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PINHEIRO ESTÊVÃO**

**SISTEMAS DE GESTÃO DE DESTINOS  
TURÍSTICOS: CONTRIBUIÇÕES PARA A SUA  
ADOÇÃO E IMPLEMENTAÇÃO**

**TOURISM DESTINATION MANAGEMENT  
SYSTEMS: CONTRIBUTIONS FOR THEIR  
ADOPTION AND IMPLEMENTATION**





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CONTRIBUTIONS FOR THEIR ADOPTION AND  
IMPLEMENTATION**

Tese apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Turismo, realizada sob a orientação científica da Doutora Maria João Aibéo Carneiro, Professora Auxiliar do Departamento de Economia, Gestão, Engenharia Industrial e Turismo da Universidade de Aveiro e da Doutora Leonor da Conceição Teixeira, Professora Auxiliar do Departamento de Economia, Gestão, Engenharia Industrial e Turismo da Universidade de Aveiro.

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## palavras-chave

Sistemas de gestão de destinos, fatores de adoção, funcionalidades, agentes turísticos do destino, sistemas de informação, destinos turísticos inteligentes, turismo

## resumo

A crescente competição entre destinos turísticos, bem como a progressiva exigência da procura turística e da complexidade das estratégias para a atrair, levou as Organizações de Gestão de Destinos (OGD) a ampliarem as suas atribuições para se assumirem como atores centrais na coordenação dos *stakeholders* dos respetivos destinos. Assim, algumas OGDs implementaram redes colaborativas *online*, designadas de Sistemas de Gestão de Destinos (SGDs), que interligam todos os agentes turísticos relevantes de um destino, facilitando a comunicação e a cooperação entre eles. Estes sistemas também proporcionam à procura turística portais *online* de destinos turísticos que oferecem experiências de planeamento de viagens mais personalizadas, incluindo a possibilidade de comprar produtos turísticos. Porém, apenas um número residual de destinos turísticos tentou adotar um SGD e uma parcela considerável dos SGDs não tiveram sucesso.

Os desafios para garantir o sucesso dos SGD exigem uma análise cuidada dos fatores que influenciam a predisposição dos agentes turísticos de um destino para os adotar, bem como dos fatores que determinam a importância que estes agentes atribuem às funcionalidades dos SGD. No entanto, a investigação neste âmbito é ainda limitada. A presente tese tem como principais objetivos obter um conhecimento aprofundado sobre os fatores anteriormente referidos, bem como sobre as características e papel dos SGD, no sentido de promover a implementação destes sistemas nos destinos. Para alcançar os objetivos estabelecidos, adotou-se uma metodologia mista, começando com uma extensiva revisão da literatura sobre SGD, entrevistas exploratórias às principais empresas fornecedoras de soluções de SGD e a OGD que implementaram estes sistemas com sucesso, bem como análises de conteúdo de SGD. Esta abordagem qualitativa permitiu um conhecimento mais aprofundado relativamente às características dos SGD, aos atuais modelos de negócios e de gestão destes sistemas, bem como aos seus recentes desenvolvimentos e perspetivas futuras. Seguidamente uma abordagem quantitativa foi utilizada para identificar os fatores que explicam a predisposição dos agentes turísticos de um destino para adotar um SGD, bem como os fatores que influenciam a importância atribuída por estes agentes às funcionalidades específicas dos SGD. Assim, um inquérito por questionário foi aplicado a diferentes tipos de agentes turísticos de um destino regional que não dispõe de um SGD: a região Centro de Portugal.

Os resultados da investigação quantitativa indicam que a predisposição para adotar um SGD é influenciada positivamente por fatores como: (i) cooperação no destino; (ii) pressão do ambiente externo (ex. de destinos concorrentes); (iii) benefícios percebidos e utilidade do SGD; (iv) liderança e visão estratégica da OGD; (v) recursos e visão estratégica dos atores turísticos do destino. Por outro lado, dois fatores até agora ausentes da investigação influenciam negativamente a predisposição para adotar um SGD, nomeadamente: (i) as plataformas alternativas *online* e (ii) a falta de um SGD em regiões vizinhas ou a nível nacional. Os resultados demonstram ainda que a importância atribuída às funcionalidades específicas de um SGD pelos agentes turísticos de um destino é influenciada positivamente (i) pelos seus recursos e visão estratégica, (ii) pelo seu conhecimento sobre as iniciativas da OGD no âmbito das Tecnologias de Informação e Comunicação, (iii) por ser membro afiliado da OGD; e (iv) pelo subsetor do agente turístico, observando-se que os fornecedores de alojamento turístico valorizam menos as funcionalidades de cariz colaborativo do que outro tipo de agentes.

A tese termina com conclusões e implicações para o setor do turismo, principalmente para agentes responsáveis pelo desenvolvimento turístico.



## keywords

Destination management systems, adoption factors, functionalities, destination stakeholders, information systems, smart tourism destinations, tourism

## abstract

The growing competition between tourist destinations, the progressively demanding tourist source markets, as well the complexity of the strategies to attract them, has led Destination Management Organisations (DMOs) to expand their attributions to assume themselves as central actors in the coordination of the stakeholders of respective destinations.

Thus, some DMOs have implemented collaborative online networks, referred to as Destination Management Systems (DMSs), which connect all relevant tourist agents in a destination, facilitating communication and cooperation between them. These systems also provide online tourist portals for tourist destinations that offer more personalised travel planning experiences, including the possibility to purchase tourist products. However, only a residual number of tourist destinations has ever tried to adopt a DMS and a considerable portion of the them were unsuccessful.

The challenges to the success of a DMS require a careful analysis of the factors that influence the willingness of the tourist agents of a destination to adopt them, as well as of the factors that determine the importance that these agents attribute to the functionalities of those same DMSs. However, research in this area is still limited. The main objectives of this thesis are to obtain an in-depth knowledge about the factors mentioned above, as well as on the characteristics and role of DMSs, in order to promote the implementation of these systems in tourist destinations. To achieve these objectives, a mixed methodology was adopted, starting with an extensive review of the literature on DMSs, exploratory interviews with the main companies providing DMS solutions and with DMOs that have successfully implemented these systems. At content analysis of those same DMSs was undertaken. This qualitative approach provided an in-depth knowledge regarding the characteristics of DMSs, the current business and management models of these systems, as well as their recent developments and future perspectives. Then, a quantitative approach was used to identify the factors that explain the willingness of destination-based stakeholders to adopt a DMS, as well as those influencing the importance attributed by these agents to the specific functionalities of DMSs. Thus, a questionnaire survey was applied to different types of tourist agents from a regional destination lacking a DMS: The Portuguese Centre region.

The results of the quantitative investigation indicate that the predisposition to adopt a DMS is positively influenced by factors such as: (i) cooperation within the destination; (ii) pressure from the external environment (e.g. from competing destinations); (iii) perceived benefits and usefulness of the DMS; (iv) DMO's leadership and strategic vision; (v) resources and strategic vision of the tourist actors in the destination. On the other hand, two factors which are still absent from research on this topic were found to negatively influence the predisposition to adopt a DMS, namely: (i) alternative online platforms and (ii) the lack of a DMS in neighbouring regions or at the national level. The results also demonstrate that the importance attributed to the specific functionalities of a DMS by destination-based stakeholders is positively influenced (i) by its resources and strategic vision, (ii) by its knowledge on the DMO's initiatives in the field of the Information and Communication and Technologies, (iii) the condition of affiliated member of a DMO; and (iv) by the tourist agent sub-sector, since it was found that tourism accommodation providers value collaborative functionalities of a DMS less than others.

The thesis ends with conclusions and implications for the tourism sector, mainly for agents responsible for the development of tourist destinations.



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## List of abbreviations

API	Application Programming Interface
B2B	Business-to-Business
B2C	Business-to-Consumer
BRMS	Business Relationship Management System
BTOB	Business-to-Business functionalities
C2B	Consumer-to-Business
CEO	Chief Executive Officer
CGM	Consumer-generated Media
CGR	Complementary General Requirements
CRM	Customer Relationship Management
CRS	Computer Reservation System
CTBMDUR	Constraints related to technology and respective business models, as well as the DMO's unfavourable role
CTP	Portuguese Tourism Confederation (acronym in Portuguese)
CUI	Customised and updated information
CVB	Convention and Visitors' Bureau
DeMSAM	Destination Management Systems' Adoption Model
DIY	Do-it-yourself
DMO	Destination Management Organisation
DMS	Destination Management System
DOI	Diffusion of Innovations
DREFC	Destination readiness and favourable conditions for DMSs' adoption
eMICA	Extended Model of Internet Commerce Adoption
ETNA	English Tourist Network Automation
EU	European Union
eWOM	Electronic Word-of-Mouth
FAQs	Frequently Asked Questions
G2B	Government-to-Business
GDP	Gross Domestic Product
GDS	Global Distribution System
GSM	Global System for Mobile Communications
GUI	Graphical User Interfaces

IBM	International Business Machines Corporation
ICT	Information and Communication Technology
INE	Portuguese National Statistics Institute (acronym in Portuguese)
IOIS	Inter-Organisational Information System
IoT	Internet of Things
IS	Information System
KMO	Kaiser-Meyer-Olkin
KPRTEC	Knowing the web platform of the Regional Tourism Entity of the Centre
KPRTPAC	Knowing the web platform of the Regional Tourism Promotion Agency of the Centre
LRCOO	Lack of resources and cooperation of other organisations of the destination
MSC	Modified Balance Scorecard
MTA	Managers of tourism attractions
MTAC	Members of Tourism Association of Centre
NTO	National Tourism Organisation
NUTS	Nomenclature of Territorial Unit for Statistics (acronym in Portuguese)
ODA	Open Data Application
OTA	Online Travel Agent
PCA	Principal Component Analysis
PEE	Pressure from the external environment
PENT	National Strategic Tourism Plan (acronym in Portuguese)
PEOU	Perceived Ease of Use
PIF	Perceived Importance of Functionalities
PMS	Property Management System
PU	Perceived usefulness
RM	Reporting Module
RSVOO	Resources and strategic vision of own organisation
RTE	Regional Tourism Entity
RTEC	Regional Tourism Entity of Centre
RTPA	Regional Tourism Promotion Agency
RTPAC	Regional Tourism Promotion Agency of Centre
SCM	Supply Chain Management
SD	Smart Tourism Destination
SME	Small and Medium-sized Enterprise
SMTE	Small and Medium-sized Tourism Enterprise



SPSS	Statistical Package for Social Sciences
TA	Tourism accommodation
TAM	Technology Acceptance Model
TGV	High-speed Passenger Train (acronym in French)
TOE	Technology, Organisation and Environment
TPB	Travel planning and booking
TSE	Travel Search Engine
TTF	Task-Technology Fit
UDDI	Universal Description, Discovery and Integration
UGC	User-Generated Content
UGCTP	Access to UGC tools and third-party information
VIB	Visitor Information Database
VRMS	Visitor Relationship Management System
WTO	World Tourism Organisation



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# **Part I**

## **Introduction**

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# **CHAPTER 1**

## **Relevance of the theme, objectives, methodology and structure**

The present doctoral thesis aims to explore the still relatively unknown factors influencing the adoption of a type of online platform usually referred to as Destination Management System (henceforth designated as DMS).

