How do External Openness and R&D Activity Influence Open Innovation Management and the Potential Contribution of Social Media in the Tourism and Hospitality Industry?

Abstract: This research work focus on how the Tourism and Hospitality industry is applying the paradigm of Open Innovation supported by social media. Open Innovation remains in topical research agenda but the lack of studies in service sector and specifically for tourism companies makes a different from previous literature. Moreover, introduction of Social Media as tool to implement it is considered the main gap raised. Structural Equation Modelling (SEM) is applied to data from 181 Portuguese and Spanish companies. This gives the keys to both customer involvement in New Product Development (NPD) and to the perception and results derived in terms of turnover and competitiveness. The structure of relationships between Research and Development, External Openness and Open Innovation Management is highlighted with statistical analysis. Likewise, the introduction of social media adds value to the proposed model. Currently, there is a lack of models available to give structure to the OI paradigm and to allow us to manage it. The contribution of this research is based on comparing the explanatory power of three models that allow for testing of how certain strategic guidelines in tourism companies influence others and have a mediating or multiplier effect linked to each other (nested model). In conclusion, the originality of this research is based on the relationship between Open Innovation Management and social media and the mediator effect of External Openness.

Keywords: Tourism and Hospitality Industry, Open Innovation (OI), Structural Equation Modelling (SEM), Social Media, Co-creation.

1. Introduction

The concept of Open Innovation, introduced by Chesbrough (2003), has attracted the attention of scholars and companies as part of an emerging paradigm (Carroll and Helfert 2015). Following the definition by Chesbrough (2003: 43) “Open Innovation means that valuable ideas can come from inside places external ideas and external paths to the market on the same level of importance as that reserved for internal ideas and paths…”. Then, OI means opening the organisation and generating spaces of collaboration with stakeholders to introduce external ideas and projects as part of strategy itself, and to find a balance between inbound and outbound capabilities to create opportunities and business value.

In the last decade, the productive sector has begun to progressively incorporate this ideology into its innovation strategy at the same time that a number of investigations have been undertaken in this field (Hossain and Anees-ur-Rehma 2015). Since then, it continues as one of the most discussed issues in the field of management.

Open Innovation implies the opening of a company to the exterior world in order to increase its performance and obtain a differential value in the market. By reviewing the state of the art and future perspectives, two research works would be prominent. On one hand, the study by Hossain and Anees-ur-Rehman (2015) in which the most frequent techniques used are identified. Firstly, qualitative techniques predominate followed by regression analysis (OLS, Tobit, Probit, binomial) and in recent years, despite its limited presence in the literature, structural equations models. On the other hand, Huizingh (2011) concentrates efforts on identifying the nuances of the Open Innovation concept to investigate the dependency contexts of this formula of innovation management, as well as to deepen its implementation process.

Most of the research on Open Innovation focuses on the industrial sector, and it is very common to use case studies to demonstrate the implementation of this phenomenon. This study approach highlights the need for quantitative studies involving companies across sectors and countries (Huizingh 2011), especially in areas of activity under-represented in the literature, such as tourism (Hossain and Anees-ur-Rehman 2015). Thus, this research responds both to the lack of empirical evidence on innovation and tourism (Cagica Carvalho and Sarkar 2014) and to the shortage of empirical evidence available for the study of Open Innovation as a formula of differentiation in the sector.

The tourism and hospitality industry in the south of Portugal and Spain serves as a stage to learn how to implement Open Innovation with the support of social media as a facilitator. Furthermore, tourism companies from both countries allow to investigate what influence certain strategic orientations have in the management models applied. In fact, it shows what is tourism sector thinking about this new vision of innovation and what is more important if an improvement of competitiveness is perceived as consequence of it. In a complementary manner, the novelty of incorporating social media as a technological tool capable of generating co-creation spaces with the consumer (Bugshan 2015) should be emphasized.Therefore, the main objective is to understand the relationship between External

Openness and R&D activity in the implementation of Open Innovation, as well as to analyze the current influence of social media as a source of innovation management.

Hossain and Anees-ur-Rehman (2015) consider that it is convenient to continue developing quantitative studies with a complex statistical support, such as SEM, to move forward and reach really practical conclusions for the company. Setting up alternative scenarios to assess how different variables imply a different result and behaviour is a good support in the decision-making process. In this paper, a sample of tourism companies from the south of Portugal and Spain is used and applied to a structural equation model. Comparisons between three different models are carried out according t nested models for SEM. The contribution of the study solves both the problem of establishing international comparisons and warns about differentiated behaviour in specific sectors – in this case, tourism. Building upon the comparison of the explanatory power of three different models, each one introduces and links significant aspects in strategic guidelines for management. It is demonstrated that the External Openness mediating effect on R&D activity could better explain the Open Innovation phenomenon in the tourism business. In short, this paper provides a broader understanding of this paradigm in the service sector and reinforces the role of social media as support to implement it. In contrast to previous studies, the comparison of models explains better how the involved variables behave and the structure of relations between them. To sum up, the defining model explains that there is a logical link between companies aware of R&D and their external openness and, this is precisely what introduces Open Innovation to the strategy in a natural way. The main insight tested is that social media is a key tool to implement this approach.

2. Literature review

2.1. Open Innovation in Tourism

Innovation emerges as a driver of economic growth and prosperity in several countries (OECD 2015), and at a micro level, innovation is a source of competitive advantage for companies (Cagica Carvalho and Sakar 2014). It is also considered a key source for improving output performance of the service sector (Zhao et al. 2016).

Given the growing importance of the service sector in the economies of developed countries, interest in analyzing innovation in this area has increased (Chen et al. 2016). Although different perspectives coexist to approach the subject, there is no discussion about its special characteristics. Innovation in the tourism sector can be considered a continuous challenge due to the many opportunities available for companies to adapt to the new tourist profile (Stamboulis and Skayannis 2003) because they are more demanding, are better informed and they have achieved a level of empowerment that forces companies to adapt continuously to these changes (Chiang and Hung 2010; Voorberg et al. 2015). Consequently, the tourist sector should be able to offer unique and innovative experiences (Weiermair 2006) which connect them better with the market and maintain their competitive standing.

The literature that focuses on innovation in the tourism sector is still insufficient and is considered a pending field of development (Hjalager 2010: Gomezelj 2016; Marasco et al. 2018; Nordli 2017). The most notable gap is the lack of evidence on the innovation behaviour of tourism enterprises compared to industry and services in general (Cagica Carvalho and Sakar 2014). This pattern is repeated if we focus on Open Innovation. Most of the research is focused on the industry (Hossain and Anees-ur-Rehman 2015; Huizingh 2011), and the implementation of this paradigm is mainly shown in large companies (Xiaobao et al. 2013), being scarce on SMEs (Small and Medium Enterprises) (Van de Vrande et al. 2009; Wynarczyk 2013). Furthermore, the analysis of Open Innovation in tourism is practically non-existent (Hossain Anees-ur-Rehman 2015). In any case, recent studies have begun to detect the influence of customer participation in innovation as well as the need to establish platforms for the exchange of ideas and to create collaborative networks (Binkhorst and Den Dekker 2009; Croft 2016; Marasco et al. 2018).

Open Innovation widens the field into which investigation can delve deeper – even more so if it fits into the tourist scope as much from the academic as from the business scopes. Chesbrough (2003) introduced the term to refer to the permeability of the company towards stakeholders as a source of differentiation. It is about opening up the organization and creating spaces for collaboration with clients, suppliers and so on that makes the introduction of ideas and projects possible from the outside as part of the strategy itself. However, this proposal seeks to find the balance between internal (inbound) and external (outbound) capabilities to create opportunities and business value. Currently, Open Innovation

has penetrated the innovation strategy of companies but continues to be considered an emerging paradigm (Carroll and Helfert 2015) and is one of the most-debated topics in the field of management. Currently, Open Innovation continues to cause controversy because within a short time, several terms with common points are emerging and it is not easy to differentiate between them: Open Innovation, crowdsourcing and co-creation (Egger et al. 2014). In a very simplified form and as already mentioned, Open Innovation is a new paradigm for understanding innovation and its implementation takes many forms; among these stress crowdsourcing and co-creation. On one hand, Crowdsourcing consists of the resolution of a problem through the undertaking of a task of variable complexity and modularity that will imply the voluntary contribution of stakeholders with their work, money (in the case of crowdfunding), knowledge and/or experience (Estellés-Arolas and González-Ladrón-De-Guevara 2012). On the other hand, Co-creation can be defined as an interesting source of innovation as result of customers' experiences with products and services (Voorberg et al. 2015). Although it is true that any stakeholder could contribute to innovation and new product/service development.

