computer include: saccadic movements or rapid eye movements, and the eye's fixation when it settles on a particular point (Hughes et al., 2003).

Nevertheless, this visual technique has certain limitations when compared to traditional usability testing. For example, one disadvantage is the size and cost of the

equipment needed to conduct these tests. On the other hand, the act of placing a device on the participant's head may give them a feeling of their actions being controlled, which would limit the spontaneity of their behavior in the test environment. Lastly, this technique requires more time to prepare and extract recorded data in order to analyze eye movement (Lapa, 2007).

3.2. Details of the experiment

3.2.1. Data collection and validity of the experiment

Fieldwork was conducted from November 15th-22nd at the Center for Research, Mind, Brain and Behavior (CIMCYC) at the University of Granada. The sample comprised a total of 63 adults, between the ages of 16 and 57 (average age = 33.95 years). However, once the data was analyzed, three tests had to be eliminated, since the quality of the recording of said tests was not sufficient for analysis. The final sample was integrated by 30 male and 30 female participants. The sample was also split according to the average age, with 30 participants aged between 18-34 and 30 participants aged 35 or older, thus having a counterbalanced design in terms of gender and age. The participants were recruited by the "snowball" sampling method, invited via contact by e-mail and telephone, and were paid €15 for their participation.

Participation in this experiment was performed one participant at a time in a quiet room, isolated from outside noise, with an ambient light of 200 Lux, as recommended in International Telecommunication Union (2002) to simulate a "home environment." This laboratory has a laptop connected to a Tobii eye-tracker. In particular, this system has an accuracy level of typical 0.5 degrees, a head movement error of 0.2 degrees, and is integrated into a 17" TFT monitor, with a screen resolution of 1280 x 1024 pixels, with a maximum vertical sync frequency of 75 Hz. and a horizontal frequency of 60 Hz. The user camera is built in frame rate 640 x 480 pixels, and 30 fps.

Some laboratory experiments have an adequate internal validity, as a result of the possibility of controlling the effect of independent and confounding variables and greater control over the research conditions (Zikmund, 2003). However, there may be errors due to the artificial nature of the environment, which would cause a lower

external validity than field experiments (Muñoz, 2008). But three different eTourism 2.0 systems were considered (see next section) in order to increase the possibility of generalization of results to the entire sector and, therefore, the external validity of the results.

3.2.2. Experimental design

The mixed experimental design of between-groups (comparison by subject groups) and within-subjects (comparison between analyzed tools) was based on a replica of three *eTourism* 2.0 tools for Hotel Jardín Tropical (located in Tenerife, Spain): its own blog, a social network page (Facebook) and a virtual community profile (Tripadvisor), as previous studies analyze (e.g. Grubbs & Milne, 2010; Leung, 2012; Margarida, 2013; Muñoz et al., 2012) or justify (e.g. Buhalis & Law, 2008; Muñoz et al., 2012; Rejón et al., 2012).

The design consisted of the following presentation formats for *eTourism* 2.0 tools (see Table 24).

Table 24. Presentation formats for the eTourism 2.0 tools and URLs

eTourism 2.0 tool + banner	**URL**
B1: Hotel blog with static airline banner	http://webcim.ugr.es/polls/EP_ET/X1.html
F1: Hotel Facebook page with static banner	http://webcim.ugr.es/polls/EP_ET/X2.html
T1: Hotel Tripadvisor profile with static banner	http://webcim.ugr.es/polls/EP_ET/X3.html
B2: Hotel blog with dynamic banner	http://webcim.ugr.es/polls/EP_ET/X4.html
F2: Hotel Facebook page with dynamic banner	http://webcim.ugr.es/polls/EP_ET/X5.html
T2: Hotel Tripadvisor profile with dynamic banner	http://webcim.ugr.es/polls/EP_ET/X6.html

Each tool additionally includes an Air Europa airline banner (area of interest) embedded in each site featuring three famous celebrities (see Figure 20). The banner contains text ("We fly just for you! Visit" + URL + "for the chance to win prizes every week") as well as a composed image (people and plane). Also, one version of the banner contained only static elements (url: http://webcim.ugr.es/polls/EP_ET/banner/B1.jpg), while another had dynamic elements (url: http://webcim.ugr.es/polls/EP_ET/banner/B2.swf).

Figure 20. Static banner for the airline used in the experiment

The analysis conducted to test the research hypothesis 1 in the repeated measures design (or for within-subjects factor) was a dependent samples T- test comparing the means of only the text and the image in the banner.

In order to verify the rest of hypotheses 2 to 5, a between-groups design was needed. This design is balanced since the number of subjects for each experimental group (10 participants) or eTourism 2.0 tool (30 participants) is the same. This balanced model, as compared to an unbalanced model, permits various advantages, including (García & Lara, 1998: 44-45; Muñoz, 2008): 1) simplifying the calculation process, 2) the resulting contrasts are more robust, or less sensitive to the unfulfilment of the normality and homoscedasticity hypothesis, and 3) minimizing the false negatives of the test for mean differences.

As expressed in Table 25, the three first groups (EG1 to EG3) viewed the hotel's three eTourism 2.0 tools with the airline banner presented in static format, and the other three experimental groups (EG4 to EG6) with the banner presented in dynamic format (with animation). The only difference between the groups was the order in which the websites were presented to mitigate any effect due to the order of presentation of the experimental scenarios. Therefore, the order of the experimental design was 3x2 (3

combinations without repetition of eTourism 2.0 tools and 2 types of banners: static and animated).

Table 25. Experimental design

EG1:	B1	O1	F1	O2	T1	O3 ; for n= 10 subjects
EG2:	F1	O2	T1	O3	B1	O1 ; for n= 10 subjects
EG3:	T1	O3	B1	O1	F1	O2 ; for n= 10 subjects
EG4:	B2	O4	F2	O5	T2	O6 ; for n= 10 subjects
EG5:	F2	O5	T2	O6	B2	O4 ; for n= 10 subjects
EG6:	T2	O6	B2	O4	F2	O5 ; for n= 10 subjects

Likewise, in this design, the three groups corresponding to the static banner (EG1+EG2+EG3) and the three groups corresponding to the animated banner (EG4+EG5+EG6) were coordinated or balanced in terms of the different age ranges and genders. Randomness was ensured for the assignment of test units for the treatment groups and the treatment of experimental groups (Malhotra, 1997: 247). Randomization permits the equal distribution of the effects of the independent variables or factors under all conditions (Zikmund, 2003: 203) and ensures that the experiment's total number of repetitions under the same conditions will show the true effects, if any in fact exist (Luque, 1997: 157; Zikmund, 2003: 203).