Concerning its structure, this introductory chapter will begin by explaining the relevance of the thesis, which is partly based on the gaps found in previous research on DMSs. Taking these gaps into consideration, the main objectives of the thesis were defined. The third part of the introduction will include a brief literature review on the most relevant topics for this research. This literature addresses the roles of information and communication technologies (ICTs) in tourism, the DMS concept, the benefits of this kind of systems, the factors affecting their adoption and success, as well as the role of DMSs in the age of the Smart Tourism Destinations. The fourth part of the introduction will approach the thesis' methodology, which is followed by the presentation of its structure.

### **1.1 The relevance of the theme**

The use of ICTs to maximise destinations' competitiveness in general as well as to manage and coordinate their internal players, in particular, is both one of the most promising areas vis-à-vis the development of ICTs in the tourism sector, as well as one of the least researched (Buhalis & Amaranggana, 2014). Indeed, for instance, despite the buzz around the newly coined concept of Smart Tourism Destination (SD) (Gretzel, Sigala, Xiang, & Koo, 2015), most studies addressing it refer to isolated technological applications within SDs, leaving a more fundamental SD approach to the management of destinations practically untouched (Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2019). Indeed, Ivars-Baidal et al. (2019) suggest that DMSs should be the core of any SD, coordinating the vast array of applications and actors that are part of it. Hence, considering the role DMSs may assume, an analysis of the potential benefits of these systems regarding destinations' promotion in the global market (Buhalis & Wagner) as well the internal coordination of stakeholders (Sigala, 2013) partially justifies the accomplishment of this thesis. The relevance of this thesis arises from the gaps existing in the literature on DMSs and on the importance of this kind of systems in the Portuguese context.

### **1.1.1 Gaps of the literature on DMSs**

Perhaps the most evident gap in the literature is the absence of a clear and comprehensive definition of the concept itself, as well as the apparent lack of consensus around it (Sigala, 2014). Any scientific approach to such a blurred concept, whose definition is not yet established, could be somewhat compromised from the start. In fact, literature on DMSs randomly enumerates some of the apparent goals, benefits and functionalities of these kind of platforms. However, such enumerations only seem to serve the authors' purpose of exemplifying the more advance nature of DMSs when compared to traditional destination websites, instead of a more preliminary, and thus more relevant, attempt to define the exact scope and delimitation of the concept. Hence, there are hardly no studies providing a holistic framework of the concept that clearly draws the line between DMSs and other types of destination web platforms, with a few exceptions (Wang & Russo, 2007). Moreover, despite the profusion of studies addressing the functionalities of DMSs, almost none has confronted those offered by these systems with the ones usually available in traditional destination websites.

This gap is highlighted by technological evolution that contributed to the change of these platforms, which was not accompanied by an upgrade of the concept in the literature. Indeed, in the last decades, most of the studies related to DMSs did not focus in the concept, which did not allow an evolution of the understanding of this concept. This may have originated an anachronism between the features and roles of DMSs as stated in the literature and the actual web platforms currently developed by destinations. Two functionalities that best seem to illustrate this anachronism in reverse ways are: DMS online transactions and User-Generated-Content (UGC). When it comes to transactions within DMSs, most of literature refers to it as one of the key distinctive functionalities distinguishing these systems from traditional destination websites (Fountoulaki, Leue, & Jung, 2015; Daniele & Frew, 2008; Schröcksnadel, Egger, & Buhalis, 2011; Buhalis, 2003; Pollock, 1995). However, some existing DMSs have either abandoned transactions or expect to do so in the near future (Estêvão, Carneiro, & Teixeira, 2020; Werthner et al., 2015). This is mainly due to the ever-growing dominance of online travel agents (OTAs) and the consequential generalised use of their booking engines. Such dominance was not so pressing more than a decade ago, when most literature on DMSs' concept was produced, thus originating a clear anachronism between academic works and the actual practice.

Inversely, most literature on DMSs do not refer to UGC as a relevant type of functionality, probably because it was still inexistent or seldom adopted by the time that most studies discussing the concept of DMSs were conducted. Nevertheless, empirical evidence clearly indicates that the use of UGC is in the forefront of priorities regarding DMS development (Sigala & Marinidis, 2012).

Another gap in the literature is the lack of research on the impact of non-technological factors, such as the degree of internal coordination amongst stakeholders or the leading capabilities of a DMO and its expected role, on the adoption of DMSs. Only a few studies, mainly carried out by Sigala (2009, 2014) and Ndou and Petti (2007), addressed this topic. While the studies conducted by Sigala (2009) empirically analysed the case of Greek destinations, others are purely conceptual, thus lacking empirical evidence.

There is scarce research on the DMSs' adoption process. Most studies addressing this topic are conceptual or analyse the benefits of adopting these systems (Baggio, 2011; Bédard & Louillet, 2011; Buhalis & Spada, 2000; Pollock, 1995). Only very few studies examined the factors that may affect the adoption of DMSs (e.g. Estêvão, Carneiro, & Teixeira, 2014; Sigala, 2013) and only one (Sigala, 2013) attempts to explain DMS adoption through an empirical approach. Despite the relevance of Sigala's (2013) study undertaken in Greece, this research does not specifically analyse the willingness of DMSs' stakeholders to adopt these systems and does not consider some factors that may influence the adoption of DMSs, namely, the existence of complementary web platforms and competing technological solutions, such as the OTAs. In addition, the high levels of failure in DMS adoption processes (Alford & Clarke, 2009) also appear to indicate that more research on its causes would be required. Moreover, no research was found that examined the factors that influence the importance assigned to the distinctive functionalities of DMSs that are also likely to determine the use of DMSs.

As previously observed, there are few research works empirically analysing the factors influencing DMSs' adoption and, even these, have some limitations. The only study carried out with this objective was undertaken in Greece by Sigala (2013), with a lack of studies on DMSs being observed in the Portuguese context, either examining factors affecting the adoption of these systems or other issues concerning DMSs. This kind of studies are of special importance to Portugal, where there are not yet DMSs.

### **1.1.2 The importance of the DMSs in the Portuguese context**

Besides the research gaps in DMSs' research mentioned in the previous section, the relevance that these systems may have in the Portuguese context was also an important motive to carry out this thesis.

Since the implantation of a democratic regime, in the mid-1970s, Portugal has never had regional administrative power, with the exceptions of Azores and Madeira archipelagos, whose insularity justified the concession of a considerable degree of autonomy. In addition, Portuguese mainland is divided in five Nomenclature of Territorial Units for Statistics (NUTS) II (North, Centre, Lisbon Metropolitan Area – mentioned in this section as Lisbon - , Alentejo and Algarve) with no administrative bodies besides municipalities, nor autonomy from the Lisbon-based central government.

However, the absolute relevance of tourism to the country's regional and local economies has led, since the early 1980s, to the establishment of regional DMOs covering the entire territory of Portuguese mainland. In fact, tourism provides a great contribution to Portugal's Gross Domestic Product (GDP) and to employment (17.3% and 20.4%, respectively) (World Travel & Tourism Council, 2018). Since they were first established, the Portuguese regions' have been periodically modified by central administrations. Such changes have encompassed their number and territorial scope (ranging from the original sixteen to today's five regions), management models (having evolved from purely public inter-municipal entities to public-private consortia), and attributions (e.g. until 2012, the official promotion of Portugal as a tourism destination in foreign markets was exclusively undertaken by the national DMO - Turismo de Portugal -, whereas today's tourism regions are also expected to participate in such initiatives). At this level, perhaps the changes operated in 2012 have been the most drastic of all, reducing the number of tourism regions from eleven to five, thus matching their names and territories with the designations of the country's NUTS II.

Regarding today's governance of tourism in Portugal, the national DMO outlines broader planning and development tools (including funding schemes) and carries out the domestic and international tourism promotion of the country, among other relevant competences, such as tourism workforces' training or businesses licensing and supervision. The regional DMOs located in the five mainland NUTS II (North, Centre, Lisbon, Alentejo and Algarve) are demanded to promote their destinations internally and externally (in this last case, under the coordination of Turismo de Portugal), as well as to qualify tourism attractions and businesses (e.g. implementing signage, providing tourism information offices at the main



tourism destinations, attracting and supporting potential investors) (Decree-Law 33/2013 16 May, 2013). Municipalities are usually the protagonists when it comes to providing visitors information, organising events and, most of all, managing and enhancing public tourism attractions.

Despite the apparent efforts that successive national and local administrations as well as tourism regions have undertaken in the last decade (Turismo de Portugal, 2017), Portugal's tourism sector continues to suffer from structural regional asymmetries that inhibit a more sustainable and balanced development. Such asymmetries seem to mirror the country's considerable uneven progress levels between the relative wealth and progress of its two major urban centres, Lisbon and Oporto, and most of the remaining country's comparatively less prosperous and dynamic regions. Those same disparities, favoured by a traditional centralised political system, become even more evident when comparing the seaside communities' overwhelmingly higher development levels with the apparently stagnant and declining societies from inland Portugal.

It seems noteworthy that, in 2017, within the five regions (NUTS II) that compose mainland Portugal, the two smallest ones (representing less than 9% of its territory and 36% of its population) – Lisbon and Algarve – represented 57% of the hotels' capacity and 59% of tourists' overnight stays (Instituto Nacional de Estatística, 2018). In the same year, Lisbon's accommodation establishments accounted for the highest annual occupancy rate and average daily Revenue per Available Room (RevPar) in mainland Portugal (60% and 74€ respectively) (Instituto Nacional de Estatística, 2018). In addition, Algarve is the region with the greatest share in terms of accommodation capacity (34%), as well as the second highest annual average occupancy rate and daily average RevPar in mainland Portugal (53% and 53.7€ respectively). The Algarve's tourism industry almost totally relies on sea-and-sun tourism, which explains why the hotel overnights in the region during the summers account for 41% of the total overnights registered in the entire year (Instituto Nacional de Estatística, 2018). Especially the Algarve's RevPar and seasonality rate suggest that the Algarve's development model seems to foster low income seasonal jobs as well as a prevalence of mass tourism with all its ensuing economic, social and environmental negative impacts (Guerreiro, Pinto, & Mendes, 2016).

The other three regions in mainland Portugal remain, since the dawn of the country's international tourism in the early 1980s, have a lower contribution to tourism in the national picture. Also according to the Instituto Nacional de Estatística (2018), in 2017, the three regions of mainland Portugal with the lowest occupancy rates and RevPar were the North

(48% and 45€, respectively), Alentejo (38% and 32.7€ respectively), and Centre (39% and 27.4€ respectively). Although the ranking of mainland Portugal's regions may come as no surprise, the degree of the disparities between them seems overwhelming.

The Tourism Strategy 2027 (Turismo de Portugal, 2017) identified the persistence of national asymmetries in the tourism industry as one of the eight major problems undermining its sustainable development. The previous national tourism plan, whose implementation occurred from 2006 to 2015, already tried to combat the country's excessive seasonality. However, between 2005 and 2015, the territorial concentration of overnight stays in seaside locations increased from 87.2% to 90.3% of the total overnight stays (Turismo de Portugal, 2017). That same previous plan also intended to attenuate the country's tourism seasonality, as it was a clear indicator of the country's tourism is overly based on sea-and-sun tourism. Nonetheless, the average national seasonality rate registered an increment of 2% between 2005 and 2015 (from 37% to 39%) (Turismo de Portugal, 2017). Moreover, in the period mentioned, the gap between the RevPar of Lisbon's and the Algarve's accommodation units and those from the rest of mainland Portugal became considerably larger. For instance, in 2005, the average RevPar of Lisbon's accommodation establishments is approximately the double of the RevPar of the units of Centre. Only a decade later, Lisbon's RevPar (53.6 €) almost tripled that of the Centre (19.5 €) (Turismo de Portugal, 2017).