However, tourism companies cannot develop R&D processes in the strict sense, as can be done in the industrial sector. Thus, it is more common to find references to innovation in tourism literature than R&D, due the peculiarities of this economic activity. According to Cagica Carvalho and Sakar (2014, p. 156) "tourism is not just based on the production of goods or services. Several intangible characteristics are embodied in individuals" and, that question creates more difficulties. In any event, the development of new services (NPS) and the need for continuous adaptation is not only interesting for researchers but also for international organizations that try to measure innovation in this sector (Hall and Williams 2008; Hjalager 2010; Nordli 2017). Furthermore, no one disputes the strategic value for competitiveness of R&D and innovation in service sector and, specifically in tourism (Gomezelj 2016). Their levels of innovation –understood through new services and product as well as technologies and new process for improve the whole service- may be conditioned by their capacity to open themselves to external sources, especially when this economic activity develops in what are called dependent contexts. In this sense, there are numerous studies that consider External Openness as natural consequence for companies in this situation (Cheng and Hiuzingh 2014). In line with the above, some recent studies in this field highlight that R&D in tourism implies that customer requirements were incorporated into companies in order to have an impact on long-run growth (Albaladejo and Martínez-García 2015). Consequently, companies are beginning to undertake this dynamic as a basis for value and as future innovation (Binkhorst and

Den Dekker 2009). In this way, the search for connections between R&D and new approaches to innovation management should be examined.

External Openness is the starting point for OI implementation. Openness “is a search strategy involving external channels of information that are used to innovate” (Wu et al. 2013, p. 705). For its part, External Openness is a result of the strong conviction that Market Orientation is a key factor for promoting innovation in companies (Atuahene-Gima and Ko 2001; Teirlink and Spithoven 2013).

The possibility that internal and external elements of the enterprise moderate the effect of Open Innovation begins to be treated in a differentiated way so that the orientation of the strategy, the location, the sector or the context of development of the economic activity acquire some relevance (Huizingh 2011). All this leads us to emphasize the interest of studying sectors of activity in a disaggregated way as well as to incorporate empirical studies, such as this one, which does not focus on the industry and which extends the vision of Open Innovation to the service field. The relevance of these issues has already been emphasized in previous studies, such as that of Laursen and Salter (2006), given that, in the light of their results, Open Innovation is affected in different ways, according to the sector and the specific technological context that affects it. Indeed, this point allows the highlighting of the possible contribution of this research work, because the analysis of Open Innovation in the service sector and, more specifically in tourism, is an under-represented area.

Emphasizing the shortage of investigations on Open Innovation and tourism, the companies in the sector are beginning to develop a special sensitivity to generating proposals with the collaboration of consumers (Von Hippel 2005). The consequence is the active stimulation of co-creation environments from which new solutions and ideas can be derived (Abbate and Coppolino 2011). In addition to the positive impact of the opening of the enterprise on its level of innovation, other positive effects are awareness, connectivity and reputation (Hossain and Kauranen 2016) and even the achievement of competitive advantages (Ernst and Brem 2017).

2.2. Relationship Between R&D and External Openness

The R&D level of the company is not always derived from the adoption of Open Innovation (Schroll and Mild,2012). In any case, it seems logical that those companies with a high level of innovation are more predisposed to opening to the outside, and therefore rely on the Open Innovation model. The literature

on the subject presents contradictory scenarios. According to Keupp and Gassmann (2009), when internal R&D is intense and well organized, Open Innovation is not so relevant. Studies such as Segarra-Ciprés et al. (2014) demonstrate precisely that R&D moderates its incorporation into the company's innovation strategy, as it already has sufficient capabilities (Grimpe and Kaiser 2010). Following this line of argument, openness takes place precisely to alleviate the deficiencies of resources, skills and knowledge; i.e., permeability gives them the innovations that they would not be able to raise and implement alone (Grimpe and Kaiser 2010; Keupp and Gassmann 2009; Spithoven et al. 2013). The direct relationship between increased R&D activity and the adoption of Open Innovation is the basis for this second group of studies (Cheng and Huizingh 2014). Evidence of the positive effect on the degree of innovation of companies adopting a Market and Entrepreneurship Orientation is collected in studies, such as Atuahene-Gima and Ko (2001) and Teirlinck and Spithoven (2013). In short, openness is more a strategic issue for the enterprise and not a matter of industry trends (Keupp and Gassmann 2009, p. 338), which are ideas emphasized in this paper and on which the first hypothesis is based.

H1. Tourism enterprises with greater investment in R&D and/or innovation are characterized by a higher degree of External Openness (EO).

2.3. Implementation of Open Innovation

Further refining the focus requires links to be made between External Openness and the implementation of Open Innovation in the company. Without doubt, the concept of openness is the angular basis of the conception of this emerging innovation paradigm (Von Hippel 2005). Cheng and Huizingh (2014) show that if the company is able to power Open Innovation as part of its strategy, it produces better results in terms of product and service innovation, as well as financial and consumer performance. In this line, studies that demonstrate the positive effect of Open Innovation on innovation performance have multiplied in the last decade. Most of the investigations concentrate on demonstrating how the combination of internal and external sources has a positive impact on enterprise performance (Wang et al. 2015; Zhao et al. 2016).

Nonetheless, opening to the market through Open Innovation involves difficulties. Each of the channels of collaboration requires the company's processes and practices to promote its effectiveness (Laursen 2011). In this sense, what makes it possible for Open Innovation to become a competitive weapon is to

establish protocols that collect inputs from the outside, and based on a series of management decisions, make it possible to produce significant outputs (innovation in services). Thus, Laursen and Salter (2006, p. 6) assert that “firms require the capability to absorb new ideas from external sources and then integrate them into their internal processes to achieve an innovation”. The need for systematization leads us to consider the implementation of Open Innovation in tourism from the perspective of management, which is widely recognized in the literature as being key for strategic-management and a preliminary step towards improving performance (Lichtenthaler and Lichtenthaler 2009; Tsai 2001). This decision makes it possible to know not only whether the companies consider the Open Innovation philosophy to be positive but also how they apply it, and on the other hand, it allows influence in a less developed area in the literature on the subject. In this sense, the approach of a hypothesis that links Open Innovation with management satisfies one of the gaps often indicated by management scholars to investigate how enterprises implement Open Innovation in practice.

H2. The degree of External Openness (EO) of tourism companies has a positive effect on the implementation of Open Innovation (OI) from the point of view of management.

2.4. Particularities of R&D Activity in Tourism and Open Innovation

As discussed above, tourism has some particularities in terms of R&D activity. So far, little has been done on the relationship between this strategic area of the company and the effective implementation of an Open Innovation Management model, and that is where this study looks to investigate. Weiermair (2006) specifies the positive effects of innovation in reducing production costs, enhancing marketing and providing product value. The tourism sector has a number of factors that encourage innovative activity, such as high competitiveness, changing scenarios (Najda-Janoszka and Kopera 2014), as well as the continuous demand for new experiences and tourist empowerment (Sigala 2012).

In this sense, it should be noted that the level of innovation demanded by the tourism company favours the adoption of Open Innovation, as is proposed in the following hypothesis:

H3 There is a direct relationship between the R&D activity developed by the tourism company and its level of implementation of the Open Innovation (OI).

Vanhaverbeke et al. (2008) affirm that a prerequisite for the implementation of Open Innovation in the company is to progressively increase the capacity to absorb and integrate the ideas and proposals of

the different key agents into the internal intelligence system. However, there is some debate about the motivations that lead an enterprise to implement this paradigm of innovation. While some consider that it responds to an offensive strategy to maintain competitiveness levels and generate a differential advantage (Van de Vrande et al. 2009), others argue that its adoption is a consequence of the weaknesses of the company to deal with its own innovation processes (Keupp and Gassmann 2009; Laursen and Salter 2006) or simply an effective formula for responding to cost of internal R&D and financial risk (Chesbrough 2012). Whatever the motivation, it necessarily implies opening up to the environment and being receptive to the suggestions and proposals of the different stakeholders, that is, applying Open Innovation to achieve a higher level of innovation.

2.5. The Potential of Social Media for Customer Involvement

In recent years, the penetration of the Internet and the connectivity between people through social media is indisputable. The power of the customer has increased as a result of the multiplication of online purchase options, available information, etc. (Hays et al. 2013). The incidence in the tourism field is especially remarkable because the travel-related decisions can be influenced by other. Searching and organizing their trips, as well as commenting and sharing experiences with others on their personal networks with which they relate, in online communities, or by using other collaborative tools (Leung et al. 2013; Wozniak et al. 2017). This is precisely where customer involvement comes in. This means interacting with customer in order to achieve better outcomes for the company at different stages of the new service development process (Carbonell et al. 2009; Fuller et al. 2009). Despite the growth of research in this topic, a review of the literature suggests that there is little empirical evidence about the effectiveness and outcomes of interacting with customers, even less focused on social media as co-creation environment to achieve it (Sigala, 2014; Carbonell et al. 2009; Wozniak et al. 2017). The opportunities not only benefit the consumer, but the tourism enterprise is also open to a wide range of options if it participates and manages 2.0 platforms (Binkhorst and Den Dekker 2009). Social media can support both the marketing area of the company (Hvass and Munar 2012) and the R&D department. These tools make it possible to apply Market Orientation strategy in an effective way (Jiménez-Zarco et al. 2011; Sigala 2012) and are presented as an ICT element and as a solid basis for incremental innovation of any service. Ultimately, the tourism sector could take advantage of co-creation via social media (Hays et al. 2013; Kietzman et al. 2011, Sigala, 2014). However, only very limited empirical work

attempts to look at the return of investment (ROI) of social media use in tourism organizations (Wozniak et al. 2017).