Therefore, the effect of the banner type factor (α) can be identified through the following equation:

α + some confounding variables = (O1 + O2 + O3) – (O4+ O5 + O6) (equation 1)

The possible effect of these confounding variables (and other artefacts) is removed through control and, in randomized experiments, through random assignment.

In order to verify hypotheses 3, 4 and 5 (for between-groups effects), several analyses of covariance (ANCOVA) were applied, also including gender and experience level with eTourism 2.0 tools measured as factors and age as a metric covariate. Experience level

(expert / novice) was based on the median value of this frequency of use ("rarely" -1- and "sometimes" -2- / "whenever I travel" -3-). The final model is expressed as follows:

$$y_{ijkl} = \mu + \alpha_i + \alpha_j + \alpha_k + \beta \cdot X_l + \varepsilon_{ijkl} \qquad \text{(equation 2)}$$

Where y_{ijkl} is the fixation value for the i modality of gender (α_i), the j modality of experience (α_j), the k modality 1 of the advertisement type (α_k) and the l value of the covariable age (X_l).

3.2.3. Data collection and recording process detailed

Following is a detailed description of the process undertaken with each participant:

1. **Information search process**. Participants were seated in front of a computer and received an explanation of how to perform the task at hand, which involved searching for information about the views offered from a hotel. This mechanism was intended to achieve a certain degree of involvement in the experiment and goal-oriented navigation as would occur in a normal situation using this type of eTourism 2.0 tools. Although some authors support navigation focused on achieving objectives over exploratory navigation, the former generates less advertising recognition in a navigation environment (Danaher & Mullarkey, 2003). Furthermore, in this specific case, the task was not aligned with viewing the advertising, and therefore relatively low effectiveness indices were expected. However, the effect of focusing on conducting the task should not impede remembering or recognizing advertising messages.

2. **The calibration stage**. Afterwards, the participant's fixation path was recorded to verify that they could continue with the experiment without any problems (calibration). In the experiment, the eye tracker was calibrated using nine calibration dots displayed in a calibration matrix on the same monitor used in the eye tracking study. Specifically, for the calibration procedure, the subject was instructed to fixate on the center of nine separate red dots successively (radius 1 cm) on a 3x3 grid mounted on a wall at a typical viewing distance of about 80 cm. A manual inspection was then performed to ensure that the obtained center locations were correct and accurate. Any severe deviation (more than one degree of visual angle) from the true

location, marked in red instead of green, was used as an out-of-calibration indicator. This allowed us to recalibrate the system in case of any miscalibration or remove said subject from the experiment.

3. **Navigation on eTourism 2.0 tools**. Next, the researcher had the subject conduct navigation through the three eTourism 2.0 tools for a total time of four and a half minutes (90 seconds per page). The order of the tools and the type of banner used depended on the experimental group (see the design described earlier).

4. **Post-test**. Finally, participants were moved to another computer located outside the room with the eye-tracker, where they responded to a questionnaire with different questions regarding their socio-demographic characteristics and certain behavioral variables, such as experience with eTourism 2.0 tools measured.

4. RESULTS AND DISCUSSION

4.1. Within-subjects factor: Text vs. image

To compare hypothesis 1, which proposes that users fixate more on the text than the image in a banner, an initial dependent samples T-test was conducted to determine the participants' attention measured as fixation duration (FD) and number of fixations (FC). In this case, no empirical evidence was obtained that would demonstrate the existence of significant differences between the two average values in both indicators, *FD*: T(57) = .50, p = .62; *FC*: T(57)= 1.86, p = .07. In this latter case, only quasi-significant differences were detected, with a lower number of fixations on text (14.90) as compared to fixations on image (18.05).

By analyzing the time it takes to make a first fixation (TTF) and the fixations made before (FB) the participant fixates on the two areas of interest, it was confirmed that participants take longer to fixate on the text than on the image, *TTF*: T(57) = -3.55, p = .001, with an average time of 60.81 and 37.44 seconds, respectively; and an average of

203.16 “prior fixations” for text and 114.45 for images, *FB*: T(57) = -3.94, p < .001. (see Table 26).

Table 26. Means and standard deviations in TTF and FB for type of elements

Type	Time to first fixation (TTF)		Fixations before (FB)	
	Mean	**St. dev.**	**Mean**	**St. dev.**
Text	60.81	57.019	203.16	206.450
Image	37.44	44.553	114.45	136.661

Therefore, there is empirical evidence to accept the premise expressed in hypothesis 1, considering mainly behavior before fixation on the banner as a measure of attention.

4.2. Between-groups factors design: Type of banner and classification variables

To conduct a more in-depth analysis of the research hypothesis, it was also verified how the classification variables and the type of advertisement influence or moderate the attention paid to the area of interest (banner). For this purpose, three separate covariance analyses (ANCOVAs) were computed, with gender, expert level and type of advertisement as independent variables, and age as the metric covariate. Attention was measured by using fixation duration (FD), times to the first fixation (TTF) and fixations before (FB).

The assumption of homoscedasticity was confirmed in all the cases: Levene’s test (for FD): F(7, 52) = .09, p = .99; Levene’s test (for TTF): F(7, 52) = 1.34, p = .25; Levene’s test (for FB): F(7, 52) = 1.32, p = .26, respectively. The same applied to the assumption of normality: Kolmogorov-Smirnov’s test (for FD): Z = 1.03, p = .236, K-S (for TTF): Z = .90, p = .40, K-S (for FB): Z = 1.16, p = .137.

The first ANCOVA, using FD as a dependent variable, yielded a significant effect for age, F(1, 55) = 4.39, p = .041, indicating that young adults had significantly higher duration

of fixations on banner than older adults, *B* = –.01. Gender, expert level and type of advertisement did not generate a significant effect for this dependent variable (FD).

The TTF as a dependent variable generated a significant effect for the type of advertisement, F(1, 55) = 4.03, p = .050, thus indicating the existence of significant differences and, consequently, showing that participants develop higher TTF with animated banners than with static banners. In particular, an average time of 28.20 seconds was obtained for dynamic banners as compared to 19.63 seconds for the static version (see Table 27).