The Centre of Portugal, as previously observed, is one of the NUTS II having lower performances in some tourism indicators. Nevertheless, this region is a great repository of cultural heritage, including history, traditions, monuments, historic cities, typical villages, festivities and art, as well as of natural resources such as mountains and rivers, holding, therefore, a great potential for tourism (Carneiro, Lima, & Silva, 2015; Gonçalves, & Ambrósio, 2017; Kastenzholz, Carneiro, Marques, & Lima, 2012; Kastenzholz, Eusébio, Figueiredo, & Lima, 2012; Teixeira & Ribeiro, 2013).

DMSs are considered to be useful platforms in attenuating geographical asymmetries of tourism development (Estêvão, Carneiro, & Teixeira, 2012) since they are all-in-one platforms, which permit the integrated promotion of a destination as a whole (Buhalis, Leung, & Law, 2011; Horan, 2010), providing higher visibility to small businesses that usually have more constraints in promoting themselves (Aurélien & Desiré, 2014; Sigala, 2013). In addition, these platforms enable DMOs to do an integrated management of destinations contributing to a more balanced distribution of tourism benefits across destinations (Spyriadis, Buhalis, & Fyall, 2011). Moreover, this kind of systems are thought

to permit to decrease the tourism suppliers' dependence on intermediaries, facilitating direct and personalised communication with potential visitors (Buhalis, 2003).

When approaching the case of Rimini, in Italy, Baggio (2011) already addressed these advantages of DMSs, reporting that the implementation of this kind of platforms contributed to decrease the excessive dependence of this region on sun-and-sea tourism products and on external tour operators. Those intermediaries were mostly interested in operating economies of scale and to promote Rimini as a beach destination, thus triggering mass tourism, as well as inhibiting the development of other types of tourism which may have been more advantageous to local communities (Baggio, 2011). The DMO realised that Rimini held remarkable cultural attractions and tried to promote the development of cultural tourism using the DMS.

Guthrie (2011) is another researcher who analysed the benefits of DMSs, examining the *Visitbritain* integrated DMS, which is updated and managed by numerous DMOs at local, sub regional, regional and national levels. This researcher posits that the British DMS was decisive in enabling small rural destinations, with typically scarce levels of visibility in the global market, to effectively promote and sell tourism products.

Buhalis and Spada (2000) had also addressed the potential benefits of DMSs to small destinations and respective SMTEs, which not only offer them global visibility through a destination's official platform, but also provide an alternative to distribution through large tour operators.

Considering all the potential benefits of these platforms (view more details concerning the range of benefits of DMSs in section 1.3.3.1), including the decrease of geographical asymmetries in tourism development as well as the reduction of dependence from large tour operators, DMSs may represent interesting technological solutions to overcome this kind of issues in Portugal. However, this kind of solutions do not still exist in Portugal (see Chapter 7). This kind of platforms are of special importance to the Centre of Portugal, a NUTS II that still presents a low performance in some tourism indicators, as already mentioned. Consequently, Portugal and, specifically the Centre Region, were chosen as the context of study in the empirical studies developed in this thesis.

## **1.2 The study's objectives**

Considering the benefits of DMSs and the gaps in the literature regarding this kind of platforms, the main purpose of this thesis is to deeply understand the role and characteristics of DMSs, as well as the process of adoption of these systems, namely the factors influencing the adoption of these systems by stakeholders of tourism destinations that supply services to visitors. Therefore, two general objectives can be identified:

- To understand the role of DMSs to destinations and visitors as well as to identify the main functionalities that better characterise them;
- Understanding the factors that may affect the adoption of DMSs in order to foster the implementation of these systems across destinations.

In order to accomplish these objectives, a set of specific objectives were defined:

- To deeply analyse the concept of DMS and the benefits of this kind of platforms based on a literature review;
- To deeply examine the functionalities that characterise DMSs worldwide, based on a literature review and on empirical studies;
- To understand the current business models and implementation challenges of DMSs' worldwide through literature review and empirical studies;
- To identify the factors affecting the potential adoption of DMSs by stakeholders of tourism destinations that provide services to visitors, such as local administrations, tourism attractions and tourism accommodation suppliers, through literature review and empirical studies undertaken in the Centre of Portugal;
- To identify the factors determining the willingness of tourism stakeholders to adopt specific types of functionalities often attributed to DMSs, based on literature review and empirical studies undertaken in the Centre of Portugal.

## 1.3 Literature review

### 1.3.1 The role of ICTs in tourism

The emergence of the Internet has completely transformed the global economy, namely the relations among suppliers and between them and their customers, optimising management, Business-to-Business (B2B) cooperation and production practices (Castells, 2001). Nowadays, ICTs continue to have a profound effect on the economies and societies where they are used (Huang & Sun, 2016).

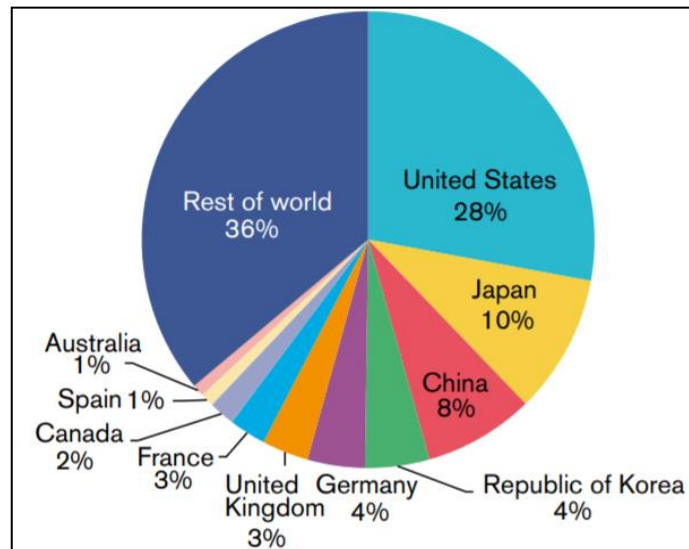
Regarding the evolution of the Internet in terms of its users, the worldwide growth was exponential. Hence, according to the *Internet World Stats* (2019), by mid-19, more than 4.5 billion people (54% of the world population) were internet users (Table 1.1), representing a 1,157% increase since the year 2000. As represented in Table 1.1, when it comes to the distribution of internet users across the globe, in mid-2019 Asia accounted for more than half of users worldwide (50.7%), distantly followed by Europe (16%), Africa (11.5%), Latin America and the Caribbean (10%), North America (7.2%), Middle East (3.9%) and Oceania (0.6%). However, as illustrated in Table 1.1, the penetration rate of internet usage when confronted with the overall population provides a very different scenario, with North America ranking first (89.4%), closely followed by Europe (87.7%). The remaining world regions held considerably lower penetration rates, being Africa the region with the lowest rate (39.6%). In addition, according to Statista's (2019) e-travel Report 2019, in 2018, 20% of internet users had regular access to broadband internet connections, while 44.9% of the world's population used smartphones regularly, which explains the overwhelming growth of tourism-related booking via mobile channels.

**Table 1.1 – World Internet usage, in mid-2019**

World Regions	Population (2019)	Population % of World	Internet Users 30 June 2019	Penetration Rate (% Pop.)	Growth 2000-2019	Internet World %
Africa	1,320,038,716	17.1 %	522,809,480	39.6 %	11,481 %	11.5 %
Asia	4,241,972,790	55.0 %	2,300,469,859	54.2 %	1,913 %	50.7 %
Europe	829,173,007	10.7 %	727,559,682	87.7 %	592 %	16.0 %
L. Amer./Carib.	658,345,826	8.5 %	453,702,292	68.9 %	2,411 %	10.0 %
Middle East	258,356,867	3.3 %	175,502,589	67.9 %	5,243 %	3.9 %
N. America	366,496,802	4.7 %	327,568,628	89.4 %	203 %	7.2 %
Oceania	41,839,201	0.5 %	28,636,278	68.4 %	276 %	0.6 %
<b>TOTAL</b>	<b>7,716,223,209</b>	<b>100.0 %</b>	<b>4,536,248,808</b>	<b>58.8 %</b>	<b>1,157 %</b>	<b>100.0 %</b>

Source: World Trade Organisation (2018)

As far as the use of the Internet in e-commerce is concerned, the total values of transactions (both domestic and international) rose from US\$16 trillion in 2015 to US in 2015, representing a 56% increase in only two years (World Trade Organisation, 2018). As depicted in Figure 1.1, in 2015, the three most representative national markets vis-à-vis the total value of e-commerce transactions were the United States (28% of the total value), followed by Japan (10%) and China (8%) (World Trade Organisation, 2018).



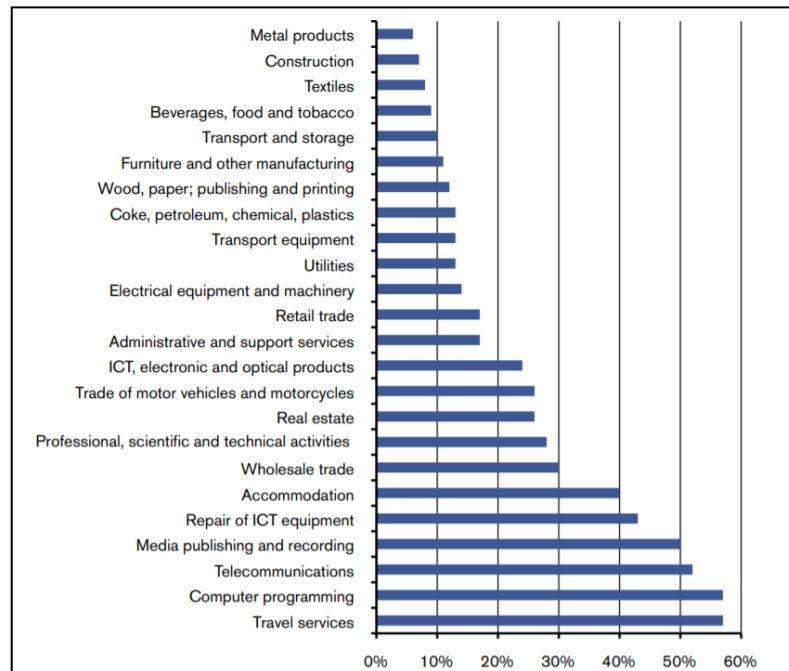
**Figure 1.1 - Distribution of world's e-commerce transactions by value, in 2015**

Source: World Trade Organisation (2018)

According to Öörni (2004), electronic markets substantially benefit from ICTs such as the Internet, since product information can be disseminated with a higher speed, quantity and quality. Due to the nature of the tourism sector, which is highly intangible and also demands suppliers to promote their products to potential customers at a global scale, tourism was, undoubtedly, one of those sectors which were more dramatically transformed by the Internet shortly after its advent (World Tourism Organisation Business Council, 1999). In fact, tourism is perceived as a leading sector and even as a driver of Business-to-Consumer (B2C) e-commerce (Peng & Lai, 2014; Werther and Klein, 1999).

Hence, the tourism sector seems to be one of the most digitalised in the world (European Commission, 2017). An evidence of that is the European Commission's 2017 Digital Progress Report, which measured a digital intensity ranking of sectors based on the share of enterprises in a given sector that use at least seven out of 12 digital technologies (European Commission, 2017). It seems noteworthy that the travel services' sector was the most digitalised, alongside computer programming and ahead of telecommunications, two

intrinsically technological sectors (Figure 1.2). As far as the accommodation sector is concerned, it ranked sixth, behind the three above-mentioned and two other inherently technological sectors: media publishing and recording and repair of ICT equipment (European Commission, 2017).