Greco et al. (2015) highlight that Open Innovation is often analyzed from a theoretical point of view and much less from the perspective of management –understood as the guidance and control of action required to put the innovation in the company into practice. Consequently, it provides an invitation for researchers and practitioners to delve deeper. Moreover, particular attention is paid to social media as support for innovation management, due to its potential as an interactive tool (Kaplan and Haentein 2010). Laursen and Salter (2006) understand that the implementation of Open Innovation goes through change in the way in which inspiration is obtained to develop new products, and the support of technology always facilitates this challenge. In addition, it must be aware of the active and intensive use of social media by tourists after the emergence of platforms, such as TripAdvisor or Lonely Planet. According to Chesbrough (2012), what is really important is to create platforms, architecture and systems that allow for openness to the outside. The nature of the social media makes it an effective tool for creating effective co-creation environments (Abbate and Coppolino 2011; Hays et al. 2013). Customer involvement is recognized as strategic practice for innovating, highlighting its contribution in New Product or Service Development (Sigala, 2012). Although further research is needed, attention has become more focussed on it in the last. Despite controversies about limitations of contribution of customers in innovation, web 2.0 seems to be a key tool in order to make the collaboration possible (Pitta and Fowler, 2005). So much so that the virtual environment, specifically social media, makes it possible that the customer plays an active role in NPD/NSD (Fuller et al. 2009).

It is worthwhile pausing to examine the concept of user-generated content (UGC). Blogs, webs forums, wikis, bookmarking sites, photo and video sharing communities, as well as social media platforms belonging to tourists and companies should be covered and taken into account in order to achieve the expected results. Currently, any consumer, but especially those in the tourism field, can create, modify, share and discuss Internet content, and they are often more trusted than official websites of destinations or tourism companies (Kaplan and Haenlein 2010; Kietzmann et al. 2011). It could be considered a chance to create channels of co-creation that allow tourism agents to put the OI paradigm into practice (Binkhorst and Den Dekker 2009, Jabreel et al. 2017). The use of social media in the tourism sector has

been widespread, which is evident in the residual percentage of companies that recognize staying out of this world (2%) (WTTC 2019).

However, in the Open Innovation literature, social media is not just seen as being a dynamic and interactive openness channel (Bugshan 2015). Although, in the last decade, the research focusing on tourism and social media has multiplied (Mkono and Tribe 2017), it has mainly focused on the incidence of social media and user-generated content from the perspective of marketing (Hvass and Munar 2012; Jabreel et al. 2017) and not how social media connects with Open Innovation. However, social media in tourism has started to garner the attention of scholars, but authors, such as Leung et al. (2013) in their review of the literature, conclude that this subject is still a long way from finding its maturity. It would appear that this field continues to lack empirical evidence that allows understanding of social media platforms and usage related to tourism (Hays et al. 2013; Minazzi 2015; Wozniak et al. 2017). According to this theoretical basis, this study analyzes the influence of social media, especially in relation to how companies establish relationships with customers through a particular channel. The degree of openness is evidenced by the established collaboration with the outside, for example, the number of sources of external knowledge contemplated, as well as the intensity of collaboration with each of these sources (Laursen and Salter 2006).

However, the literature shows that the use of different Internet tools improves market intelligence, so to some extent, these platforms allow the establishment of a continuous source of communication between the consumer and the enterprise. Finally, social media allows the implementation of a Market Orientation strategy (Jiménez-Zarco et al. 2011; Sigala 2012; Pitta and Fowler, 2005) and is an excellent way to take advantage of collective intelligence on what could have a strong impact on the innovative activity of the company (Bugshan 2015; Ernst and Brem 2017). The theoretical framework is finalized with the proposal of a last hypothesis linked to social media as a key element for the openness of tourism companies:

H4. The number of social media platforms (SM) from which the company manages to incorporate ideas from the outside influences the level of External Openness (EO) and increases the implementation of Open Innovation.

Figure 1 shows the different models, as well as the relationships between R&D, External Openness (EO), Open Innovation Management (OIM) and Social Media (SM) variables, which reflect the hypotheses and provide the basis for the proposed SEM analysis to validate them.
It should be stressed that the comparison between models is adopted because they seem complementary at the empirical level and it allows for working with a competing models strategy. According Hair et al. (2014, p. 542) it is necessary to use "a modeling strategy that compares the proposed model with a number of alternative models in an attempt to demonstrate that no better-fitting model exists. This approach is particularly relevant in structural equation modeling, because a model can be shown only to have acceptable fit, but acceptable fit alone does not guarantee that another model will not fit better or equally well". For this reason, the models are compared following the nested model methods for SEM because "a powerful test of alternative models is to compare models of similar complexity, yet representing varying theoretical relationships. A common approach is through nested models, where a model is nested within another model if it contains the same number of variables and can be formed from the other model by altering the relationships, such as either adding or deleting paths" (Hair et al. 2014, 587).

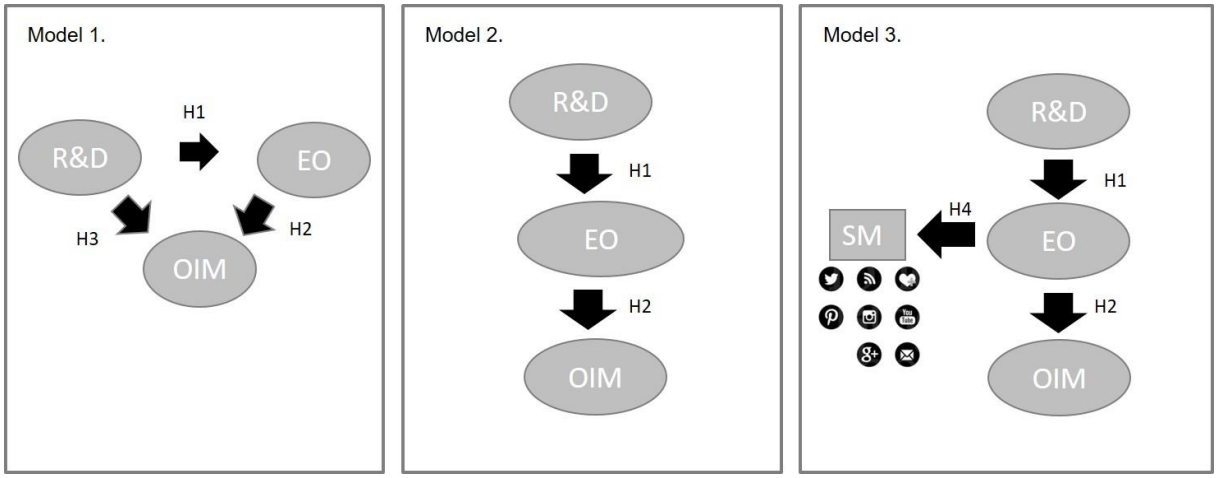

Figure 1. Models and relationships between variables
Source: Authors

Model 1 recognizes the influence of R&D on OE (H1) and the latter on Open Innovation Management (H2) as well as the direct effect between R&D and OIM (H3). In Model 2, the only thing that varies is that the direct influence of R&D on OIM (H3) is not considered, but an influence modulated by the degree of openness is posed. Finally, Model 3 incorporates social media (H4) as a support tool for openness.

3. Methods

3.1. Variables and Measuring Instrument

The objective of this research is to understand how companies from the south of Portugal and Spain face innovation management by testing a number specific of variables, such as their permeability to External Openness and their level of assimilation of Open Innovation. Based on the above, the survey was modelled based on three main studies. Atuahene-Gima and Ko's (2001) study is used to measure the orientation of enterprises to the market and to entrepreneurship (innovation), while to conceptualize Open Innovation, the main reference is the study of Laursen and Salter (2006). On the other hand, the items related to the company's R&D activity are derived from the proposal of the OECD (2015).

The survey was structured into five blocks.

- Firms' Characteristics (FC). This block analyzes the profile of the companies according to their dimension by turnover and type of tourist enterprise.
- R&D. The items in this section are focused on knowing the importance of innovation, effectiveness and the perceived profitability of innovations.
- External Openness (EO). The issues included are aimed at knowing the degree of openness to the tourist for the development of new products and services.
- Open Innovation Management (OIM). This includes questions that show how tourism companies implement Open Innovation in their business model. The business community recognizes the benefits derived from customer involvement, but specific mechanisms are not always put in place to make this possible, despite this generalized perception. The reason for this is based on the focus of the Open Innovation block from a management perspective. In this sense, specific questions are included that show the degree to which there are mechanisms, measurement indicators, incentives for participation and feedback of the best proposals, amongst others.
- Social Media (SM). According to the proposal of Laursen and Salter (2006), in which the concepts "breadth" and "depth" are used, this research asks about the social media used by the companies of the sample. Following this theoretical basis, as more sources of openness to the outside are used (breadth), in our case, restricted to social media, a greater level of implementation of Open Innovation is verified. As for the second concept, depth, given that it measures the intensity of use of social media, we use the

previous block of questions related to Open Innovation Management. In any event, it should be clarified that the variable “Depth” is only chosen based on Laursen and Salter (2006), Keupp and Gassman (2009) and Chiang and Hung (2010). Although the variable “Breadth” to the truth is often referred to, it doesn’t match in this study because everthing is focused on how Open Innovation is perceived and developed by the companies and the individual perception in companies that could introduce a bias in the results.