Table 27. Means and standard deviations in TTF and FB for type of advertisement

Type	**TTF**		**FB**	
	Mean	**St. dev.**	**Mean**	**St. dev.**
Static	19.63	12.342	61.05	36.019
Animated	28.20	16.606	87.98	50.747
Total	**23.92**	**15.136**	**74.51**	**45.694**

Fixations before (FB) as a dependent variable yielded two significant effects. First, for the type of advertisement, F(1, 55) = 4.32, p = .04, showing that participants develop higher FB with animated (87.98) than with static banners (61.05). Second, for age, F(1, 55) = 4,04, p = .049, indicating that young adults had a higher number of fixations before to fixate on the banner, *B* = –1.09.

Hypothesis 2 is therefore supported, confirming that less attention is paid to animated banners than to static banners. This way, the animated banners may alert users of the existence of an advertisement, leading them to adopt a behavior of rejection or psychological “reactance”.

Regarding the rest of variables, there is no empirical evidence to accept the premise of hypotheses 3 and 5 concerning the respondent’s gender and experience level for any of the attention measures. The results supported hypothesis 4, with a result opposed to the hypothetical assumptions in the case of eTourism 2.0 tools. In particular, young people had significantly higher duration of fixation on the banner and paid more attention to the other areas of the website, if their viewing pattern before fixating on the banner is considered. Therefore, unlike other websites (e.g. Drèze & Hussherr,

2003), young people start to fixate on a greater number of areas, thereby producing a longer fixation duration (before) and staying longer on eTourism 2.0 tools.

5. CONCLUSIONS AND RECOMMENDATIONS

The development of ICTs has led to the appearance of a new version of the World Wide Web that foments user collaboration and participation: Web 2.0. Furthermore, advertising has also positively evolved, adapting to this electronic environment. These changes have affected all sectors of activity, especially the hospitality and tourism industry, which is why potential tourists are increasingly using eTourism 2.0 systems to prepare their travel plans.

The scientific literature review did not lead to conclusive results and some are even contradictory; showing that the findings are highly determined by the context of the research. It can therefore be inferred, from previous studies carried out in the website environment, that the effectiveness of advertising is determined more by the quality and nature of the advertisement content than the presentation format. It is thus recommended that advertising provides extensive content, which should be informative and rational (San José Cabezudo et al., 2004).

Few studies have focused their attention, however, on eTourism 2.0 tools, which is why our paper attempts to verify whether the same factors apply to these tools as to websites. This also applies to the different classification variables for potential tourists. Although there is little research on this topic, some studies consider these variables in the website environment. For this reason, our purpose is to analyze how these variables influence the context of eTourism 2.0 tools.

The purpose of this article is to determine the effectiveness of advertising in different eTourism 2.0 tools (blog, Facebook and Tripadvisor), through a mixed experimental design using the eye tracking technique in order to assess the participants' observational or attention seeking behaviors. In particular, two main objectives were pursued: determining which of the banner's elements (text vs. image) and which type of banner users pay more attention to (animated vs. static banners). Furthermore, this

attention level has been compared considering certain independent or classification variables (gender, age and experience level). The accurate execution and careful application of this experimental design achieved improvements in the internal and external validity of the obtained results.

In contrast to what was found in the literature review (Hughes et al., 2003; Pieters & Wedel, 2004; Rayner et al., 2001), the results from the first part of this study show that slightly less fixations are made on the text than on the image, with longer periods for first time fixation on the text and a higher "prior fixation" rate on the text than on the images. They most likely look at the image first because it featured three famous celebrities that could have drawn their attention during their website visit.

Besides, the results of this study show that there are no differences in terms of duration of fixation on static banners as compared to animated banners. However, it was found that participants fixate first on the static banner. This can be explained by the fact that the presence of animation alerts users of the existence of advertising in that spot and lead them to adopt a behavior of rejection and psychological reactance towards it (Chandon et al., 2007; Edwards et al., 2002).

Regarding the classification variables, firstly, participants' duration of fixation on the banner does not reflect significant differences when comparing gender, experience level and type of advertisement. In this case, it was confirmed that men and women behave similarly when paying attention to the banner. These results coincide with the results of prior studies (Drèze & Hussherr, 2003; Margarida, 2013). And it is confirmed that experience level did not influence the attention paid to the banner either (Beerli & Martín, 2010).

In terms of age, it was found that young people take longer to reach the banner than older people. Besides, once they reach the text of the eTourism 2.0 tool, younger people tend to view it for longer periods of time than older people. These results contradict other research, which has confirmed that older people stay on sites with advertisement content for longer periods of time (Danaher et al., 2006; Drèze & Hussherr, 2003).

The findings suggest interesting future research path on effectiveness of advertising on the Web tools developed and can help improve tourism business processes for optimizing advertising campaigns, by taking into account the characteristics of the tourists visiting these website tools.

6. LIMITATIONS AND FUTURE LINES OF RESEARCH

The present study analyzed the participants' behavior of attention or fixation by measuring the effectiveness of advertising. For future research, it would be interesting to complement this study with other measures of advertising effectiveness, such as *click-through* (CTR). This way, it was possible to learn which subjects voluntarily visit the website of the selected advertiser.

On the other hand, the research has only considered three independent variables when studying the effectiveness of banners on eTourism 2.0 tools. In this regard, other classification variables could be added to the study in order to develop a more in-depth analysis (e.g. employment situation, level of studies, etc.).

Finally, it is also recommended to expand the study to other geographic areas for a more cross-country or cross-cultural perspective, including other European countries or countries on other continents.

7. REFERENCES

Baltas, G. (2003). Determinants of internet advertising effectiveness: An empirical study. *International Journal of Market Research*, *45*(4), 505-513.

Bayles, M. (2000). Just how 'blind' are we to advertising banners on the web. *Usability News*, *2*(2), 520–541.

Bayles, M. E. (2002). Designing online banner advertisements: Should we animate? In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 363-366). New York, NY: Association for Computing Machinery, ACM.

Beerli, A., & Martín, J. (2010). La eficacia de la publicidad online en el contexto de los blogs. *Cuadernos de Gestión, 10*, 17-42.

Braidot, N. (2009). *Neuromarketing*. Ediciones Gestión 2000, España.