**Figure 1.2 - Digital intensity of the European Union’s economic sectors, in 2017**

Source: European Commission (2017)

The online travel market comprises the distribution of online mobility services (flights, ride hailing, railway and bus transportation, car rentals), as well as online travel bookings of package holidays and accommodation stays (Jacobs, Klein, Holland, & Benning, 2017). In 2018 the online travel market had global revenues of US\$757 billion and is expected to garner US\$1.064 billion by 2023, with an average annual growth of 7.1% (Statista, 2019). The United States are the leading national online travel market, with a total revenue of US\$217 billion in 2018 (Statista, 2019). It is noteworthy that the three major players in the US online travel market are all OTAs, namely *Expedia*, the *Priceline Group*, and *Airbnb* (Statista, 2019). Europe was the second world region with the highest revenues (US\$200.5 billion), followed by China, which was the second largest national market worldwide, with a total revenue of US\$ 156.6 billion (Statista, 2019). The Chinese market is likely to overtake Europe in 2023, with an estimated annual average growth of 10.7%, while the European market is expected to grow 5.8% per year, on average (Statista, 2019).

The above-mentioned data demonstrate that there was an increasing adoption of technologies since the advent of the Internet, which may have opened a whole new range of possibilities but also created challenges to individual tourism suppliers and to destinations as a whole. According to Buhalis (2003) the Internet brought some key innovations, such as “melting” down geographical barriers in both B2B and B2C perspectives, which enhanced the capacity of tourism suppliers to act at a global level with much fewer financial costs, and also allowed visitors to become more informed, autonomous and demanding. However, given that tourism is a multidisciplinary sector composed by many different actors ranging from national airlines to family-managed restaurants, there is a considerable gap regarding the use of the Internet among the various tourism subsectors (Maurer, 2015; Minghetti & Buhalis, 2010). Egger and Buhalis (2011) state that even in the same subsector there might be considerable differences in the level of Internet usage and *e-readiness*.

In such a volatile scenario it is not an easy task for the academia and for the strategic players within the sector to keep up with new trends in terms of e-tourism. However, perhaps more than ever, to gain competitiveness, it is essential to analyse how Internet affects and will affect the tourism industry in the future.

### **1.3.2 Challenges and opportunities fostered by e-tourism to different tourism stakeholders**

The use of the Internet by the tourism industry is growing fast and the majority of its firms consider their websites as essential tools to attract new customers (Baloglu & Pekcan, 2006; Huang, Backman, Backman, & Chang, 2016). According to Gimenez-Fernandez and Beukel (2017), today’s e-tourism market is composed by two different types of companies: incumbent tourism firms (firms which are already in position in a market) and start-ups. As illustrated by Figure 1.3, established or incumbent tourism firms, which tend to be less flexible, have more traditional business models and, often, a vertically oriented structure. These firms have been recently challenged by start-ups, which emerged from the mobile technology era and have implemented innovative and, sometimes, daring business models (e.g. sharing economy) (Gimenez-Fernandez & Beukel, 2017). The lack of financial and human resources of start-ups leads them to open more to external relations than incumbent firms, which boost their innovation performance (Gimenez-Fernandez & Beukel, 2017).



	Online Travel Booking	Online Transportation/Mobility Services
Start-ups		
Incumbent firms		

**Figure 1.3 – Examples of major start-ups and incumbent firms in the online travel market**

Source: Statista (2019)

However, the adoption and use of ICTs is considerably uneven across tourism subsectors, which seems to mirror the diversity of actors operating in this sector (Buhalis & Sinarta, 2019; Minghetti & Buhalis, 2010). Hence, while the airline industry is amongst those adopting ICTs in most of their operational and strategic operations, others, such as many family-run restaurants or accommodation units, scarcely use them (Minghetti & Buhalis, 2010).

### 1.3.2.1 Mobility services

Technologies also brought several challenges in the context of transportation (mobility) in tourism. The mobility services using Internet comprise both those which have used the Internet since its advent, as well as start-ups which have recently emerged as a result of the growth on the online market and are originating major shifts in e-tourism (Stone, 2017). While airlines, bus and railway transportation and car rentals are mostly composed of established or incumbent firms in the online transportation market, ride hailing (e.g. car sharing (e.g. *Drive Now*), or bike/scooter sharing (e.g. *Lime*) are newly arrived players that are changing the way people in general, and visitors in particular, perceive and consume transportation services (Stone, 2017).

In 2018, the online mobility services registered a global revenue of US\$ 411.2 billion and are estimated to have an annual average growth of 7.6% until 2023 (Statista, 2019). According to Phocuswright (2019a), 70% of those revenues were generated by the booking

of flights, and the overall online sales of flights are expected to have an average annual growth of 5.6% until 2023. Although OTAs still dominate the bookings of flights' tickets, with the exception of the low-cost segment, **airlines** have been using ICT solutions to gain control of their inventory and sell flights to their passengers without the need of intermediaries, which demand commissions in exchange. As a result of such efforts, in 2016, around 38% of the total issued flight tickets were sold via the websites of airlines (SITA, 2019). In the overall online transportation services, the Chinese market is the fastest growing, with an estimated annual growth of 11.3% through 2023 (Statista, 2019). However, in 2018, the countries holding the highest penetration rate on online transportation services were Finland and Sweden, followed by the United Kingdom and Norway (Statista, 2019).

Within the overall tourism sector, the airline industry is arguably the most digitalised service of all. In the last decades, several factors contributed to an increasing use of technologies among airline companies, such as: optimisation of aircrafts (e.g. the advent of the jet propulsion, which improved airplanes' speed, safety, passenger capacity and cost-effectiveness) as well as the advent of mass tourism (Sezgin & Yolal, 2012); Computerised Reservation Systems (CRS) (e.g. *SABRE*) (Gunther, Ratliff, & Sylla, 2012) and Global Distribution Systems (GDSs) – namely *Amadeus* (1987), *Worldspan* (1988), and *Galileo* (1993) – (Egger & Buhalis, 2011); air transport deregulation (Doganis, 2013; Pickrell, 2017); and the emergence of the low-cost airlines, which sell almost every seat in their inventory directly through the Internet (Castillo-Manzano, Castro-Nuño, López-Valpuesta, 2017; e-Business Watch, 2006).

It is becoming ever clearer that ICTs and the Internet in particular will become more and more crucial to the operational and strategic dimensions of airlines. In 2003 Buhalis had already argued that the Internet would heavily support successful airlines not only regarding the marketing mix of airlines, as it would also determine their strategic thinking and become more critical to their operations and strategy (Buhalis, 2003). It can therefore be foreseen that ICTs will not only establish all elements of the marketing mix of airlines in the future, but they will also determine their strategic directions, partnerships and even ownership (Egger & Buhalis, 2008). In 2018, airlines spent around US\$ 49 billion in IT, having invested heavily in cloud computing, cybersecurity, and business intelligence (SITA, 2019). When it comes to services to passengers, in 2018 mobile check-in and boarding services were provided by 8 out of 10 airlines worldwide (SITA, 2019). In addition, by the end of 2019, more than 83% of airlines have implemented mobile app services enabling passengers to search flights (SITA, 2019). Moreover, a quarter of airlines provided location-based

notifications to their customers, while 33% of them had implemented baggage location status updates to passengers (SITA, 2019). A further evidence of the intensive and highly sophisticated use of ICTs by current airlines is the fact that, by the end of 2019, 44% of the world's airlines had implemented a major Artificial Intelligence (AI) programme, while other 45% were starting to develop such programmes (SITA, 2019). The use of AI by airlines is mostly aimed at developing virtual sales agents and chatbots to interact with passengers through their websites and apps, providing targeted and personalised advertising (SITA, 2019).

**Ride hailing** (e.g. *Uber*) is the second largest as well as fastest growing online mobility service in both the US and China, with an overall global revenue of US\$ 61.5 billion in 2018 (Statista, 2019). The fact that the revenues of this relatively recent type of online mobility service are roughly three times larger than those of the car rental sector seems noteworthy, if not surprising. In Europe, although ride hailing is on the rise, legal regulations and a higher propension to private car ownership explain a relatively smaller expression of this type of service (Statista, 2019).

Concerning the **bus and railway subsector**, until recently only a minority of travellers tend to purchase train tickets through the Internet, with the exception of long-distance travels and fast trains such as *TGV*. However, this tendency is gradually changing as there has been a recent increase in the number of online platforms developed by the railway industry. According to Egger and Buhalis (2011), *Bahn.de*, the German Railways website, was a good example of this shifting trend, as it is not only one of the most visited travel portals in Europe but also allows dynamic travel planning and e-ticketing of train and bus transportation, also through mobile devices.

In 2018, the revenues of the bus and train online services amounted to US\$39.5 billion. Nowadays, railways communication systems are applied in three main domains, namely (i) safety and control, (ii) train operations and (iii) customer-oriented networks (Fraga-Lamas, Fernández-Caramés, & Castedo, 2017). The International Transport Fund (2011) estimated that railway transportation passengers will increase 200%-300% by 2050 which, alongside the growing complexity of high-speed railways networks demand for an extensive use of ICTs (Ai et al., 2015). This phenomenon has led researchers in this field to coin the expression The Internet of Trains, inspired by The Internet of Things (Borgi, Zoghلامي, & Abed, 2017). The most innovative ICT solutions within the railway transportation sector encompass (Fraga-Lamas et al., 2017): (i) passenger and freight information systems; (ii)

smart infrastructure; (iii) safety assurance; (iv) video surveillance systems; and (v) signalling systems. However, the Internet of Trains still faces many challenges, such as standardisation, interoperability, scalability and cybersecurity (Fraga-Lamas et al., 2017).

Regarding its turnover, until the late 2000s, the **car hire subsector** was the second most important within the transportation sector (Statista, 2019). Large companies, such as *Avis* and *Hertz*, have long implemented ICT-based systems contemplating the web, aiming to manage their extensive and disperse inventory and support their relationship with customers, namely through direct online marketing (Epsilon Conversant, 2019). More recently, car hire companies have also been using the Internet to optimise their synergies with airlines, empowering customers to use their airline loyalty programmes' bonus points to rent a car from a partner company (Egger & Buhalis, 2011). Today, evidence shows that car rental companies are rapidly losing customers to ride hailing and sharing services. Indeed, a survey conducted by Epsilon Conversant (2019) between 2016 and 2018 concluded that 63% of previous car rental customers reduced their spending on car rentals, which is almost a \$3.2 billion loss. Moreover, 56% of customers stopped using car rental services altogether, with most of them moving to rideshare services (Epsilon Conversant, 2019). The relatively lower levels of mobile-technology friendliness of the car rental sector, its less efficient booking systems as well as its higher prices, have contributed to their loss of competitiveness to ride hailing and sharing services (Epsilon Conversant, 2019).

### **1.3.2.2 Accommodation and package holidays**

The accommodation sector is mostly comprised of the hotel and other accommodation rental (e.g. *Airbnb*, *HomeAway*) industries.

Unlike the airline industry, the accommodation sector is not intrinsically technological. Besides, its diversity in terms of infrastructure, management models, technical expertise and size, explains its relatively slow and uneven adoption of IT. Thus, despite the fact that larger hotel chains have rapidly and effectively adopted ICT tools for internal coordination as well as to communicate with external stakeholders, their use by many smaller units remained residual (Gössling & Lane, 2015; Raguseo, Neirotti, & Paolucci, 2017). Law, Leung, Au, and Lee (2013) have suggested that accommodation businesses use ICTs to improve their internal organisational performance, customer satisfaction, strategic

competitiveness as well as to promote, organise, and deliver products and services to an increasingly sophisticated and IT-savvy demand.