To perform the survey, a Likert scale was used with values between 1 and 7. 1 was always the lowest degree of agreement, importance or implementation and 7 is the highest one in the answers. Moreover, in order to clarify the specific meaning of the values linked in each, a clarification in their statement was included from question 4 to 16. Respondents should select a number in a scale from 1 to 7 in the survey.

Table 1. Survey

Construct	Item
Firms’ Characteristics (FC)	1. Nationality (N)
	2. Classification of the activity (CA)
	3. Turnover (€)
Research & Development/ Innovation (RD)	4. What level of effectiveness do you attribute to the innovations introduced by your company? (RD1)
	5. What level of effectiveness do you attribute to the innovations introduced by your company? (RD2)
	6. What level of profitability do you attribute to the introduction of new tourist products/services? (RD3)
External Openness (EO)	7. What level of importance do you attribute to share/connect and leverage of the marketing and innovation information? (EO1)
	8. What level of importance do your human resources attribute to innovation? (EO2)
	9. What level of importance does your company attribute to the participation of the consumer in new product development? (EO3)
	10. What level of importance do you attribute to the involvement of other stakeholders (suppliers, intermediaries, etc.) in new product development? (EO4)
Open Innovation Management (OIM)	11. At what level did your company establish a model of Open Innovation Management (defined processes, indicators systems, results measurement etc)? (OIM1)
	12. Has your company established incentive mechanisms for increasing participation of consumers with the support of social media to detect new ideas and, in consequence, improve your products and services? (OIM2)
	13. Does your company start with identification of innovation needs to motivate and manage the participation in social media? (OIM3)
	14. Does your company answer any customers’ proposals, especially if they are useful to create a new product or service? (OIM4)
	15. Has your company established a system of indicators to evaluate the useful and profitability of customer involvement? (OIM5)
	16. Has your company established some reward for customers who propose the most interesting questions? (OIM6)
Social Media (SM)	17. Number of social media platforms (Number)
	18. What social media does your company use? (WSM)

Each questionnaire also provides an explanation of what Open Innovation is to ensure companies' understanding. The given definition is based on Chesbrough (2003) in which Open Innovation is understood as the use of purposive inflows and outflows of knowledge to accelerate level of innovation in the company and to get more engagement through stakeholder involvement, especially tourists.

Additionally, the validity of the questionnaire items was checked drawing on collaboration of the most representative associations in the tourism sector in the South of Portugal and South of Spain.[1] Moreover, this pilot test was useful to enhance the degree of understanding of the questions, as well as to adapt some terms to engage better in tourism.

3.2. Processing methods and data collection

The analysis of Open Innovation in the tourism and hospitality industry from the case of Spain and Portugal is justified by the representativeness of this sector on global economic activity. According to the OECD (2015), both are among the European countries most dependent on tourism; in both cases, the contribution of this economic activity to GDP exceeds 15% and represents 15.2% and 18.4% of national employment, respectively (World Travel Tourism Council – WTTC 2019). Notably, when focusing on tourism innovation, 80.6% of the total companies invest in innovation and approximately 6% of their turnover is dedicated to R&D. In a disaggregated way, the Algarve in Portugal and the Costa del Sol in Spain are areas of great affluence and tourist impact on the whole of these countries. On one hand, the Algarve is the second destination by number of tourists and economic activity generated (INE 2016). Also, the southern part of Spain occupies second place in the ranking and specifically, the Costa del Sol is the region of the Andalusian autonomous community that contributes most to tourism, both by number of travellers and by turnover. It is worth mentioning the contribution of this study in relation to two main issues: the multi-country approach and the choice of the tourism sector. On one hand, the study of the phenomenon in two countries not only allows a comparison that adds value to the research, but also follows the suggestions of future lines of research proposed in previous studies. So far, the percentage of multi-country investigations remains comparatively lower than those that were chosen for

[1] Association of Hoteliers of the Costa del Sol (AEHCOS), Association of Business & Leisure Centres of the Costa del Sol (APECO), Convention Bureau Málaga, Association of Active Tourism of Málaga (ASOTURA), Business Association of Travel Agencies (AEDAV), The Algarve Tourism Association (ATA)

analysis. However, above all else, the study tests how Open Innovation is implemented in the tourism sector seeking links between this approach, with the awareness of R&D and with an openness strategy. Additionally, social media is introduced to understand the new scenarios of stakeholder's relationships management in tourism better. There are no precedents in the field of Open Innovation, specifically in tourism with a multi-country perspective, so it should be highlighted as a main insight.

Open Innovation has been examined by limiting it to only one country, 26% versus 74%, according to the comprehensive review conducted by Hossain and Anees-ur-Rehman (2015). Furthermore, according to the results of the review by Hossain and Anees-ur-Rehman (2015), there are no investigations in the Web of Science database on Open Innovation focused on tourism. As a result, the contribution of this research can complete the overview of the implementation of Open Innovation in a sector that is under-represented in the literature and that, because of its casuistry, is especially interesting for the adoption of this paradigm (Huizingh 2011).

As demonstrated above, the questionnaire was distributed via e-mail with a link to an online survey include in the body of the message. A general manager or R&D manager was requested to respond to the questionnaire. In order to identify the sample group to be investigated, we made a list of companies operating in the sector in each objective region on the basis of official statistics drawn up in Spain and Portugal, the public boards of tourism companies, especially on official websites of tourism and the information provided by many (sectoral) business associations.

Data was collected between 2016 and the beginning of 2017. During 2016 the collection of data was carried out and in the last four months all the information was analyzed. It should be emphasized that in view of the response rate, in February 2017 it was decided that a second wave of questionnaires was necessary to improve the results and to enhance the statistical analysis.

In the first phase, 135 responses were obtained and 46 were received in the second phase. The second phase was conducted to address possible non-response bias. This methodological decision on the sample was made under the assumptions of simple, random sampling, which assumes that the error is of 7.3% with a confidence of 95% and under the assumption of maximum indeterminacy ($p = q = 0.50$). In summary, the sample a priori consisted of 347 companies, since 181 companies answered, the percentage of non-response was 47.85%.

In order to evaluate the non-response bias, the possible differences between the respondents of the first phase and the second one have been investigated, assuming that respondents in the second phase have more in common with the non-respondents than with the respondents of the first phase (Armstrong and Overton 1977). In particular, the variables that give us the characterization of the company have been investigated, in order to observe if the enterprises that did not answer are different from those that had done so. This is how the differences in the two phases are observed, with respect to the qualitative variables, nationality and activity of the company and on the quantitative variables, turnover and number of social media platforms. The chi-two test of homogeneity was used for the former variables, confirming that both samples show homogeneous behaviours (p-values 0.337 for activity and 0.087 for nationality). With respect to the second variables, the ANOVA test also shows that the characteristics of the companies that answered in the first phase with respect to the second phase do not vary in turnover (p-value 0.586) or in the number of social media platforms they use (p-value 0.723). In short, the absence of evidence of non-response bias is demonstrated in the usual way in which these tests are performed in the literature on the subject (Kidwell and Fish 2007).

Regarding the structure of the sample and with respect to the activity, the tourist lodges were concentrated in the majority of the sample (37.8%), followed by enterprises organizing tourism activities at the destination as active tourism companies, cultural tourism or nautical activities (14.8%). For their part, travel agencies and companies dedicated to thematic tourism (cultural tourism, senior, health and ecotourism) represented nearly 12%, closely followed by tourist facilities that include spas, health and beauty centres, golf resorts and marinas, which together make up 11.1%. Regarding nationality, 65.7% of the companies correspond to establishments in the South of Spain, in accordance with the greater business dimension of this area. In relation to the dimension of the enterprises, the evidence shows that small companies predominate, and there is a significant representation of SMEs, with limited economic results; specifically, 36% of companies have a turnover of up to € 250,000, and only 6% exceed € 7,500,000.

4. Results

The empirical comparison of the formulated hypotheses of this investigation was carried out using Structural Equation Models (SEM) to analyze data collected from a survey. The most-used technique for the study of Open Innovation has been regression analysis of different types (OLS, tobit, probit, binomial, amongst others), followed by structural equations models, which, due to its advantages for this type of analysis, has displaced other statistical techniques in recent years (Hossain and Anees-ur-Rehman 2015). Opting for a structural equation model gives greater flexibility to the regression models, since they are less restrictive, allowing us to include both measurement errors in the dependent variables and the independent ones and, particularly, because of their ability to measure the direct and indirect effects among factors. Moreover, it should be emphasized the nested models allow comparison of the fit between three different models in a competing strategy. According to Hair et al. (2014), nested modelling is a powerful option in SEM.

Before applying this multivariate technique, it is important to analyze the correlations between the different items of the survey at a univariate level.

4.1. Descriptive Analyses

Table 2 presents the averages and standard deviation per item. It is observed that the relative dispersion is small in all items, so the averages are representative, and no treatment of atypical data is needed. In addition, it shows how the averages, in general, oscillate around 5 or 7, but they are somewhat lower in the case of the variables corresponding to OIM4. This block of variables presents a differentiated behaviour with a decline in the scores that can be based on the type of items that make it up. Following the study of Hossain and Kauranen (2016), enterprises, especially SMEs, are receptive to Open Innovation, but they are currently in the phase of implementation and co-creation of specific mechanisms for putting it into practice. Thus, since these questions characterize how the Open Innovation paradigm materializes, it seems logical that there is a greater absolute and relative dispersion of the associated values.