Bray J. (2006, April). Web 2.0 Begins To Sprout In Travel. *PhoCusWright's FYI*. Retrieved October 14, 2013, from <http://www.phocuswright.com/research_updates/web-20-begins-to-sprout-in-travel>.

Brehm, J. W., & Brehm, S. S. (1981). *Psychological reactance: A theory of freedom and control*. San Diego, CA: Academic Press.

Buhalis, D., & Deimezi, O. (2004). eTourism Developments in Greece: Information Communication Technologies adoption for the strategic management of the Greek tourism industry. *Tourism and Hospitality Research*, *5*(2), 103-130.

Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism research. *Tourism Management*, *29*(4), 609-623.

Burke, M., Hornof, A., Nilsen, E., & Gorman, N. (2005). High-cost banner blindness: Ads increase perceived workload, hinder visual search, and are forgotten. *ACM Trans. Comput.-Hum. Interact.*, *12*(4), 423–445.

Burns, K. S., & Lutz, R. J. (2006). The function of format: Consumer responses to six on-line advertising formats. *Journal of Advertising*, 35 (Spring), 53. <http://dx.doi.org/10.2753/JOA0091-3367350104>.

Camacho, D., Borrajo, D., & Molina, J.M. (2001). Intelligent Travel Planning: A multiagent planning system to solve web problems in the e-tourism domain. *Autonomous Agents and Multi-Agent Systems*, *4*(4), 387-392.

Casaló, L. V., Flavián, C., & Guinaliu, M. (2009). Importancia de las redes sociales en turismo rural. Facultad de Ciencias Económicas y Empresariales. Zaragoza: Universidad de Zaragoza. Retrieved October 20, 2010, from <http://www.unizar.es/centros/eueeh/master/CASALOetalt.pdf>.

Chandon, P., Hutchinson, J. W., Bradlow, E., & Young, S. H. (2007). Measuring the Value of Point-of-Purchase Marketing with Commercial Eye tracking Data. *Business School Research Paper* No. 2007/22/MKT/ACGRD. Retrieved September 12, 2011, from <http://ssrn.com/abstract=1032162> or <http://dx.doi.org/10.2139/ssrn.1032162>.

Crespo, E. (2011). *Eficacia de la promoción de ventas on-line. Influencia del tipo de* incentivo promocional y la experiencia de uso web. Departamento de Comercialización e Investigación de Mercados. Granada: Universidad de Granada.

Dahal, S. (2011). *Eyes don´t lie: understanding users´ first impressions on website design using eye tracking*. Master thesis. Business and Information Technology. Rolla, MO: Missouri University of Science and Technology.

Dahlen, M. (2001). Banner advertisements through a new lens. *Journal of Advertising Research*, *41*(4), 23-30.

Dahlén, M., Rasch, A., & Rosengren, S. (2003). Love at first site? A study of website advertising effectiveness. *Journal of Advertising 43*(1), 25-33.

Danaher, P. J., & Mullarkey, G. W. (2003). Factors affecting online advertising recall: A study of students. *Journal of Advertising Research*, *43*(3), 252-267.

Danaher, P. J., Mullarkey, G. W., & Essegaier, S. (2006). Factors affecting web site visit duration: A cross-domain analysis. *Journal of Marketing Research*, *43*(2), 182-194.

Drèze, X., & Hussherr, F. (2003). Internet advertising: is anybody watching? *Journal of Interactive Marketing*, *17*, 8-23.

Edwards, S.M., Li, H., & Joo-Hyun, L. (2002). Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads. *Journal of Advertising*, *31*(3), 83–95.

García, J., & Lara, A. M. (1998). *Diseño estadístico de Experimentos. Análisis de la Varianza*. Granada: Grupo Editorial Universitario.

Garrido, A., & Lockett, N. (2013). An exploratory analysis of social media use in european hotels. *XXIII Congreso Nacional de ACEDE*, Málaga.

Goodrich, K. (2014). The gender gap: Brain- Processing sexes shape attitudes about online advertising. *Journal of Advertising Research, 54*(1), 61-72.

Grubbs, M., & Milne, G. (2010). Gender differences in privacy-related measures for Young adult Facebook users. *Journal of Interactive Advertising*, *10*(2), 28-45.

Hamborg, K.-C., Bruns, M., Ollermann, F., & Kaspar, K. (2012). The effect of banner animation on fixation behavior and recall performance in search tasks. Computers in Human Behavior, *28*(2), 576–582.

Hernández, J., Muñoz, F., & Sánchez, J. (2013). The influence of e-word-of-mouth on travel decision-making: consumer profiles. *Current Issues in Tourism*, 1-21 (published online) <http://dx.doi.org/10.1080/13683500.2013.802764>

Hervet, G., Guérard, K., Tremblay, S., & Chtourou, M. S. (2011). Is banner blindness genuine? Eye tracking internet text advertising. *Applied Cognitive Psychology*, *25*(5), 708–716.

Hong, W., Thong, J.Y.L., & Tam, K.Y. (2004). Does animation attract online users attention? The effects of flash on information search performance and perceptions. *Information Systems Research*, *15*(1), 60–86.

Hughes, A., Wilkens, T., Wildemuth, B., & Marchionini, G. (2003). Text or Pictures? An eyetracking study of how people view digital video surrogates. *CIVR'03 Proceedings of the 2nd international conference on Image and video retrieval*, (pp. 271-280). Berlin (Germany): Springer-Verlag.

IAB Spain Research, & The Cocktail Analysis (2009). *Claves sobre la Interacción visual con la publicidad web. Aplicación de la técnica eye tracking.* Madrid: IAB Spain Research.

International Telecommunication Union, ITU (2002). Methodology for the subjective assessment of the quality of television pictures. ITU-R BT.500-11. Retrieved March 10, 2012, from <http://www.itu.int/rec/R-REC-BT.500/en>

Kuo, F.-Y., Hsu, C.-W., & Day, R.-F. (2009). An exploratory study of cognitive effort involved in decision under Framing—an application of the eye tracking technology. *Decision Support Systems*, *48*(1), 81–91.

Lapa, Ch. (2007). Using eye tracking to understand banner blindness and improve website design. (Doctoral Thesis). NY (USA): Rochester Institute of Technology.

León, J.L. (2009). Nuevos soportes y mercados de la publicidad digital. Transiciones y experiencia. *Pensar la Publicidad*, *3*(2), 17-30.