The online package holiday segment encompasses travel deals, predominantly via OTAs, and usually includes travel, accommodation and experiences at the destinations (e.g. visits, tours) (Statista, 2019). OTAs have been extensively using ICTs to improve the flexibility of their package holidays and empowering visitors, namely through dynamic package tools (Andreassen, Diaz Andrade, & Milne, 2018; Ferreira, Putnik, Cruz-Cunha, & Putnik, 2012).

The overall online market for accommodation and package holidays had a total revenue of US\$345 billion in 2018 and is estimated to grow, on average, 6.4% per year until 2023. Within this segment, the online package holidays accounted for total revenues of US\$156.3 billion, followed by hotel bookings (US\$ 142 billion) (Statista, 2019).

### **1.3.2.3 Online intermediaries**

Perhaps in the dawn of the Internet era it might be reasonable to consider that individual hospitality services would be able to sell most of their inventories directly to visitors through their own websites' booking engines, thus making intermediaries obsolete. However, today's distribution channels in tourism are dominated by OTAs (Beritelli & Schegg, 2016). In the Asia-Pacific region, for instance, OTAs account for 58% of the total hotel bookings revenue (Phocuswright, 2019), while in China alone they control 68% on the country's tourism online booking market (Huang Yin, Goh, and Law, 2019).

Several factors contributed to increase the relevance and power of OTAs in the tourism sector. One of those factors is the overwhelming quantity and diversity of websites and offerings of products and destinations available online, which may turn the travel planning process a lengthy and difficult process in which prospective visitors often feel uncertainty vis-à-vis the reliability and quality of individual travel and hospitality services (Calveras & Orfila, 2014). In such scenarios, OTAs proved to be helpful in filtering, condensing and conveying such information to their customers in a platform which is familiar to them (Wang, Xiang, Law, & Ki, 2016). However, the remarkable growth of OTAs in the early 2000s, both in revenue share and number, contributed to increase the uncertainty of visitors regarding which OTA to choose when buying a certain tourism product at a given day for a specific date (Long & Shi, 2017). Such challenges justify the advent of the meta-search engines, a more recent breed of intermediaries (often referred to as reintermediaries), which do not

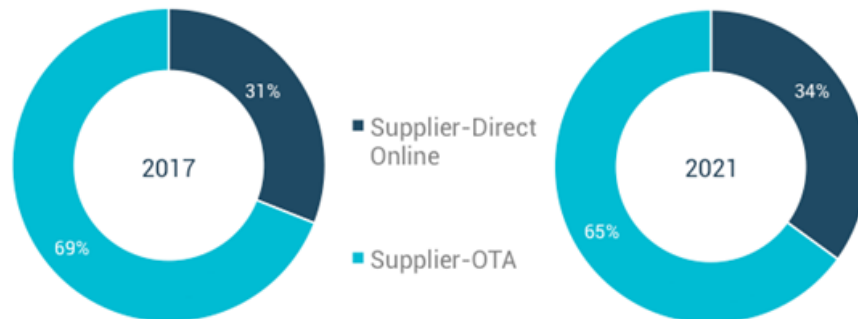
engage in commercial relations with suppliers but rather with OTAs (Vila, Vila, González, & Brea, 2018). In fact, instead of searching the inventories of tourism services, meta-search engines (e.g. *TripAdvisor*, *Kayak*, *Trivago*) search the offerings of OTAs looking for the best deals to offer to their customers (Vila et al., 2018).

In addition, OTAs and, especially, metasearch engines, give prospective visitors the opportunity to compare prices, features and quality levels of a larger range of hospitality services, as well as to book them by using a single platform (Holland, Jacobs, & Klein, 2016). Furthermore, OTAs enable last-minute deals to visitors, which traditional intermediaries were not able to provide consistently (Law, Leung, Lo, Leung, & Fong, 2015).

Moreover, the above-mentioned information dispersion, as well as the geographical gap between the demand and destinations in the travel planning stage, and the predominance of SMTEs in this sector, are likely to originate lack of trust among visitors towards the quality standards of companies which are totally or relatively unfamiliar to them. In such scenarios, the assistance that OTAs and meta-search engines provide to visitors, namely through UGC tools that they convey in their online platforms, is arguably one of their most important roles (Xiang, Wang, O'Leary, & Fesenmaier, 2015). Furthermore, the OTA's increased ability to provide complete and customised travel planning solutions to their customers, namely by dynamic packaging, was also a major factor accounting to their current dominance in the global travel and hospitality market (Xiang et al., 2015).

Lastly, the dissolution of the markets' geographical boundaries originated by OTAs, enabled many of them to operate at a global scale and gain an overwhelmingly larger negotiation power with individual suppliers (Leung, Guillet, & Law, 2014). Such power is often translated in the increased capacity of OTAs to sell individual services and aggregated products (packages) from destinations around the world to a global audience, at more competitive prices, sometimes lower than those offered by the suppliers' own direct distribution channels (Leung et al., 2014). Thus, according to Chang, Hsu and Lan (2019), OTAs and suppliers, such as hotels, simultaneously cooperate and compete with each other. Hence, although OTAs and meta-search engines enable small-sized hotels to reach a global audience (Raguseo et al., 2017), the pressure of the former to be given discounts and ever-higher commissions, explains why the hotels would like that returning guests will book their stays directly through their own websites (Chang et al., 2019). Such duality is evident in Europe (Figure 1.4), where the hotel bookings performed directly via their own websites is

estimated to grow from 31% of the overall revenues in 2017 to 34% in 2021 (Phocuswright, 2019).



**Figure 1.4 - European online hotel booking share (%) by channel, 2017 vs. 2021**

Source: Phocuswright (2019)

Previous research suggests that the major relevance of OTAs to tourism suppliers is their ability to give them and their products a global presence (Raguseo et al., 2017). However, as the growing dominance of OTAs encourages them to demand further discounts and commissions to individual suppliers, the latter tend to look for ways to avoid OTAs as much as possible, which often originates conflicts between them (Huang Yin et al., 2019). In this scenario, DMOs are often considered as a key player in implementing ICT solutions that provide further visibility to tourism attractions and services (Oliveira & Panyik, 2015).

#### **1.3.2.4 Tourism destinations**

Unlike individual tourism businesses, tourism destinations are a relatively abstract construct which is prone to different interpretations (Pearce, 2014). According to Saraniemi and Kylänen (2011), depending on the perspective, destinations may be perceived as (i) the place and society where the visitor's stay will occur, which includes its natural and cultural attractions and services, (ii) a set of tourism and non-tourism players sharing a management strategy aiming to enhance the competitiveness of their tourism services, (iii) a brand strategically built to attract visitors.

Given the inherently territorial basis of tourism destinations, they are usually administered by public administrations, which often create organisations at local, regional/state, and national levels (Pulido-Fernández & Merinero-Rodríguez, 2018), mainly established to promote destinations in source markets and most of them still focus on external-oriented

tasks such as: (i) advertising campaigns; (ii) direct mailings; (iii) production and distribution of brochures; (iv) participation in trade shows/fairs; and (v) direct sales (Presenza, Sheehan, & Ritchie, 2005). These organisations are usually referred to as tourism boards (Elliot, 2002). The advent of the Internet, in the mid-90s became a crucial element of the tourism boards' promotional efforts and added web marketing to their external-oriented efforts, since it allowed them to reach a wider audience at relatively lower costs (Buhalis, 2003). Thus, most of the previously mentioned tourism organisations had soon implemented their own official destination websites which were, to a greater extent, electronic brochures providing useful information to prospective visitors and promoting their attractions and services (Estêvão, Carneiro, & Teixeira, 2014). The implementation and management of promotional tourism destination portals represented the first major adoption of ICTs by tourism destinations (Buhalis, 2003). Unlike the aviation and hotel sectors, which had initially made use of ICTs to coordinate their increasingly complex internal operations, the focus of tourism boards on promotion have led them to adopt ICTs to reach their potential visitors.

However, as tourism progressively turned into one the major industries worldwide, factors such as the rising competition of the growing number of destinations globally, the growing sophistication of the tourism demand as well as the increasing importance of the tourism sector to the economies and social welfare of many host communities has spurred some tourism boards to shift their focus from the external promotion to the internal coordination of its tourism players (Sheehan, Vargas-Sánchez, Presenza, & Abbate, 2016). The term Destination Management Organisation (DMO) was coined to differentiate this new breed of tourism bureaus that, although continuing to have the external promotion as a major task, also focused their efforts on the management of the whole destination in order to: (i) establish tourism cyclic planning and development processes and goals (Hall, 2008); (ii) qualify the key elements of the destination (e.g. natural and tourism attractions, human resources, infrastructure) (Ritchie & Crouch, 2003); (iii) encourage and assist private players to raise quality levels of their services (Karayilan, & Cetin, 2016); (iv) play a pivotal role fostering communication and collaboration between the whole array of destination-based stakeholders (Pechlaner & Raich, 2010; Sheehan et al., 2016); (v) design specific themed products which are more beneficial to the local economy (Pikkemaat, Peters, & Chan, 2018); (vi) provide valuable strategic data and knowledge to the destination's players (Ritche & Crouch, 2003); (vii) target and attract the most advantageous segments of the tourism demand (Femenia-Serra & Gretzel, 2020); (viii) provide and/or advertise funding schemes for private tourism players (Chaperon, 2017).



According to Ritchie and Crouch (2003) the internal destination development efforts should be to coordinate tourism stakeholders in order to provide the best possible quality of the visitor's experience. Despite the scarce research on DMO's success factors, empirical evidence indicates a positive correlation between DMO's success and destination's competitiveness (Volgger & Pechlaner, 2014). In their study of an Alpine destination context, Volgger and Pechlaner's (2014) findings suggest that destination competitiveness is heavily influenced by networking capacity of the DMO which, in turn, depends on the level of acceptance of its leading role by destination stakeholders.

The shift of the focus of some DMOs from external promotion to internal management demanded the establishment of more efficient communication and collaboration processes between them and individual businesses and attractions. Moreover, especially in geographically dispersed regional/state and national-scope destinations, the various DMO's branches and tourism information offices required ICTs enabling a coherent provision of information to visitors as well as the internal sharing of up-to-date data with its staff members. The emergence of new ICT applications enabling the use of Customer Relationship Management (CRM), Web 2.0 and UGC to improve the relationship with the demand markets as well as with internal stakeholders became both a challenge and an opportunity for DMOs (Lee & Wicks, 2010; Sigala, 2008). Moreover, the primacy of the coordinating role of DMOs, which is its core competency (Presenza et al., 2005) and is paramount to destination competitiveness (Volgger & Pechlaner, 2014) spurred a handful of them to implement ICT networks linking tourism players, the so-called DMSs.

### **1.3.3 Destination management systems**

#### **1.3.3.1 The concept of DMS**

Despite the lack of a universally accepted definition of DMSs (Sigala, 2013) these systems are often considered as a collection of computerised data about a destination, accessible in an interactive manner (Buhalis & Wagner, 2013), which generally include information about attractions and services, incorporating the possibility of making reservations (Sigala, 2014). With respect to ownership and management, Buhalis (2003, p. 282) states that "the DMSs are usually managed by Destination Management Organisations (DMOs), which can be public, private or public-private organisations". One of the first approaches to the concept of DMS was made by Pollock (1995), who defined it as the ICT infrastructure used by a

DMO to collect, store, manipulate and distribute information in various ways. However, perhaps the most relevant and innovative aspect of the Pollock perspective is the fact that he considers that DMSs also allow transactions, bookings and other commercial activities. In order to integrate all these functionalities, these systems have a technological architecture that allows, not only the communication with potential customers, but also interactions among DMOs and different service providers located at the destination (Soteriades, 2012).