Table 2. Descriptive statistics and correlation matrix

	mean	SD	RD1	RD2	RD3	OE1	OE2	OE3	OE4	OIM 1	OIM 2	OIM 3	OIM 4	OIM 5	OIM 6
RD1	5.91	1.15													
RD2	5.41	1.06	.394***												

RD3	5.25	1.09	.231***	.354***											
EO1	5.26	1.54	.403***	.379***	.312***										
EO2	5.06	1.73	.286***	.245***	.145*	.601***									
EO3	4.98	1.63	.283***	.201**	.175**	.374***	.622***								
EO4	5.35	1.39	287**	.272***	.306***	.253***	.242***	.330***							
OIM1	3.90	1.83	.040	.067	.140*	.291***	.210**	.204**	.112						
OIM2	4.00	1.89	-.033	.165*	.172**	.191**	.310***	.276***	.288***	.572**					
OIM3	4.10	1.79	.075	.323***	.183**	.223***	.213**	.316***	.282***	.638**	.751**				
OIM4	4.75	1.62	-.010	.089	.162*	.002	.021	.101	.305***	.221**	.455**	.521**			
OIM5	4.13	1.91	.046	.099	.101	.291***	.273***	.251***	.137*	.723**	.637**	.594**	.324**		
OIM6	3.86	1.97	-.025	.120	.156*	.191**	.217**	.172**	.192**	.602**	.674**	.551**	.414**	.674**	
SM	2.31	1.20	.149**	.149**	.180**	.145*	.140*	.202**	.201**	.034	.093	.109	.186*	-.013	.042

Note: Unilateral p-value * p< 0.05 ** p<0.01 ***p< 0.001

Source: Authors

Finally, the exogenous Social Media (SM) variable, prior to its introduction in the proposed model, is related to External Openness (EO). According to Laursen and Salter (2006), the number of social media platforms is used to show the extent to which tourism companies are permeable to the outside world.

4.2. Structural Equation Modelling

Structural equation modelling (SEM) analysis of the survey was undertaken using the AMOS program (version 24). SEM was selected as the statistical methodology because of its several advantages over regression modelling, including its more flexible assumptions, use of confirmatory factor analysis to reduce measurement error by having multiple indicators per latent variable or construct (survey), the desirability of testing models overall rather than coefficients individually, the ability to test models with multiple dependents (in this case three dependent variables: EO, numbers of social media platforms and OIM), the ability to model mediating variables rather than be restricted to an additive model, as in regression (EO includes the influence of RD on OIM), the ability to model errors terms and the desirability of its strategy of comparing alternative models to assess relative model fit. So, three alternative models are presented.

Before applying SEM, the data was checked to ensure it meets the assumptions that the technique requires and the estimation method that we are going to use, Maximum Likelihood (ML). First, “it is generally accepted that the minimum sample size is 100 to 150” (Hair et al. 2001, p. 632). The data set has responses from 181 companies, more than meeting the requirements of SEM.

Another important assumption is normality, which the AMOS program allows the checking of through the coefficients of skewness and kurtosis, which is kept within the acceptable range of ±2 (Schumacker and Lomax 2010). Reliability and discriminant validity are initial tests relevant to SEM. Reliability analysis of the final constructs indicated that all measurement scales exceeded the 0.7 threshold for Cronbach’s α, therefore, demonstrating a satisfactory internal validity, except in a case that is somewhat minor. A list of all latent variable items, their standardized factor loadings and the α for each scale are presented in Table 3 (some problematic items have been removed from the analysis).

Table 3. Measurement model and Cronbach’s alpha

Item	Standardized factor loading	α Cronbach
RD1	.614**	.590
RD2	.647***	
RD3	.463***	
EO1	.704***	.738
EO2	.812***	
EO3	.690***	
EO4	.403***	
OIM1	.711***	.885
OIM2	.836***	
OIM3	.896***	
OIM4	.538***	
OIM5	.726***	
OIM6	.836***	

Note: Significant difference at 0.1% (***), 1% (**) or 5% (*).

Source: Authors

For the last test, a Harman’s one-factor test was conducted to examine the discriminant validity. Results indicate that no single method factor exists, as the first factor accounts for less than 50% of the variance; the first factor exactly retains 35.213% of the information. Thus, “common method bias does not appear to be a significant problem” (Koropp et al. 2014, p. 8).

Having verified the validity of the assumptions, it is now applied, and the technique and data analysis follow a two-step approach using SEM (Anderson and Gerbing 1988). Firstly, model accuracy is assessed using a measurement model. Secondly, the path relationships are analyzed. Table 3 shows the measurement model; the constructs are grouped appropriately, and the indicators are always positive, and, although their standardized coefficients are not always as high as those desired, they are always highly significant. In addition, the fit is correct, as can be seen in Table 4, in which the values of the adjustment of the confirmatory factor analysis or measurement model (row of CFA) are shown (along with others).

Studies using SEM rely on a variety of fit indices for evaluating model goodness. It is common to use GFI (goodness of fit index) indexes and RMSEA (root mean square error of approximation) and several others, like Aloini et al. (2015). In order to give greater rigour to the analysis, Garson's (2015) recommendation "recommends reporting chi-square (CMIN) are followed, RMSEA, and one of the baseline fit measures (NFI, RFI, IFI, TLI, CFI); and if there is model comparison, also report one of the parsimony measures (PNFI, PCFI) and one of the information theory measures (AIC, BIC, CAIC, BCC, ECVI, MECVI)", also advising to put a note in the table to remember the conventional cut-off used.

Table 4. Fit indices

	Fit indices					
	CMIN/df	GFI	RMSEA	CFI	PNFI	AIC
CFA	2.680	0.880	0.097	0.898	0.653	222.770
Model 1	2.680	0.880	0.097	0.898	0.653	222.770
Model 2	2.120	*0.904*	0.079	*0.933*	0.667	*189.119*
Model 3	*1.958*	0.897	*0.073*	0.931	*0.680*	206.996
Rules (good fit)	CMIN / df < 5	> 0.9	< 0.1	> 0.9	> 0.5	Smaller is better

Note. CFA is the confirmatory factor analysis or measure model
Model 2 includes EO as mediating effect on OIM
Model 3 includes Social Media related with EO
Source: Authors

The good fit of the measurement model suggests that the survey respondents were able to distinguish between the latent variables. Therefore, advancement could be made to the second part, testing the hypothesized model depicted in Figure 1. Firstly, only the relationships between the constructs based on the survey (RD, EO and OIM, Model 1 and Model 2) are observed, to later and successively add the exogenous variable number of social media platforms (Model 3). The results, in terms of coefficients, are shown in Table 5. The coefficients of the relationship between the variables are always positive,

provided that the relationship is significant, as was expected according to the hypotheses raised in this study. Table 4 shows the level of fit of the models, and all of them are sufficient.

However, in Model 1, the relationship between RD and OIM is shown to be non-significant (p-value=0.512), and the adjustment level is lower than in Model 2, which indicates that the influence of innovation (RD) on the Open Innovation Management (OIM) is only possible through External Openness (EO); since, if it does not exist, it breaks the circuit, not allowing the influence of innovation (RD) to pass through to Open Innovation Management (OIM).

Table 5. Summary of hypotheses

Hypothesis	Predicted Influence	Standardized path coefficient		
		Model 1	Model 2	Model 3
H1. R&D (RD) → External Openness (EO)	+	.637***	.626***	.628***
H2. External Openness (EO)→ Open Innovation Management (OIM)	+	.425**	.332***	.339***
H3. R&D (RD) → Open Innovation Management (OIM) Direct Effect	+	-.093		
H4. External Openness (OE) → Social Media (SM)	+			.217**

Note 1: Significant difference at 0.1% (***), 1% (**) or 5% (*).
Note 2: Model 1 lists the lineal relation between RD, OE, OIM.
Model 2 proposes OE as the mediating effect on OIM.
Model 3 includes SM related to EO.
Source: Authors

The use of the structural equations allows us to understand that, between the two alternative models presented, both are correct in their adjustment levels, Model 2 is better, since it always yields significant coefficients, with the correct sign and higher adjustment levels (see Table 5). In this model, the standardized coefficients are 0.626 to quantify the influence of RD on EO and 0.332 for EO on IMO4, both significant at any level of significance and positive. Model 3 enriches Model 2 with the addition of the variable number of social media platforms used by the company. The hypothesis that was formulated on this aspect (Hypothesis 4) established that the greater External Openness of the enterprise (EO) influenced the number of social media platforms used by the company, since the tourist sector actually imposes that the openness is manifested through the use of the Internet. The standardized coefficient for this relationship is 0.217 (p-value=0.005), and although it cannot be said with complete confidence that adding the social media variable increases the explanatory capacity of the model (Model 3) with

respect to the model that does not introduce it (Model 2), it cannot be said otherwise, and there is no doubt that the EO relationship with social media is significant.

Figure 2 presents the model that shows the relationship between the RD variable and OIM through the mediating effect of EO (Model 2) and the one that enriches this scheme with the introduction of social media (Model 3).