Leung, X. Y. (2012). *The Marketing Effectiveness of Hotel Facebook Pages: From Perspectives of Customers and Messages*. Las Vegas, NV: University of Nevada.

Lohtia, R., Donthu, N., & Hersherger, E.K. (2003). The impact of content and design elements on banner advertising click-through rates. *Journal of Advertising Research*, *43*(4), 410-418.

Luque, T. (1997). *Investigación de marketing. Fundamentos*. Barcelona: Ed. Ariel.

Malhotra, N. K. (1997). *Investigación de Mercados. Un enfoque práctico*. (2ª ed.). México: Prentice Hall Hispanoamericana.

Margarida, A. (2013). Do users look at banner ads on Facebook? *Journal of Research in Interactive Marketing*, *7*(2), 119-139.

Muhtaseb, R., Lakiotaki, K., & Matsatsinis, N. (2012). Applying a multicriteria satisfaction analysis approach based on user preferences to rank usability attributes in e-tourism websites. *Journal of Theoretical and Applied Electronic Commerce Research*, *7*(3), 28-48.

Muñoz, F. (2008). *La adopción de una innovación basada en la Web. Análisis y modelización de los mecanismos generadores de confianza.* Departamento de Comercialización e Investigación de Mercados. Granada: University of Granada.

Muñoz, F., Hernández J., & Sánchez, J. (2012). Generalising user behaviour in online travel sites through the Travel 2.0 website acceptance model. *Online Information Review*, *36*(6), 879 – 902.

Namahn (2001). Use eye tracking for usability testing. A research note. Brussels (Belgium): TechGig.

Pan, B., & Zhang, L. (2010). An eyetracking study on online hotel decision making: The effects of images and number of options. *Travel and Tourism Research*, *Association Annual Conference*, San Antonio, June 20-22, 2010.

Pieters, R., & Wedel, M. (2004). Attention capture and transfer in advertising: brand, pictorial, and text-size effects. *Journal of Marketing*, *68*, 36-50.

Rayner, K., Stwewart A., Keir J., & Duffy, S. (2001). Integrating text and pictorial information; eye movements when looking at print advertisements. *Journal of Experimental Psychology*, *7*(3), 219-226.

Rejón, F., Sánchez, J., & Muñoz, F. (2012). Improving the Effectiveness of Advertising in Internet Social Networking. In M.M. Cruz-Cunha, P. Gonçalves, N. Lopes, E.M. Miranda, & G.D. Putnik (Eds.), *Handbook of Research on Business Social Networking: Organizational, Managerial, and Technological Dimensions* (pp. 756-785). Hershey, PA: IGI-Global.

Robinson, H., Wysocka, A., & Hand, C. (2007). Internet advertising effectiveness. The effect of design on click-through rates for banners ads. *International Journal of Advertising*, *26*(4), 527-541.

San José Cabezudo, R., Gutiérrez, A.M., & Gutiérrez, J. (2004). Determinantes de la eficacia publicitaria del sitio web. Una aplicación del ELM. *Revista Española de Investigación de Marketing. ESIC*, *8*(2), 93-121.

Sebastia, L., García, I., Onaindia, E., & Guzmán, C. (2009). E-tourism: A tourist recommendation and planning application. *International Journal on Artificial Intelligence Tools*, *18*(5), 717-738.

Stevenson, J.S., Bruner, G.C., & Kumar, A. (2000). Web page background and viewer attitudes. *Journal of Advertising Research*, *40*(1/2), 29-34.

Thorbjørnsen, H., Supphellen, M., Nysveen, H., & Egil, P. (2002). Building brand relationships online: a comparison of two interactive applications. *Journal of interactive marketing*, *16*(3), 17-34.

TripAdvisor (2014). Ficha informativa, TripAdvisor. Retrieved October 13, 2014, from <http://www.tripadvisor.es/PressCenter-c4-FactSheet.html>

Wells, W. D., & Chen, Q. (1999). Surf's up-Differences between web surfers and non-surfers: Theoretical and practical implications. In *Proceedings of the conference-american academy of advertising* (pp. 115-126). Pullman, WA: American Academy of Advertising.

Wicklund, R. A. (1974). *Freedom and reactance*. Potomac, MD: Lawrence Erlbaum.

Wolf, P. (2006). Greetings from the PhoCusWright Executive Conference – Hollywood, Phocuswright, Sherman, CT (USA). Retrieved August 20, 2011, from <http://www.phocuswright.com/Travel-Research/Research-Updates/2006/Greetings-from-The-PhoCusWright-Executive-Conference-Hollywood#.VOSR_Cxx_1B>.

Wolfinbarguer, M., & Gilly, M.C. (2003). eTailQ: Dimensionalizing, measuring and predicting etail quality. *Journal of Retailing*, *79*, 183-189.

Wolin, L. D. (2003). Gender issues in advertising—An oversight synthesis of research: 1970–2002. *Journal of advertising research*, *43*(01), 111-129.

Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management*, *31*(2), 179-188.

Yaveroglu, I., & Donthu, N. (2008). Advertising repetition and placement issues in on-line environments. *Journal of Advertising*. *37*(2), 31-43.

Zikmund, W. G. (2003). *Fundamentos de investigación de mercados*. Madrid: Thomson.

Zeff, R.L. & Aronson, B. (1999). *Advertising on the Internet*. NY (USA): John Wiley & Sons Inc.

CHAPTER 6: CONCLUSIONS

1. MAIN CONCLUSIONS

The empirical studies conducted in each of the chapters presented above have led to a series of conclusions concerning user behavior towards Travel 2.0 tools, globally explained hereinafter. In general, the main findings of our study are as follows:

1. We assume that when tourists plan a trip, they are more influenced by the opinions and comments expressed by relatives, friends or acquaintances (Word of mouth – WOM) than by those expressed by other users in the online environment (electronic Word of Mouth- eWOM).

2. That said, an analysis focused on eWOM reveals that the Travel 2.0 tools most preferred by users for preparing their trip are the following, in this order: a) official websites of the destination/hotel, with comments from customers, b) travel blogs and c) travel social networks. This result may be explained by the fact that tourists consider that the official websites of destinations/hotels provide all the necessary information for travel planning (characteristics of the place, logistical aspects such as transport or schedules, other users' comments and opinions, etc.). Although users also consider blogs to provide a wide variety and a great deal of useful information for their travel, they still trust more the websites of the destination or hotel for the fact of being official and because nowadays any person can create and/or publish content on a travel blog.