Despite the wide range of possibilities of these systems, in early studies of the concept of DMS, a great focus is given to its role as a marketing tool for consumers. Hence, another of the first attempts to define DMSs was proposed by Sussman and Baker (1996, p. 102), who suggest that "a DMS is essentially a marketing tool, promoting tourism products in a specific destination, which can be a nation, region, city or other recognizable geographical entity". However, long before the advent of the OTA domain or the emergence of social media, the authors already argued that the DMSs could have up to three components including the opportunity of doing bookings and purchases (Sussman & Baker, 1996, p. 102):

- (i) A product database (e.g. of attractions, accommodations, travel information);
- (ii) A customer database (of those who use or have used the database);
- (iii) A reservation system.

The ability to handle bookings, either through the DMS booking system or by passing them on to the store's third parties' booking systems, had the power to transform any destination portal from a computerised brochure into something significantly more powerful.

Despite recognising that DMSs differ from traditional promotional websites of the destinations, there is still no consensus regarding all the features that characterise these systems and the DMS concept is still somewhat blurred. The concept of DMS is detailed in Chapter 3, addressing, among other features, the architecture of this kind of platforms and analysing in deep detail the functionalities that characterise this kind of systems.

### 1.3.3.2 Benefits of DMSs

Previous research on DMSs has focused primarily on the advantages of adopting DMSs to destinations. Several authors state that, when compared to the traditional distribution channels - intermediaries (e.g. tour operators, travel agencies) and the direct distribution operated by each service provider -, DMSs bring clear advantages to destinations as a whole and to individual suppliers in particular, while satisfying the needs of a more sophisticated and autonomous demand (Buhalis, 2003; Inversini, Cantoni, & De Pietro, 2014).

Egger and Buhalis (2011, p. 177) argue that "successful DMS solutions present the information structure of a destination and encourage internal and external coordination and communication with partners and customers". Hence, Ndou and Petti (2007) reinforce that coordination and communication within a destination is a common strategic objective of the DMSs.

According to Horan and Frew (2007, p. 9), at the destination level, the DMSs can contribute to achieve the following objectives:

- “Effectively coordinate the marketing and branding activities of a specific destination and the full range of products it has to offer;
- Provide timely, accurate, impartial and quality assured information about the destination and products (accommodation and not accommodation);
- Facilitate the effective distribution and sale of a comprehensive range of tourism products from one destination;
- Present the destination as a holistic entity displaying a destination orientation rather than a product orientation;
- Provide adequate and sustainable mechanisms for building customer relationships through effective, meaningful and continuous communication;
- Increase the level of satisfaction of its suppliers, the local community and all its stakeholders by building and maintaining meaningful relationships;
- Facilitate the management of a destination by supporting DMO's activities and by providing tools, support and training to its stakeholders”.

Egger and Buhalis (2011) state that the emergence of DMSs is a consequence of the growing relevance of DMOs in the construction of the tourism product, presenting the

supply, promoting cooperation and marketing to ensure long-term competitiveness as a strategic goal.

On another hand, today, the expectations of visitors who plan an online tourism experience, include not only the search for assertive information about a destination, but also the possibility of making reservations (Minghetti & Buhalis, 2010). In addition, as mentioned earlier, visitors tend to prefer one-stop-only websites when making their travel arrangements (Law, Leung, Leung, & Fong, 2015). These are some of the reasons why many DMOs have worked hard to attract more sophisticated and demanding potential visitors, creating integrated search engines that, along with product information and promotions, include travel planning and booking.

Most likely due to the latest development trends in the tourism industry, especially the growing dominance of OTAs, some researchers began to question the role of DMSs (Werthner et al., 2015). In their manifesto for future ICTs and tourism research issues, some of the most prominent researchers in the field argue that a major upcoming development would eventually be the replacement of DMSs by global booking mechanisms (Werthner et al., 2015). Indeed, when addressing the Swiss hotel industry, Schegg, Stangl, Fux, and Inversini (2013) noted that many hotels questioned the usefulness of keeping expensive DMSs, generating relatively few reservations and unable to compete with OTAs marketing, technology and strategy.

However, it may be appropriate to question whether the entire concept of DMS can be compromised by the loss of its relevance in relation to OTAs. Some other authors, who privilege the internal role of DMSs regarding the coordination of destination-based players (Morrison, 2013; Ndou & Petti, 2007), would probably disagree. After conducting an extensive survey to DMO managers aiming to analyse the role of ICT applications to destinations' sustainability, Ali and Horan (2014) concluded that DMSs were considered the most important ICT tool, among a total of them, in supporting their efforts to achieve sustainability. Nonetheless, the authors highlight that the internal roles of a DMS in coordinating destination-based actors, rather than its consumer-facing elements, were considered by the DMO managers as paramount to achieve sustainability, namely through the constant information exchanges across stakeholders that it enables (Ali & Horan, 2014).

Moreover, several researchers are still conducting research on DMSs (Ammirato, Felicetti, Della Gala, & Cozza, 2018; Femenia-Serra & Ivars-Baidal, 2018; Ivars-Baidal et al., 2019), which partially attests that they consider these platforms as valuable tools, and some

researchers argue that this kind of systems can leverage the concept of smart tourism destinations (Ali & Frew, 2014; Ammirato et al., 2018; Ivars-Baidal et al., 2019) . This last issue is explored in more detail in section 1.3.3.4.

The different approaches to the concept of DMS, as well as the apparent lack of a research agenda on this kind of platforms, suggest that there are still relevant gaps in previous research concerning the advantages of DMSs' adoption. The advantages of these systems are discussed in chapter 2, in the scope of the advantages of e-tourism, and in chapter 9, while addressing the reasons for adopting DMSs and the benefits of this adoption. However, a detailed analysis of the advantages of DMSs is provided in chapter 5.

### **1.3.3.3 Factors influencing DMSs' adoption**

A relatively scarce body of research has been produced on the factors which may instil or rather inhibit DMOs as well as destinations to adopt a DMS. However, since DMSs can be considered as a type of interorganisational information system (IOIS), it seems pertinent to extend the analysis of the factors explaining DMSs to the previous research undertaken in the realm of IOISs. Hence, both previous research on DMSs and on IOISs enabled to identify three main types of factors that determine the adoption of these systems by stakeholders:

- (i) Technology and business model;
- (ii) Organisational factors;
- (iii) External environment.

Previous research has permitted to identify four technology-related factors that may influence the adoption of DMS, namely:

- Range and diversity of its functionalities (Li & Wang, 2010; Wang, 2008);
- Geographical scope/basis of a DMS (Buhalis, 2003; Buhalis & Spada, 2000);
- Levels of standardisation and compatibility between DMSs and other tourism-related platforms (Guthrie, 2011; Kärcher & Alford, 2011);

- Orientation of the DMS, which may be more likely to promote and sell products from the destination or rather tailored to assist potential visitors to plan and book their travel experiences (Wang, 2008; Wang & Russo, 2007).

The following six organisational factors were identified in existing literature on IOISs and DMSs alike:

- Strategic orientation of the DMO (Mistilis & Daniele, 2005; Sigala, 2013);
- Conflicting ideas on the role that the DMO should play (Mistilis & Daniele, 2005; Sigala, 2013);
- Perceived costs and benefits of the DMS to the organisation (Buhalis, 2003; Iacovou et al., 1995; Sigala, 2013);
- Organisational readiness of DMSs' adopters, such as the DMO and the destination-based tourism agents (Chwelos, Bensabat, & Dexter, 2001);
- Level and depth of relationships between organisations at the destination level (Boonstra & de Vries, 2005; Ndou & Petti, 2007; Rodon, Pastor, Sesé, & Christiaanse, 2008; Sigala, 2013);
- SMTEs trust in the DMO (Bédard & Louillet, 2011; Sigala, 2013).

The third and last type of factors is related to the external environment and includes:

- Competitive pressure from other destinations and their tourism suppliers (Alford & Clarke, 2009; Chwelos et al., 2001; Sigala, 2013);
- Pressure and/or imposition from trading partners (Buhalis, 2003; Boonstra & de Vries 2005; Chwelos et al., 2001; Horan & Frew, 2007);
- Government influence or imposition to adopt a DMS or not (Chau & Hui, 2001; Sigala, 2013);
- Customer profile and expertise (Brown, 2004; Ramamurthy, Premkumar, & Crum, 1999).

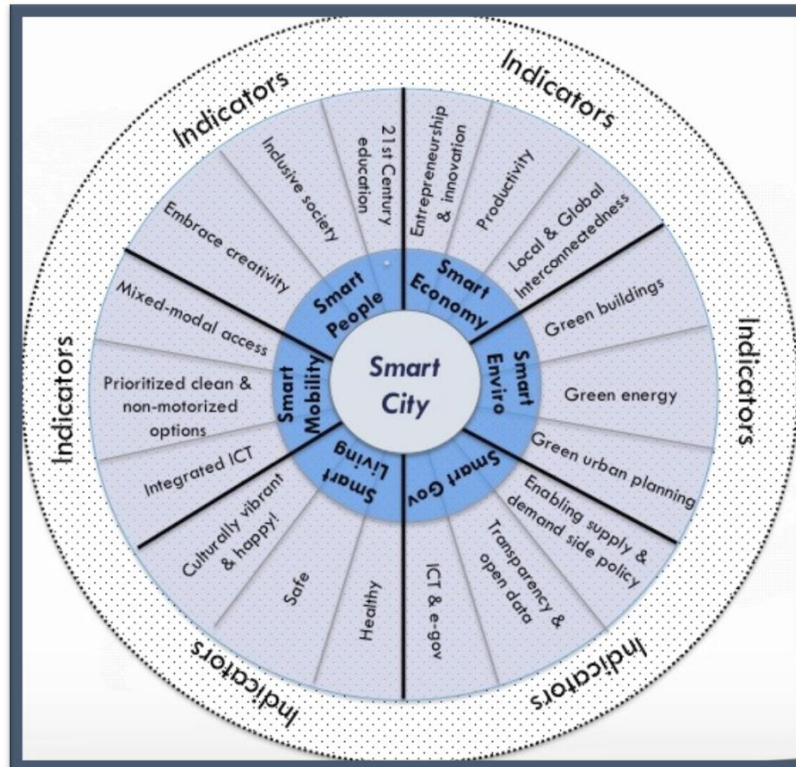
The present thesis aims at further clarifying the factors that influence the adoption of DMSs, including those deriving from novel transformations in the tourism industry. Thus, the above-mentioned factors will be extensively addressed and empirically tested in chapters 4, 9, 10

and 11. While in Chapter 4 a deep analysis of these factors based on literature review is provided, in Chapter 9, these factors are addressed when referring to challenges for DMS adoption. In order to complement the theoretical approaches of the two chapters previously referred, Chapters 10 and 11, empirically test the influence of factors both on the adoption of DMSs (Chapter 10) and on the perceived importance of specific functionalities of this kind of platforms (Chapter 11).