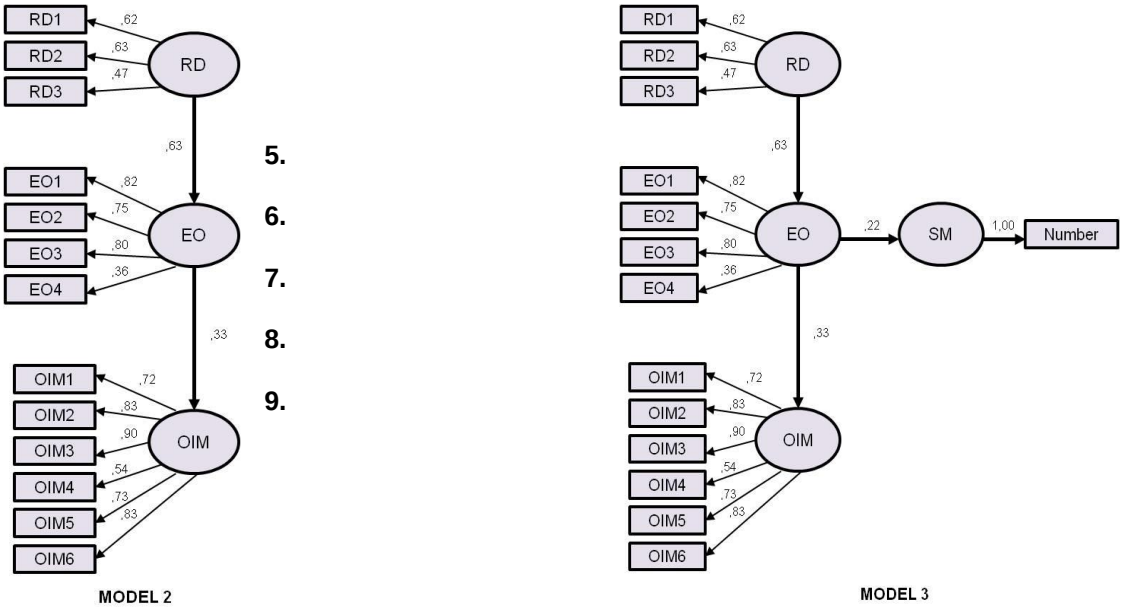

Figure 2. Path diagram Models 2 and 3
Source: Authors

5. Discussion and conclusions

The results of this study confirm that Open Innovation is a strategy that requires the establishment of effective communication channels to the stakeholders. Their involvement in innovation processes means that suggestions are implemented. Further to this, openness and permeability results in Open Innovation when it is not a corporate philosophy and it becomes a business practice, according to what was proposed in Hypothesis 1 and in line with the studies of Laursen and Salter (2006) or Teirlinck and Spithoven (2013). The adoption of this paradigm can benefit internal R&D activity, but as shown in this research, there is no direct relationship between a higher level of R&D and the implementation of the management model of this type of innovation (H3), since the relationship is through the mediating effect of exterior openness as result of evidences of Hyphotesis 1 and H2, in line with studies such as Vanhaverbeke et al. (2008).

This investigation demonstrates that the most receptive companies abroad have developed an Open Innovation Management model that supports this new perspective, confirming Hypothesis 2 (H2). It is precisely this approach to management that is one of the topics that continues to be most debated in the present and, by extension, one of the contributions of this study. The conviction of the positive effects of Open Innovation seems to be amply internalized, and instead, the channelling of efforts, processes and indicators that organize and structure this external knowledge to achieve a better performance of innovation is in practice a pending issue (Chen et al. 2016). The previous studies conducted already pointed to the relationship between External Openness and level of innovation were a point of departure to implement a new vision in innovation management (Albaladejo and Martínez-García 2015; Binkhorst and Den Dekker 2009; Gomezelj 2016; Wu et al. 2013).

Another key result is the usefulness of social media to make the Market Orientation strategy effective, according to Hypothesis 4. The introduction of the social media variable is relevant in the model. In this sense, these 2.0 tools facilitate contact with the outside, to collect ideas that can be transferred to the development of new products (NPD) or services (NSD); these conclusions are in line with those obtained by the study of Bugshan (2015). At the moment, the majority of use of social media in the literature is more related to marketing and communication objectives of the target markets (Havss and Munar 2012; Hays et al. 2013), while in this study, it is related to innovation management. Following this line of argument, it is worth noting that the tourism sector uses social media, but it is not yet fully certain of its benefits, either in return for investment, for marketing purposes (Hvass and Munar 2012; Wozniak et al. 2017) or from the point of view of innovation (Wang et al. 2015; Zhao et al. 2016). The level of openness through the social media use of the enterprises in the sample may be a consequence of the positive perception regarding innovation. In any case, it is possible that, as in the study of Ernst and Brem (2017), the direct impacts have not always been measured, and the results are not desirable, but the degree of penetration of social media predicts a scenario of collaboration with the consumers, which is increasingly shown in the most recent literature (Jabreel et al. 2017; Kaplan and Haenlein 2010; Lei 2017).

The research approach satisfies some of the gaps detected in previous literature, such as increasing the number of papers that contemplate a multi-country perspective and delving into the Open Innovation phenomenon with quantitative studies whose sample units are companies (Hossain and Anees-ur-

Rehman 2015). However, it is still a pending subject to develop studies that do not focus on the industrial sector, especially in high-tech companies, and to perform analysis in disaggregating sectors (Huizingh 2011) to see if there are differences in their implementation derived from the nature of the activity (Wang et al. 2015). Focusing on tourism, Abbate and Coppolino (2011) emphasize that the particularities of the sector imply a different approach in the management of innovation, an issue that is verified with the research carried out. In addition, the choice of the tourism and hospitality industry cover one of the least developed fields in the Open Innovation literature (Hossain and Anees-ur-Rehman 2015; Bounicontri et al. 2017).

In summary, this research shows that the relationship between R&D activity and Open Innovation Management is produced through External Openness. The first connection is shown by Cheng and Huizingh (2014), while the effect of External Openness as strategy for increasing innovation level is highlighted in research works such as those by Atuahene-Gima and Ko (2001) and Teirlinck and Spithoven (2013). However, the novelty introduced into this study is the identification of the relationship structure between the variables, noting the mediating effect of External Openness. It responds to one of the questions raised by Huizingh (2011, p. 1), “to build path models to understand chains of effects”. In short, tourism companies show a higher rate of implementation of Open Innovation if the corporate culture is permeable to the environment and has systems and procedures for customer involvement. Finally, the introduction of the social media variable better explains the orientation towards the outside of the tourism sector, which is in line with Lei (2017). These 2.0 communication platforms become supporting mechanisms for the implementation of this philosophy and, therefore, the basis for the implementation of this new paradigm from the point of view of management. Furthermore, using social media with this goal can contribute to putting Open Innovation into practice through crowdsourcing and co-creation in the tourism sector in an efficient way. This idea agrees with Binkhorst and Den Dekker (2009) and Jabreel et al. (2017), who signal that as a challenge in destination and tourism enterprises management.

This study reveals many practical implications for the tourism sector and, by extension, for the management of tourism destinations. One of the most important practical implications for companies is that Open Innovation requires the preview assimilation of strategic guidelines, such as External

Openness and the mediated effect of R&D activity on it. In brief, Open Innovation should not be a conceptual point of view in companies, it needs to be reinforced with other strategic decisions. Above all, the efforts must go hand in hand with a management perspective if an effective change in the company is desired. On the other hand, there is a need to appreciate the potential social media has for furthering tourist relationship management and branding, in particular the contributions on the innovation level. Consequently, the encouragement and the management of conversations generated on social media could be a tool for competitive improvement in innovation management in the tourism sector. According the results, although companies have come a long way, much more remains to be done in order to achieve the expected results. Tourism companies interested in underscoring by their innovation should establish channels of involving stakeholders. Firstly, social media is a strategic tool and UGC becomes a valuable source of gathering ideas for improving, innovating and differentiating in the sector. The qualitative leap would be made when Open Innovation was not only a philosophy but was implemented defining channels, systems of evaluation, integration and measuring its performance. At the present time, Open Innovation is appreciated but it is not always implemented and takes social media into account even less. Currently, these tools are more used for engaging and branding and hardly ever as a systematic way for innovating. Moreover, this approach is especially interesting for SMEs because with fewer resources they can show a competitive level of innovation thanks to customer involvement. This idea coincides with Odriozola-Fernández et al. (2019) but it requires ongoing effort and the participation of the whole company.

In a strategic approach, Open Innovation offers to tourism sector a new dimension, which increasingly reflect the perspective of stakeholders' involvement. It is highly recommended to adopt an integrated and strategic approach to innovate with the support of them in order to be more competitive. Moreover, it enhances a much-improved channels and co-creation spaces which are needed to provide management information for decision-making in order to achieve desirable innovation outcomes.