Finally, the last position is for social networks, since they do not provide as much information as the previous platforms. In this case, when Internet users look up for information on these travel networks, they need to complete their search with information from other websites (i.e., official travel webs or blogs) to plan their travel in the best possible way.

3. Approximately half of the sample (51%) is considerably influenced by the comments posted on the Internet by other travelers. However, this information has a greater impact on the more experienced travel website users than on the less experienced ones. We also made a distinction of age and income level, thus finding that people older than 24 ('young adults') are more influenced by comments than younger users.

With regard to the income level, people with a medium-low gross family income (under 2,700€) are more influenced by other users' comments.

4. When it comes to sharing travel experiences on the web, it was found that two thirds of respondents have never published their travel experiences on a website, a blog or a social network; approximately barely one third of Internet users have published contents on their own blogs or websites. Additionally, it was found that men are more likely to share their experiences than women.

5. The Technology Acceptance Model (TAM) is a robust and parsimonious underlying model for analyzing the Travel 2.0 tools (travel blogs, travel social networks and online tourist communities). However, the relationship between usefulness and intention of use does not apply to Facebook (travel social network), nor to Tripadvisor (online tourist community).

Other relationships like the ones existing between trust and usefulness, attitude and intention of use, or between ease of use and intention of use, depend on the tool being analyzed (see next figure). In particular, the relationship between trust and usefulness applies to the tourists who use Hotel Botánico's Facebook profile and the Tripadvisor website. We can therefore state that, in general, when tourists trust the content published by other users (comments, experiences, videos, etc.), they believe these websites are useful for preparing their travels. Nonetheless, this relationship does not apply to blogs. The reason may be that many blogs do not only contain articles on other travelers' personal experiences, but also other types of information, like things do to at destination, travel tips, information on a specific destination, etc. In this sense, tourists find these webs useful, but they do not give credibility to the experiences shared by other users.

The relationship between ease of use and trust seems to be very significant for the three travel webs analyzed. Therefore, users trust more the Travel 2.0 tools that are easy to use. And trust has a positive impact on tourists' attitude on the blogs and on Facebook, but not in the case of Tripadvisor. Although tourists trust other users' comments shared in this virtual community, they do not have a positive attitude towards the website itself. They probably prefer to use other applications where they

can find a wider variety of information apart from other travelers' opinions and experiences: information on flights, hotels, friends' opinions, etc.

In the case of the blogs, intention of use is not only influenced by attitude, but also by ease of use and perceived usefulness. However, on the social networks and the virtual communities, intention of use is only determined by attitude. This may be due to the fact that although many tourists perceive virtual communities and social networks as easy to use and useful tools, they prefer to use other Travel 2.0 tools like blogs, which not only contain other travelers' experiences, but also a wider variety and larger amount of information. The strong negative relationship between ease of use and intention of use in the case of the blogs is an important aspect to take into account; it shows that due to their simplicity and the few options they provide, blogs are considered to be a less attractive source of information among Internet users, as these are more used to interact with increasingly complex websites.

The positive relationship between trust and intention of use applies to the blog and the virtual communities, but not to the social networks. In this case, the explanation may be that the information posted by other travelers on social networks can be manipulated by the concerned company through positive comments or by the competition itself through negative comments, which leads to a lack of trust from many tourists. In spite of this, tourists show intention to use travel social networks, since the information published on these websites can help them find more reliable information on other websites.

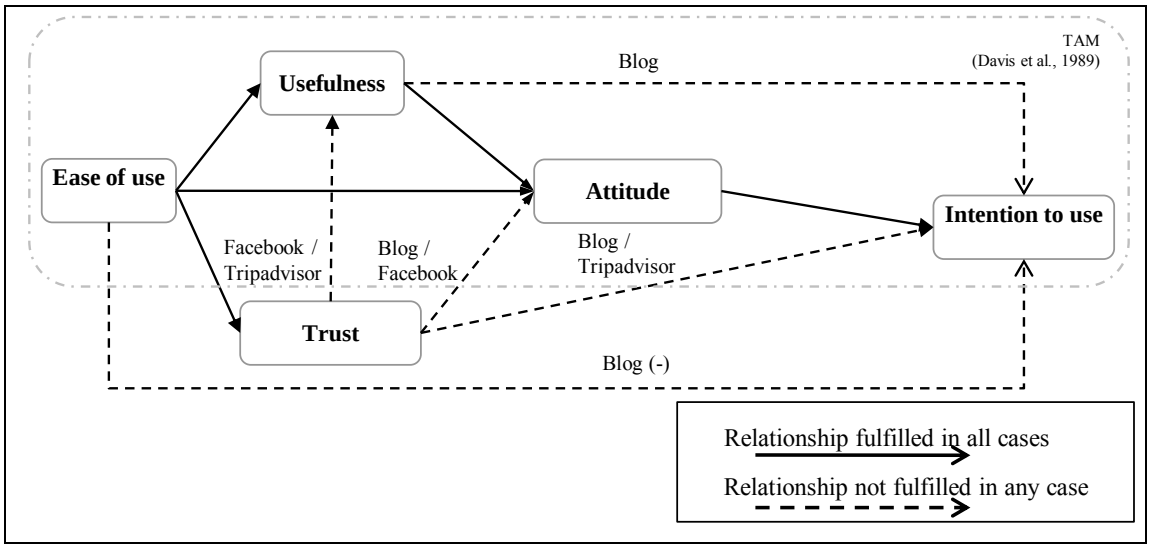

Figure 21. Extended model underlying all Travel 2.0 websites: the T2WAM model

After having presented the main findings of our study related to analysis and modeling of adoption behaviors for the Travel 2.0 tools, we proceed with the main conclusions drawn from the studies about the level of visual attention paid to the different elements contained in these tools, with special emphasis on online advertising. The implementation of the eye-tracking methodology led to the following findings:

1. Concerning viewing patterns, the navigation on both the blog and the virtual community follows a left-to-right pattern. In this case, special attention is paid on the blog to the area where the first post is displayed, while on the virtual community the area containing travelers' comments and opinions catches the most attention. On the social network, users show a top-to-bottom eye movement, paying more attention to the upper left part of the screen. On the blog and on the social network, users fixate on the lower part and right part of the screen for some time, especially when the information of interest for potential clients is located in this area. However, in the case of the online community users barely pay attention to the lower part of the screen.