#### **1.3.3.4 The potential role of DMSs in the age of the smart tourism destinations**

The emergence of SDs may open new and more innovative future perspectives for DMSs as the core of destination management. The concept of SD emerged from that of smart cities, which extensively use ICTs to coordinate relevant activities and services aiming to interconnect citizens and organisations, in order to tackle the challenges inherent to the growing complexity and competitiveness of urban areas (Zhu, Zhang, & Li, 2014). Komninos, Pallot and Schaffers (2013) claim that, in order to achieve smartness, a city must make its ecosystem: (i) instrumented, measuring the city's services and activities in order to improve their management (e.g. through sensors scattered around the city providing metrics); (ii) interconnected, linking residents, organisations and technologies through an ICT network both wired and wireless; (iii) intelligent, by using predictive applications with the ability to generate more accurate, timely and personalised services and decisions to both service managers and citizens.

Moreover, according to Caragliu, Bo and Nijkamp (2011), smart cities should be able to provide high quality of life standards as well as sustainable growth to their resident communities through investment in human capital, proper levels of government participation, and infrastructure supporting the adequate spread of information through the city. Cohen (2012) has proposed a smart city wheel (Figure 1.5) suggesting that they ought to improve indicators at six levels, namely: (i) governance; (ii) environment; (iii) economy; (iv) people (e.g. inclusive policies, creativity, innovative education); (v) mobility; and (vi) living (e.g. safety, health services).



**Figure 1.5 - The Smart City Wheel**

Source: Cohen (2012).

Smart cities have inspired SDs to apply smartness to the enrichment of visitors' experiences to subsequently provide more quality of life to host communities (Gretzel, Zhong, Koo, Boes, Buhalis, & Inversini, 2016). According to Gretzel, Sigala, Xiang and Koo (2015), smart tourism is a direct extension of e-tourism but it differs from it by connecting the physical world of everyday life to the digital, as postulated by the Internet of Things (IoT) concept.

It seems noteworthy that most of the early research on SDs focuses on the use of ICT applications to enhance the visitors' experiences, while paying little attention to their role vis-à-vis destination management. However, even the research work which has coined this concept recognises that SDs should be based on and take advantages of: (i) technology-embedded environments; (ii) responsive processes at micro and macro levels; (iii) end-user devices available in multiple touchpoints; (iv) engaged stakeholders that use a centralised platform dynamically as a neural system (Buhalis & Amaranggana, 2014). Hence, Buhalis and Amaranggana (2014) recognise that Smart Tourism Destinations (SDs) require interconnectedness stakeholders through a technological system on which information related to tourism activities could be exchanged instantly. Such platforms would also help assembling tourism experiences and improve the effectiveness of resources management



across the destination (Buhalis & Amaranggana, 2014). Regarding the centralised system of the SD, Zhu et al. (2014) consider that they should provide open data, allowing destination-based stakeholders to openly access and adopt new applications developed by the SD for free or at a reasonable cost, so as to avoid monopolies vis-à-vis the use of specific ICTs and benefit the whole local economy. Although these authors do not suggest a nomenclature for such technological system, its similarities with some crucial elements inherent to DMSs, such as those provided through their intranet, extranets, as well as by their dynamic packaging capabilities, seem evident. In addition, when positing that the use of a centralised system would “enhance the tourism experience and improve the effectiveness of resource management” (Buhalis & Amaranggana, 2014, p. 557), the authors are aligning the goals of that same system with those of DMSs. In an additional study, Buhalis and Amaranggana (2015) stressed the importance of SDs’ ICTs in enabling the creation of personalised content and experiences by visitors, which also corresponds to the capabilities often attributed to DMSs.

Some more recent body of research on SDs tends to pay more attention to the role of SDs regarding the destinations’ management and governance (Boes, Buhalis, & Inversini, 2015; Gretzel et al., 2016; Ivars-Baidal et al., 2019). Under this perspective, Gretzel et al. (2016) argue that the sole adoption of ICTs typically implemented in SDs in a given destination will not be enough to turn it into a SD. According to these authors, SD managers should provide an inclusive ecosystem for all destination-based actors in order to take full advantage of the adopted ICTs (Gretzel et al., 2016). Among the main components that compose a successful SD, Boes et al. (2015) highlight the need for an effective leadership of the destination able to convince destination-based stakeholders that short-term individual benefits are sometimes harmful for the long-term sustainability of SDs. Gretzel et al. (2016) also refer to dynamic leadership of the DMO as a prerequisite to the further cooperation among stakeholders required by SDs. The relevance of leadership as a condition for coordination and cooperation of players at the destination level has obvious reminiscences in the prerequisites for successful DMS adoption mentioned in previous research (Ndou & Petti, 2007; Petti & Solazzo, 2007; Sigala, 2013).

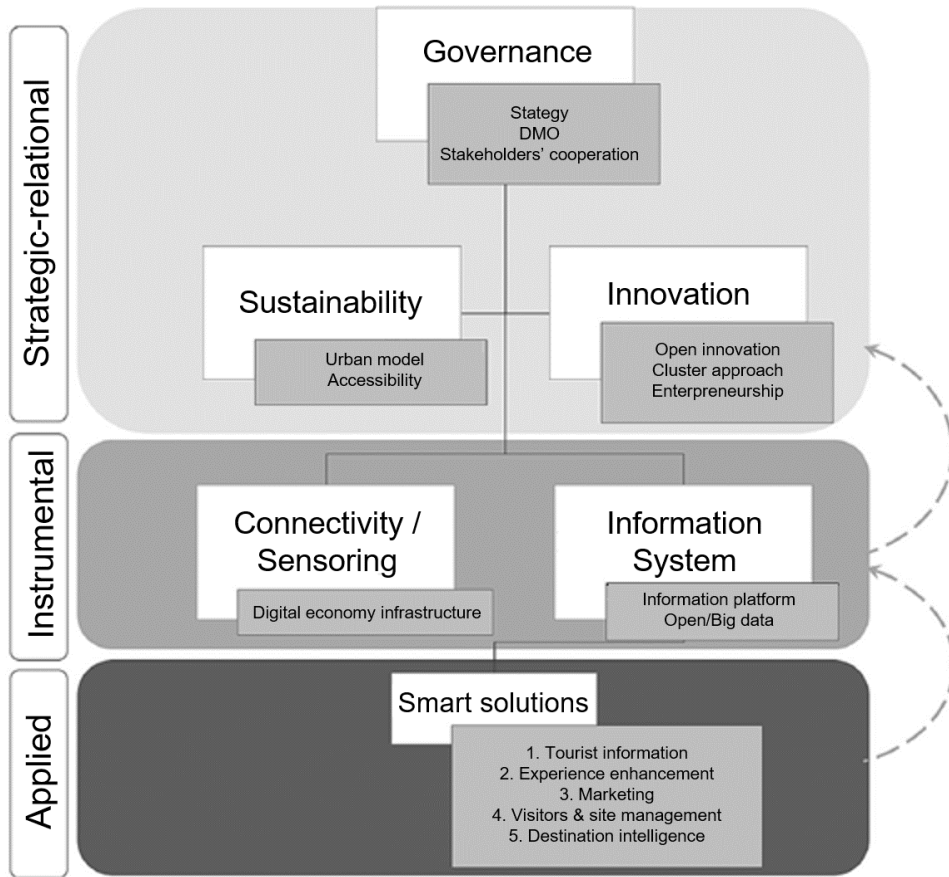
Ivars, Solsona, and Giner (2016) have also highlighted the implications of SDs to destination management when proposing a model comprising three levels in which SDs should operate in order to succeed (Figure 1.6). The first level - strategic-relational -, demands public-private cooperation in order to guarantee the sustainability of the destination as well as an open and collaborative environment of innovation (Ivars et al., 2016). The second level -

instrumental - refers to the need for digital connectivity to configure a destination information system that is essential to support decision-making (Ivars et al., 2016). Lastly, the third level - applied - comprises the development of specific smart solutions aiming to enhance the efficiency of the communication and relationship flows between stakeholders and the improvement of the visitors' experience (Ivars et al., 2016). Baggio and Del Chiappa (2014) argue that destination managers should realise that the relationships between destinations' stakeholders occur at both the real and virtual levels. Hence, the authors consider that the destinations' virtual world must be integrated in the daily communication of destination-based players through ICT networks that foster the destination's digital ecosystem (Baggio & Del Chiappa, 2014), such as DMSs.

Also adopting a destination management perspective, Ivars-Baidal et al.'s (2019) scientific work appears to have been the first explicitly referring to DMSs in a SD context, beginning by arguing that the "direct link between ICTs and destination management was first made during the development of the first Destination Management Systems" (p. 1583). The authors posit that the efficiency of SDs will not rely exclusively on technology but also on appropriate governance at all levels of the SD. While referring to required openness of SDs ICT systems, Ivars-Baidal et al. (2019) suggest that "a new horizon for DMS has been created in which open data (...) and the application of big data analysis techniques (...) are particularly interesting" (p. 1586), thus considering DMSs as the central information systems of SDs.

Femenia and Ivars-Baidal (2018) also posit that SDs are expected to develop a central intelligence platform or system able to collect, store and analyse big data generated by different destination stakeholders, as well as to generate useful business insights deriving from the use that visitors make of the system's UGC and social media tools. According to these authors, a DMS is the most suitable type of ICT application to perform this central role in the SD's management.

Ali and Horan (2014) further argue that DMSs may have a major role fostering internal coordination and collaboration efforts aiming to achieve an integral sustainable development of the destination. Indeed, when addressing their relevance to SDs, these authors posit that "DMSs can offer creative products such as providing a webspace where the community and the visitor can interact, offering an avenue for the community to consult on proposed tourism plans and projects, supply sensitisation information to visitors for better interpretation of the destination and encouraging more sustainable behaviours and attitudes" (Ali & Horan, 2014, p. 13).



**Figure 1.6 - Systemic SD model proposed by Ivars et al. (2016)**

Source: Ivars-Baidal et al. (2019)

## **1.4 Thesis' methodology**

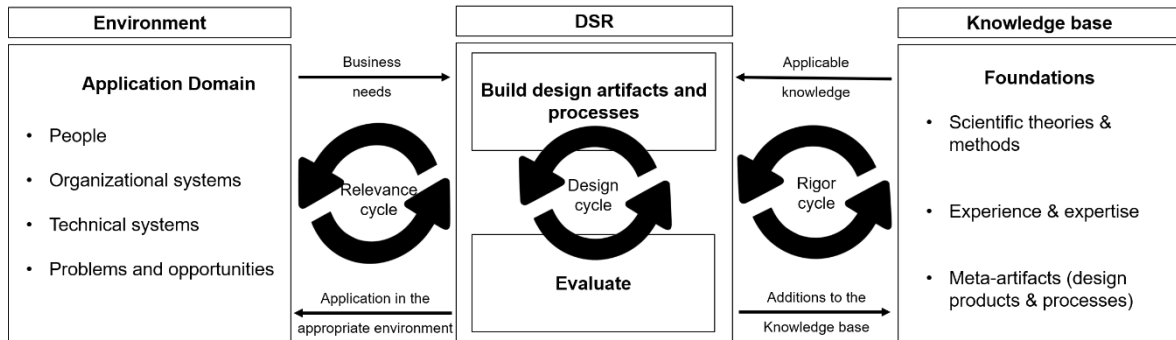
### **1.4.1 Design science research**

The research underlying the present thesis was built upon the Design Science Research (DSR) methodology, which has been mostly applied to the ICTs' field and, particularly, to the study of IOISs (Lempinen, Rossi & Tuunainen, 2012; Lucas & Babaian, 2012; Zarvić, Stolze, Boehm, & Thomas, 2012).