This research is not free of limitations, and these issues will be related to the challenge for future research directions. In the first place, the contributions of this study are eminently empirical, so it is advisable to make comparisons with other sectors of activity and deepen the focus on the tourism sector. However, including companies from other countries is desirable, as is extending the sample to include other tourist regions in Spain and Portugal. Likewise, in future research tourist subsectors might be

included to ascertain if different activities can determine strategy and approach in innovation and openness. In applying SEM it would be possible to identify paths of behaviour based on this variable categorization. Anyway, in this first approach, tourism is considered an economic activity consisting of a set of several and varying types of ventures: accommodation, transport, hospitality services, leisure activities etc. Therefore, it should be understood as an integrated whole and sub-sectors have not been a criteria of disaggregation of the sample. Also of note, the response rate in this survey is only 52.16%, and although it is clearly superior to other studies in the tourism sector that have rates of 12% to 26% (Kidwell and Fish 2007; Haemoon 2003; Weaver 2012; Duman and Mattila 2005), it remains low. Although the differences of response are tested on four key variables (nationality, activity of the company, turnover and number of social media platforms) and no apparent evidence of non-response bias is found, its non-existence cannot be completely guaranteed. Therefore, researchers should evaluate the results of the study cautiously.

Future research should explore the evolution of the use of social media as an element of support for the management of innovation, as a key aspect to strengthen Market Orientation and the permeability to the environment and to verify whether the results are solved in a similar way to those obtained in this study. Also, it could add information to the analysis to jointly contemplate, not only the number of social media platforms employed, but also the intensity and types of uses of them. This proposal would also be in line with the research of Laursen and Salter (2006). However, a thorough and qualitative method of analysis would be necessary to collect data properly for this variable (Chiang and Hung 2010). Likewise, this study shows that opener companies are aware of tourists´ involvement and, consequently, they establish channels to put Open Innovation into practice but there is no evidence about whether that means better performance in innovation. This is precisely a future line in which to further develop the research.

Another issue to consider in the future is the performance analysis derived from Open Innovation (Wang et al. 2015; Zhao et al. 2016). Companies are aware of the need to improve the implementation of Open Innovation from the point of view of management, as well as to increase the performance of social media to collaborate with tourists. This issue will support future research, so that it is possible to demonstrate the maturity of Open Innovation in the tourism sector. In this sense, it is necessary to keep advancing

the analysis of the Open Innovation phenomenon and its effects on competitiveness, both from the point of view of the investigation and of tourism companies.

6. References

Abbate T, Coppolino, R (2011) Knowledge creation through knowledge brokers: some anecdotal evidence. Journal of Management Control 22(3):359–371. http://dx.doi.org/10.1007/s00187-011-0144-5

Albaladejo IP, Martínez-García MP (2015) An R&D-based endogenous growth model of international tourism. Tourism Economics 21(4):701-719. https://doi.org/10.5367/te.2014.0379

Aloini D, Pellegrini L, Lazzarotti V, Manzini R (2015) Technological strategy, open innovation and innovation performance: evidences on the basis of a structural-equation-model approach. Measuring Business Excellence 19(3):22–41. http://dx.doi.org/10.1108/mbe-04-2015-0018

Anderson JC, Gerbing DW (1988) Structural equation modeling in practice: A review and recommended two-step approach. Psychological bulletin, 103(3), 411. http://dx.doi.org/10.1037/0033-2909.103.3.411

Armstrong JS, Overton TS (1977) Estimating nonresponse bias in mail surveys. Journal of Marketing Research 14(3):396-402. http://dx.doi.org/10.2307/3150783

Atuahene-Gima K, Ko A (2001) An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. Organization Science 12(1):54-74. http://dx.doi.org/10.1287/orsc.12.1.54.10121

Binkhorst E, Den Dekker T (2009) Agenda for co-creation tourism experience research. Journal of Hospitality Marketing & Management 18:311-327. https://doi.org/10.1080/19368620802594193

Buonincontri P, Morvillo A, Okumus F, Van Niekerk, M (2017) Managing the experience co-creation process in tourism destinations: empirical findings from Naples. Tourism Management 62:264-277. https://doi.org/10.1016/j.tourman.2017.04.014

Bugshan H (2015) Open innovation using Web 2.0 technologies. Journal of Enterprise Information Management 28(4):595–607. http://dx.doi.org/10.1108/jeim-09-2014-099

Cagica Carvalho LM, Sarkar S (2014) Market structures, strategy and innovation in tourism sector. International Journal of Culture, Tourism and Hospitality Research 8(2):153–172. http://dx.doi.org/10.1108/ijcthr-05-2013-0031

Carbonell P, Rodríguez-Escudero AI, Pujari, D. (2009) Customer involvement in new service development: An examination of antecedents and outcomes. Journal of product innovation management, *26*(5), 536-550. https://doi.org/10.1111/j.1540-5885.2009.00679.x

Carroll N, Helfert M (2015) Service capabilities within open innovation: revisiting the applicability of capability maturity models. Journal of Enterprise Information Management 28(2):275–303. http://dx.doi.org/10.1108/jeim-10-2013-0078

Chen KH, Wang CH, Huang SZ, Shen GC (2016) Service innovation and new product performance: the influence of market-linking capabilities and market turbulence. International Journal of Production Economics 172:54–64. http://dx.doi.org/10.1016/j.ijpe.2015.11.004

Cheng CCJ, Huizingh EK (2014) When is open innovation beneficial? The role of strategic orientation. Journal of Product Innovation Management 31(6):1235–1253. http://dx.doi.org/10.1111/jpim.12148

Chesbrough H (2003) Open innovation - The new imperative for creating and profiting from technology. Boston, Massachusetts

Chesbrough H (2012) Open innovation: where we've been and where we're going. Research-Technology Management 55(4):20–27. http://dx.doi.org/10.5437/08956308x5504085

Chiang YH, Hung KP (2010) Exploring open search strategies and perceived innovation performance from the perspective of inter-organizational knowledge flows. R&D Management 40(3):292-299. https://doi.org/10.1111/j.1467-9310.2010.00588.x

Croft CD (2016) Hearing the authentic voice of stakeholders? Implications for governance of tourism strategy-making. Current Issues in Tourism 21(14): 1670-1689. http://dx.doi.org/10.1080/13683500.2016.1153051

Duman T, Mattila AS (2005) The role of affective factors on perceived cruise vacation value. Tourism Management 26(3):311-323. https://doi.org/10.1016/j.tourman.2003.11.014

Egger R, Gula I, Walcher D (Eds.) (2014) Open tourism: open innovation, crowdsourcing and co-creation challenging the tourism industry. Springer

Ernst M, Brem A (2017) Social Media for identifying lead users? Insights into lead users' social media habits. International Journal of Innovation and Technology Management 14(04). http://dx.doi.org/10.1142/s0219877017500225

Estelles Arolas E, González-Ladrón-De-Guevara F (2012) Towards an integrated crowdsourcing definition. Journal of Information Science 38(2):189-200. https://doi.org/10.1177/0165551512437638

Füller J, MüHlbacher H, Matzler K, Jawecki G. (2009). Consumer empowerment through internet-based co-creation. Journal of Management Information Systems, *26*(3): 71-102. https://doi.org/10.2753/MIS0742-1222260303

Garson GD (2015) Structural equation modeling. Blue Book series 14. Statistical Associates Publishers, Asheboro

Gomezelj DO (2016) A systematic review of research on innovation in hospitality and tourism. International Journal of Contemporary Hospitality Management 28(3):516-558. http://dx.doi.org/10.1108/IJCHM-10-2014-0510

Greco M, Grimaldi M, Cricelli L (2015). Open innovation actions and innovation performance: a literature review of European empirical evidence. European Journal of Innovation Management, 18(2):50-171. https://doi.org/10.1108/EJIM-07-2013-0074

Grimpe C, Kaiser U (2010) Balancing internal and external knowledge acquisition: the gains and pains from R&D outsourcing. Journal of Management Studies 47(8):1483–1509. http://dx.doi.org/10.1111/j.1467-6486.2010.00946.x

Haemoon O (2003) Price fairness and its asymmetric effects on overall price, quality, and value judgments: the case of an upscale hotel. Tourism Management 24(4):387-399. https://doi.org/10.1016/S0261-5177(02)00109-7

Hair JF, Anderson RE, Tatham RL, Black W (2014) Multivariate data analysis. Fifth edition. Prentice Hall

Hall CM, Williams AM (2008) Tourism and innovation. Routledge, London and New York

Hays S, Page JP, Buhalis D (2013) Social media as destination marketing tool: its use by national tourism organisations. Current Issues in Tourism 16(3):211-239. http://dx.doi.org/10.1080/13683500.2012.662215

Hjalager AM (2010) Progress in tourism management. A review of innovation research in tourism. Tourism Management 31(1):1-12. http://dx.doi.org/10.1016/j.tourman.2009.08.012

Hossain M, Kauranen I (2016) Open innovation in SMEs: a systematic literature review. Journal of Strategy and Management 9(1):58-73. https://doi.org/10.1108/JSMA-08-2014-0072

Hossain M, Anees-ur-Rehman M (2015) Open innovation: an analysis of twelve years of research. Strategic Outsourcing: An International Journal 9(1):22-37. https://doi.org/10.1108/SO-09-2015-0022

Huizingh EK (2011) Open innovation: state of the art and future perspectives. Technovation 31(1):2-9. https://doi.org/10.1016/j.technovation.2010.10.002