2. The banner blindness phenomenon does not apply to the Travel 2.0 tools when different eye measurements are applied. This may be due to the banner format (image of celebrities), which caught users' attention. Another explanation may be that the banner was inserted close to the editorial content in the three Travel 2.0 tools, where was also located the answer to the task assigned and this might have increased the possibilities to view the banner at some point.

3. Thus, the banner is a more efficient advertising format for social networks, followed by blogs and lastly by virtual communities. Although the advertisement was located on the same position on the three Travel 2.0 tools, users fixated first, more frequently and longer on the banner inserted on Facebook (social network), secondly on the one inserted in the blog and thirdly on the one on Tripadvisor (online community). This may be due to the fact that the design complexity of a website (the text size and format, the position of images, etc.) can affect the viewing patterns of the themes being explored. In the present case, the social network has less editorial content than the other tools.

4. Although banner blindness was not found in our study, users proved relatively poor recall of the banner. On one hand, over fifty per cent of participants could not remember the brand/company of the banner concerned by our study. On the other hand, barely one third of the participants remembered the image of the advertisement. An explanation can be the fact that the total fixation duration on the banner is lower than for the other areas of the Travel 2.0 tools (e.g. posts, headers, etc.), probably because users realized it was an advertisement as soon as they viewed it, and assuming that the information they needed for completing the task was not there, they avoided to look at the banner anymore. Therefore, visual attention to the banner was paid with a low level of awareness, which explains why the associations did not activate its recall later.

5. With regard to the content of the banner, it was found that users fixate later and less intensely on the text than on the image. This can be due to the image of celebrities, who caught their attention more.

6. Furthermore, no differences were found according to the time users fixate on static banners as compared to animated banners; however, participants did fixate first on the static banner. The reason of this may be explained by the fact that the detection of animation can alert users of the existence of advertising on a given spot, hence making them adopt a rejection and psychological reluctance behavior towards it.

7. The analyses of variance conducted confirmed two things: that men and women behave similarly in terms of fixation on the banner; and that the experience level did not influence the behavior towards the banner.

8. Finally, the study revealed that, interestingly, younger participants took longer to their first fixation on the banner than older participants. Besides, once they reached the text on the eTourism 2.0 tool, younger participants tended to view it for longer than older ones.

The following table clarifies and summarizes the main results and conclusions of the study:

Table 28. Main research findings

Objective	**Main results**
Influence of eWOM on Travel 2.0 tools	When planning a travel, tourists are more influenced by WOM than by eWOM.
	The Travel 2.0 platforms most used by users for travel planning are the official websites of the destinations/hotels, which include comments from other customers, followed by travel blogs and, lastly, by travel social networks.
	Half of the simple is considerably influenced by comments posted by other Internet users. In this case, the most influenced users are: ▪ People having more experience in the use of travel websites, rather that the less experienced ones; ▪ Young adults, rather than young users; ▪ And users with medium-low income, rather than users with higher income levels.
	▪ Two thirds of the participants have never shared their travel experiences on a website, blog or social network. ▪ Barely one third of Internet users have published content on their own blogs or websites. ▪ Men are more likely than women to share their experiences on the Web.
Modeling of user behavior towards the use of Travel 2.0 tools	The TAM model is a robust and parsimonious underlying model for analyzing Travel 2.0 tools.
	The relationship between perceived ease of use and trust turned out to be very significant for the three travel websites analyzed. Users trust more the tools that are easier to use.
	There are relationships that do not apply to all the cases: ▪ Trust→ Usefulness *(Does not apply to the blog).* ▪ Trust→ Attitude (Does not apply to *Tripadvisor).* ▪ Trust → Intention of use (*Does not apply to Facebook)* ▪ Ease of use→ Intention of use *(Does not apply to Facebook nor to Tripadvisor)*

	▪ Usefulness → Intention of use *(Does not apply to Facebook, nor to Tripadvisor)*
	▪ On both the blog and the virtual community, users follow a left-to-right viewing pattern. On the blog, they pay special attention to the area where the first post is located, while on the virtual community they pay more attention to the area containing comments from travelers. ▪ On the social network, users follow a top-to-bottom eye movement, paying more attention to the upper left part of the screen. ▪ On the blog and on the social network, users fixate for a while on lower and right side of the screen, while on Tripadvisor they barely pay attention to the bottom of the screen.
Assessment of advertising efficiency in the Travel 2.0 tools	From an objective approach (not perceived), banner blindness did not occur in the case of Travel 2.0 tools.
	The banner as advertising format is more efficient on social networks, followed by blogs and, lastly, by virtual communities.
	Users barely remember the content of the banner. More than half of the participants did not remember the brand/company advertised on the banner and only one third remembered the image of the advertisement.
	Concerning the content of the banner, users fixate less intensely and later on the text than on the image of the banner.
	There are no differences in terms of fixation time between static and animated banners. However, participants fixated first on the static banner.
	Men and women behave similarly in terms of attention paid.
	The experience level did not influence fixation on the banner.
	Young participants took longer to fixate the banner than older participants. At the same time, young participants fixated longer on it.

2. IMPLICATIONS FOR MANAGEMENT

Tourism companies must take the opportunity provided by the Web 2.0 and ensure their presence on Travel 2.0 tools. Besides, a proper social media management could improve both a company's reputation and outturn.

As shown above, one of the information sources people use the most for travel planning are the official websites of their destination/hotel, which allow users to share comments and opinions. For this reason, it would be interesting for companies to include a section in their website where users can post opinions and experiences, which would be very useful for other tourists to plan their travels. In other words, Internet users will have the official information provided by the company on its website, alongside other travelers' opinions.

Since users also visit blogs when planning a travel, tourism companies have to take this into account and update their blogs frequently, not only with business-related content, but especially with quality publications that enrich visitors. For this reason it is important that tourist company blogs post the full range of content travellers might need when travelling (travel tips, interesting facts, current news on travel and hotels, travel guides, experiences of other travellers, etc.) in a clear and orderly manner so that users perceive the website to be useful in searching for information on specific destinations and/or hotels.

Although social networks are less widely used by tourists for preparing their travels, tourism companies must also ensure their presence there, to be able to interact with their customers at anytime. In this case, they need to answer all types of comments (whether favorable or negative) posted by clients on their websites and not only "listen" to them, but also take the necessary measures to solve problems and complaints.

But this is not everything tourism companies need to know. If they want users to trust their Travel 2.0 tools and use them more, they need to design them properly. In particular, in the case of company-managed tools, i.e. blogs, trust has a positive impact on attitude and intention of use. Therefore, companies need to design more objective blogs, enabling users to publish any type of contents (e.g. both favorable and negative comments), even though the company image might be somehow undermined, in favor of increased credibility.

With regard to social networks, increased trust involves a better perception of use and positive attitudes. Therefore, the same recommendation applies to social networks as to blogs: increased company transparency and permissiveness.

In the case of tourist communities, increased trust improves both perceived ease of use and intention of use. It is more difficult to make recommendations in this case, as the system is in the hands of external organizations (management) and of tourists (comments). However, organizations should try not to saturate the website with too much information, as they normally do, and tend to simplicity. The results of the eye-tracking methodology also reveal that travel 2.0 platforms that are not overloaded with editorial content are more efficient in terms of visual attention paid to an inserted

banner. It is therefore preferable that companies advertise themselves on this type of webs, such as Facebook pages or simple blogs.

Nonetheless, as high recall rates were not achieved in this study for any of the tools analyzed, we would advise advertisers to conduct a prior study of the website on which they want to publish their ads, as well as of the type of task Internet users normally carry out on that website (information search, purchase of specific products, etc.). This way, the design of the banner will be oriented towards the user's objective and he/she will be able to remember it better.

Additionally, the results obtained in our study can help advertisers to choose the most efficient areas on the Travel 2.0 tools for placing their banners. On one hand, users' viewing pattern goes from left to right in the case of blogs and virtual communities (such as TripAdvisor), while on social networks (such as Facebook) it normally goes from top to bottom. Therefore, ads must be displayed on the upper left side of the screen, which is normally more visible. We also recommend integrating the banner within the editorial content of the three types of tools. On blogs and on Facebook, the most efficient option is to place the banner among the first publications, while on tourist communities it should be inserted in the central area whenever possible, or very close to the first travelers' posts.

Lastly, with regard to the content of the banner, we recommend banners to include a remarkable image, for instance celebrities. Characters need to be related to the editorial content and to the main tasks normally carried out on the web concerned. This way, Internet users will not only pay more attention to the banner, but they will also be able to remember it. Likewise, we advise advertisers to use static banners instead of animated ones. Although no difference was found in terms of fixation time between both types of banners, it was confirmed that users fixate first on the static one. This can be due to the fact that animation alerts them that there is an ad on that spot, so they avoid looking at that area of the website anymore. In order to prevent this from happening, it is advisable to avoid animation on banners.

3. LIMITATIONS AND FUTURE LINES OF RESEARCH

The main limitations of our research, some of which point to possible future lines of research, are described below:

1. Only three specific Travel 2.0 tools were used in this case (travel blog, travel social networks and online tourist communities). Therefore, it would be interesting to conduct the same study with other platforms 2.0 that have experienced significant growth in the recent years, such as Twitter, Instagram, Pinterest, Linkedin, etc. Another interesting study could be conducted about mobile tourism applications that have developed so fast in the last years for the most common operating systems –Android and iOS– (Liu and Law 2013; Adukaite et al. 2013; Dickinson et al. 2014).

2. In the first two studies (chapter 2 and 3), we used the example of a specific hotel (Hotel Botánico) for the experimental part. We did the same for the next two studies (chapters 4 and 5), where we used another specific hotel (Hotel Jardín Tropical) for the experiment. In the future we could conduct the same study with hotels of different characteristics (for instance, different type or quality, location, price, etc.) and see whether these attributes influence or not the behavior of the tourist 2.0.

3. Since Web 2.0 applications are based on users' socialization and participation, it would be interesting to develop a wider behavioral model than the one created in chapter 3. Thus, we could include other variables like the sense of belonging to a community and the perceived enjoyment related to the use of these pages for travel planning, or the subjective and social norms derived from the Theory of Reasoned Action (TRA), i.e. the extent to which users perceive others approve their participation to these platforms 2.0.

4. The type of navigation carried out by the participants of the two studies with eye-tracking (chapter 4 y 5) was a goal-oriented navigation, as they were assigned a task during their visit on the Travel 2.0 tools. In this sense, findings could be extended if the same study is conducted with free navigation (no task assigned), to see how the type of navigation influences user's behavior towards online advertising.

5. The study could also be extended to other geographical areas, in order to see how cultural differences and differences between countries influence tourist's behavior towards Travel 2.0 tools. It is worth mentioning that we are currently conducting a joint research study with the University of Algarve, Portugal (more exactly at the Escola Superior de Gestão, Hotelaria e Turismo and the Faculdade de Ciências Humanas e Sociais), with a very similar line of research to the one adopted in chapters 4 and 5. More exactly, we intend to analyze how the banner position and the type of navigation (goal-oriented vs. free) influence Portuguese users' visual attention and memory when they visit the website of a hotel.

6. From the methodological perspective, the small sample size of the experimental groups did not allow us to create a more complex experimental design that could combine other factors – between groups – such as the user experience measured at different levels, or that could isolate the inclusion of other confounding variables (as covariables) that could bias the results. We hope we will be able to replicate this design in the future with a larger sample of subjects, with the aim of analyzing these variables and improving the internal and external validity of results.

7. For assessing the advertising efficiency on Travel 2.0 tools, the eye-tracking technique was applied. It would be convenient to complete the study with another metrics of the advertising efficiency, like for instance the click-through (CTR) technique. This way we could know whether users are interested enough by the banner as to visit the advertiser's website.

4. REFERENCES

Adukaite, A., Reimann, A. M., Marchiori, E., and Cantoni, L. (2013). Hotel Mobile Apps. The Case of 4 and 5 Star Hotels in European German-Speaking Countries. In *Information and Communication Technologies in Tourism 2014*(pp. 45-57). Springer International Publishing.

Dickinson, J. E., Ghali, K., Cherrett, T., Speed, C., Davies, N., and Norgate, S. (2014). Tourism and the smartphone app: Capabilities, emerging practice and scope in the travel domain. *Current Issues in Tourism*, *17*(1), 84-101.

Liu, Y., & Law, R. (2013). The adoption of smartphone applications by airlines. *Information and communication technologies in tourism*, 47-57.

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