Hvass KA, Munar AM (2012) The takeoff of social media in tourism. Journal of Vacation Marketing 18(2): 93-103. https://doi.org/10.1177/1356766711435978

Instituto Nacional de Estadística (2016) Viajeros y pernoctaciones por comunidades autónomas y provincias, INE. http://www.ine.es/jaxiT3/Tabla.htm?t=2074 . Accessed 26 June 2017

Instituto Nacional de Estatística (2016) Tourism Statistics – 2015, INEP.PT, Lisboa. Accessed 26 June 2017

Jabreel M, Moreno A, Huertas A (2017) Semantic comparison of the emotional values communicated by destinations and tourist on social media. Journal of Destination Marketing & Management 6(3):170-183. https://doi.org/10.1016/j.jdmm.2016.03.004

Jiménez-Zarco AI, Martínez-Ruiz MP, Izquierdo-Yusta A (2011) Key service innovation drivers in tourism sector: empirical evidence and managerial implications. Service Business 5:339-360. https://doi.org/10.1007/s11628-011-0118-6

Kaplan AM, Haenlein M (2010) Users of the world, unite! The challenges and opportunities of Social Media. Business Horizons 53(1):59-68. http://doi.org/10.1016/j.bushor.2009.09.003

Keupp MM, Gassmann O (2009) Determinants and archetype user of open innovation. R&D Management 39(4):331-341. https://doi.org/10.1111/j.1467-9310.2009.00563.x

Kidwell RE, Fish AJ (2007) High-performance human resource practices in Australian family businesses: preliminary evidence from the wine industry. International Entrepreneurship and Management Journal 3(1):1-14. https://doi.org/10.1007/s11365-006-0020-1

Kietzmann JH, Hermkens K, McCarthy IP, Silvestre BS (2011) Social media? Get serious! Understanding the functional building blocks of social media. Business Horizons 54(3):241-251. https://doi.org/10.1016/j.bushor.2011.01.005

Koropp C, Kellermanns FW, Grichnik D, Stanley L (2014) Financial decision making in family firms: an adaptation of the theory of planned behavior. Family Business Review 27(4):307-327. https://doi.org/10.1177/0894486514522483

Laursen K (2011) User–producer interaction as a driver of innovation: costs and advantages in an open innovation model. Science and Public Policy 38(9):713-723. https://doi.org/10.3152/030234211X13070021633242

Laursen K, Salter A (2006) Open for innovation: the role of openness in explaining innovation performance among U.K. manufacturing firms. Strategic Management Journal 27(2):131–150. https://doi.org/10.1002/smj.507

Leung D, Law R, van Hoof H, Buhalis D (2013) Social media in tourism and hospitality: a literature review. Journal of Travel & Tourism Marketing 30(1/2):3-22. http://dx.doi.org/10.1080/10548408.2013.750919

Lichtenthaler U, Lichtenthaler E (2009) A capability-based framework for open innovation: complementing absorptive capacity. Journal of Management Studies 46(8):1315-1338. http://doi.org/10.1111/j.1467-6486.2009.00854.x

Marasco A, De Martino M, Magnotti F, Morvillo A (2018) Collaborative innovation in tourism and hospitality: a systematic review of the literature. International Journal of Contemporary Hospitality Management 30(6):2364-2395. http://dx.doi.org/10.1108/IJCHM-01-2018-0043

Minazzi R (2015) Social media marketing in tourism and hospitality. Springer International Publishing, Cham

Mkono M, Tribe J (2017) Beyond reviewing: uncovering the multiple roles of tourism social media users. Journal of Travel Research 56(3):287-298. https://doi.org/10.1177/0047287516636236

Najda-Janoszka M, Kopera S (2014) Exploring barriers to innovation in tourism industry–The case of southern region of Poland. Procedia-Social and Behavioral Sciences 110:190-201. https://doi.org/10.1016/j.sbspro.2013.12.862

Nordli AJ (2017). Measuring innovation in tourism with community innovation survey: a first step towards a more valid innovation instruments. Scandinavian Journal of Hospitality and Tourism 17(4):423-440. http://dx.doi.org/10.1080/15022250.2016.1247382

OECD (2015) Science, Technology and Industry Scoreboard, October 2013. Innovation for Growth, OECD Publishing, Paris. http://dx.doi.org/10.1787/20725345. Accessed 6 February 2017.

Odriozola-Fernández I, Berbegal-Mirabent J & Merigó-Lindahl JM (2019). Open innovation in small and medium enterprises: a bibliometric analysis. Journal of Organizational Change Management. https://doi.org/10.1108/JOCM-12-2017-0491

Pitta DA, Fowler D (2005) Online consumer communities and their value to new product developers. *Journal of Product & Brand Management*, *14*(5), 283-291. https://doi.org/10.1108/10610420510616313

Schroll, A. and Mild, A. (2012) A critical review of empirical research on open innovation adoption. *Journal für Betriebswirtschaft*, *62*(2), 85-118.

Schumacker RE, Lomax RG (2010) A beginner's guide to structural equation modeling. 3rd edition. New York, Routledge. http://doi/10.1111/j.1751-5823.2011.00149_13.x

Segarra-Ciprés M, Roca-Puig V, Bou-Llusar JC (2014) External knowledge acquisition and innovation output: an analysis of the moderating effect of internal knowledge transfer. Knowledge Management Research & Practice 12(2):203-214. http://dx.doi.org/10.1057/kmrp.2012.55

Sigala M (2012) Web 2.0 and customer involvement in new service development: a framework, cases and implications in tourism. In: Sigala M, Christou E, Gretzel U (eds.) Social media in travel, tourism and hospitality: theory, practice and cases, Ashgate Publishing Company, pp. 25-38

Spithoven A, Vanhaverbeke W, Roijakkers N (2013) Open innovation practices in SMEs and large enterprises. Small Business Economics 41(3):537-562. http://dx.doi.org/10.1007/s11187-012-9453-9

Stamboulis Y, Skayannis P (2003) Innovation strategies and technology for experience-based tourism. Tourism Management, 24(1):35-43.https://doi.org/10.1016/S0261-5177(02)00047-X

Teirlinck P, Spithoven A (2013) Formal R&D management and strategic decision making in small firms in knowledge-intensive business services. R&D Management 43(1):37-51. http://dx.doi.org/10.1111/j.1467-9310.2012.00701.x

Tsai W (2001) Knowledge transfer in intraorganizational networks: effects of network position and absorptive capacity on business unit innovation and performance. Academy of Management Journal 44(5):996-1004. https://doi.org/10.5465/3069443

Van de Vrande V, de Jong JPJ, Vanhaverbeke W, de Rochemont M (2009) Open innovation in SMEs: trends, motives and management challenges. Technovation 29(6-7):423–437. http://dx.doi.org/10.1016/j.technovation.2008.10.001

Vanhaverbeke W, Van De Vrande V, Chesbrough, HW (2008) Understanding the advantages of open innovation practices in corporate venturing in term of real options. Creativity and Innovation Management 17(4):251-258. http://dx.doi.org/10.1111/j.1467-8691.2008.00499.x

Von Hippel E (2005) Democratizing innovation. MIT Press

Voorberg WH, Bekkers VJJM, Tummers LG (2015) A systematic review of co-creation and co-production: embarking on the social innovation journey. Public Management Review 17(9):1333-1357. https://doi.org/10.1080/14719037.2014.930505

Wang CH, Chang CH, Shen GC (2015) The effect of inbound open innovation on firm performance: evidence from high-tech industry. Technological Forecasting and Social Change 99:222-230. http://dx.doi.org/10.1016/j.techfore.2015.07.006

Weaver DB (2012) Psychographic insights from a South Carolina protected area. Tourism Management 33(2):371-379. https://doi.org/10.1016/j.tourman.2011.04.006

Weiermair K (2006) Product improvement or innovation: what is the key to success in tourism? Innovation and growth in tourism, OECD, Paris, 53-69

World Travel & Tourism Council (WTTC) (2019) Travel & Tourism: Economic Impact 2018. WWTC. Accessed 27 April 2019.

Wozniak T, Stangl B, Schegg R, Liebrich A (2017) The return on tourism organizations' social media investments: preliminary evidence from Belgium, France, and Switzerland. Information Technology & Tourism 17(1):75-100. http://dx.doi.org/10.1007/s40558-017-0077-4

Wu YC, Lin BW, Chen CJ. (2013) How do internal openness and external openness affect innovation capabilities and firm performance?. IEEE Transactions on Engineering Management 60(4):704-716. http://dx.doi.org/ 10.1109/TEM.2013.2262050

Wynarczyk P (2013) Open innovation in SMEs: a dynamic approach to modern entrepreneurship in the twenty-first century. Journal of Small Business and Enterprise Development 20(2):258-278. http://dx.doi.org/10.1108/14626001311326725

Xiaobao P, Wei S, Yuzhen D (2013) Framework of open innovation in SMEs in an emerging economy: firm characteristics, network openness, and network information. International Journal of Technology Management 62(2/3/4):223-250. http://dx.doi.org/10.1504/IJTM.2013.055142

Zhao S, Sun Y, Xu X (2016) Research on open innovation performance: a review. Information Technology and Management 17(3):279–287. http://dx.doi.org/10.1007/s10799-015-0231-7