According to Hevner, March, Park, and Ram (2004), DSR can be defined as a process or method aimed at designing and proposing an artefact – often in the ICTs' field – so as to solve or help solving an existing problem. Hence, DSR has an intrinsically proactive nature, as its purpose is not to describe the real world but rather designing concrete artefacts to improve it (Alturki, Bandara, & Gable, 2012; Voigt, Niehaves, & Becker, 2012). As suggested by livari (2007), although DSR requires the production of descriptive knowledge (i.e. describing and explaining the observed phenomenon or object), as well as of conceptual knowledge (i.e. the concepts, constructs and frameworks on which the outcome of the DSR will be based), its ultimate goal is to produce prescriptive knowledge by designing an artefact capable of helping to solve a specific problem.

As previously mentioned, DSR was mainly developed by and for the ICTs' field (livari, 2007). Hence, the extensive use of ICTs within the tourism industry, whose lifeblood is information (Fletcher, Gilbert, Fyall, & Wanhill, 2017) might lead one to consider that there is a profusion of research on ICTs in tourism adopting a DSR approach. However, this is far from being the case. When asked to comment Werthner et al.'s (2014) manifesto titled "Future Research Issues in IT and Tourism", which emerged from a workshop gathering some of the leading experts in this field, Daniel Fesenmaier noted that "the emergence of Data Science and Design Science within IT-related fields appears not to have been discussed" (Werthner et al., 2014, p. 14). The realisation of the scarce application of DSR to tourism research are likely to have spurred Fesenmaier and Xiang (2016) to compile the handful of tourism studies using a DSR approach. Interestingly, most of these works do not encompass ICTs in tourism but rather, in most cases, the design process of innovative visitor experiences under a destination management perspective.

Regarding the specific activities within DSR, Hevner (2007) proposes three cycles that must integrate the artefact's development stages: (i) the relevance cycle; (ii) the rigor cycle; and (iii) the design cycle. Figure 1.7 illustrates these three cycles within a DSR process.



**Figure 1.7 - The design science research cycles**

Source: Adapted from Hevner (2007)

Hevner (2007) suggests that the relevance cycle begins by situating the research in a given environment, determining the problem, its application context as well as its limitations. It subsequently ends with a solution to the previously identified problem. The rigor cycle requires the analysis and justification of the knowledge base selected to construct the artefact, which includes the theoretical foundations as well as the methodology underlying the research. This requires an extensive literature review, capable to ensure the artefact's innovative nature. Lastly, the design cycle consists of the main activities undertaken by the researcher in order to construct and evaluate the artefact, representing the design research process.

#### 1.4.1.1 Design science research applied to the investigation underlying the thesis

The DSR-based methodological process underlying this thesis is illustrated in Figure 1.8.

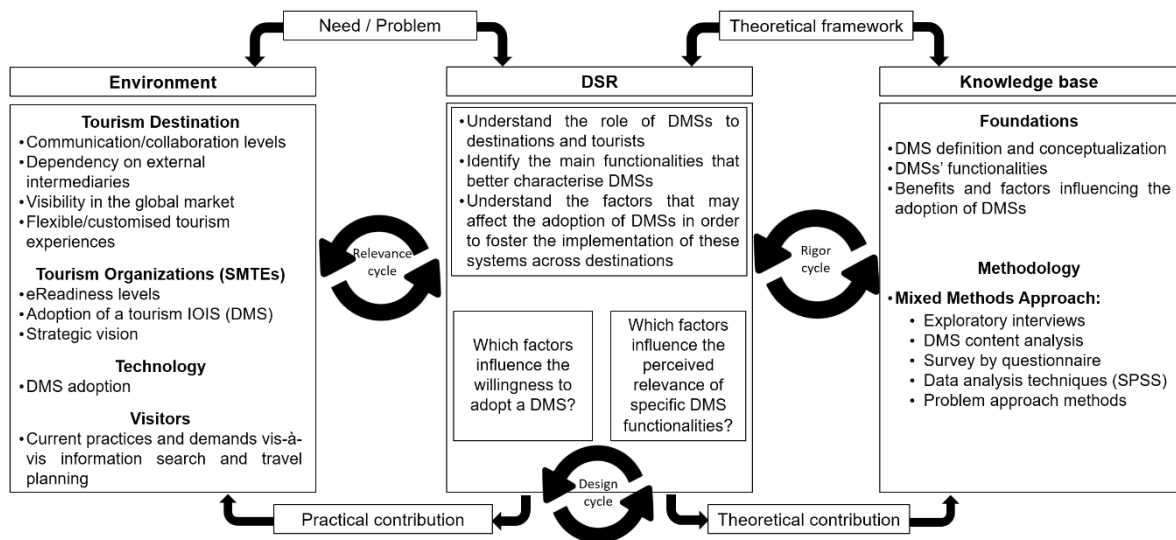


Figure 1.8 - The research framework based on DSR

The elements of the DSR applied to the present study are presented next.

The **Environment / Relevance cycle** consists of difficulties in keeping competitive faced by several tourism destinations, in a scenario of growing competition, namely the need of greater communication and collaboration among the destination's stakeholders, of decreasing the dependency of external intermediaries, improving the visibility in the global market and increasing the supply of customised tourism experiences.

Furthermore, several SMTEs of these destinations face various problems and challenges, namely low levels of *e-readiness*, lack of strategic vision, as well as low willingness and ability to cooperate with other destination-based stakeholders, which inhibits them to adopt IOIS systems such as DMSs. Moreover, destinations also face many challenges in coping with the current practices and trends regarding the online information search and travel planning of visitors. In such scenario, DMSs represent useful technological tools that may have a crucial role in helping both destinations and their stakeholders to overcome these difficulties, as well as in increasing their competitiveness. The Centre region of Portugal is one of the destinations facing several of these difficulties and challenges, with lower levels of competitiveness when compared to other regions of Portugal (as mentioned in section 1.1.2.), that has no DMSs, thus not benefiting from the advantages of this kind of platforms.

The **Knowledge base / Rigor cycle** was conducted through literature review on DMSs' definition and conceptualisation, functionalities of these platforms, their benefits as well as

factors influencing their adoption. Additionally, this cycle recommends a deep analysis of the main methods that may be used in the research process. When selecting the methods and techniques of an empirical research, one may opt for a quantitative, qualitative or mixed methods approach. The first adopts a positivist perspective, suggesting that reality can be quantified and that the purpose of research is to measure it as accurately as possible (Crocker, 2009). Hence, quantitative research gathers numeric data through closed-answer mechanisms (e.g. questionnaires) in order to analyse them statistically. In social sciences, such method tends to be used to analyse a relatively large number of individuals, ideally through a sample representing the universe they belong to (Creswell, 2009). When employing quantitative techniques, the researcher often aims to measure the level of match or mismatch between previously formulated hypothesis and data obtained through the sample (Crocker, 2009).

In contrast, qualitative research draws from constructivism, which believes that each individual constructs his or her own understanding of the world, depending on time and on specific circumstances (Merriam, 2002). Thus, qualitative research asks particular types of questions related to a particular context (Patton, 2002). In social sciences, qualitative research seeks to understand the individuals' own experiences or perceptions regarding a given issue without preconceived ideas and hypothesis (Ivankova & Creswell, 2009). Hence, by collecting textual data through open-question mechanisms (e.g. semi-structured interviews), and examining it through interpretative analysis, its aim is not to prove or disprove a pre-existing idea but rather to explore and describe a phenomenon (Ivankova & Creswell, 2009).

As far as the mixed methods approach is concerned, it employs both quantitative and qualitative research in a single study according to the goals and context of an individual project (Crocker, 2009; Johnson, Onwuegbuzie, & Turner, 2007). According to Creswell (2009), the mixed methods approach must take into account specific procedures for collecting, analysing and mixing quantitative and qualitative data, based on three elements: (i) timing, or order in which the quantitative and the qualitative research are conducted; (ii) weighting, which refers to the need to select to which approach (quantitative or qualitative), if any, will be given priority in the research; (iii) mixing, which is the way qualitative and quantitative data are integrated in the research process. If, for instance, the research aims to explain quantitative results obtained previously, it should start by producing data through, for example, a closed-question questionnaire whose results will be, subsequently explained by open-question instruments, such as in-depth interviews (Ivankova & Creswell, 2009).

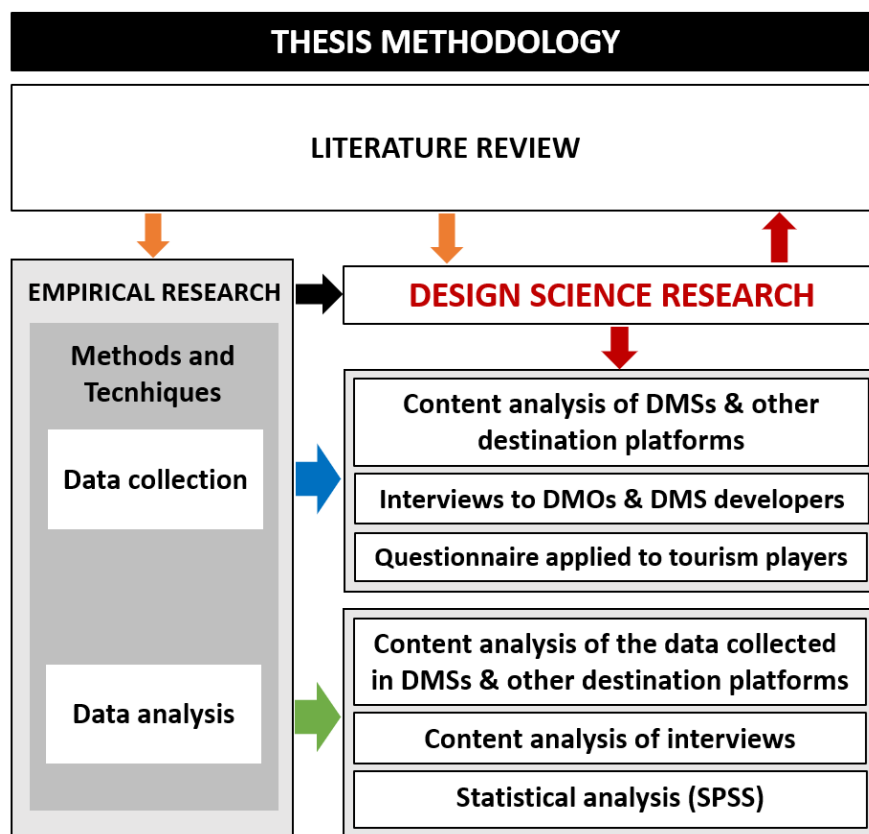
On the other hand, if a given study aims at developing a closed-question questionnaire grounded in the views of experts in the issue being analysed, qualitative data (e.g. through in-depth interviews) should be obtained prior to the design and application of a quantitative data collection method (e.g. closed-questions' questionnaire).

At this point, for reasons explained in detail below, it seems relevant to clarify that the empirical research underlying this thesis adopted a mixed methods approach.

The **DSR / Design Cycle**, in the present thesis, consisted of collection and processing of qualitative and quantitative data gathered through interviews to DMSs' developers and DMOs, the content analysis of DMSs worldwide, the content analysis of Portuguese official national and regional websites of tourism destinations, as well as through a questionnaire survey to regional tourism players. Thus, both constructivist and positivist approaches were applied. When it comes to the former, in four scientific works several content analyses to Portuguese destination websites (chapters 5 and 7) and to international DMSs (chapters 6 and 8) were conducted. In addition, following a constructivist approach, the research underlying this thesis also included in-depth interviews with DMS developer companies as well as with international DMOs' responsible for the implementation and management of a DMS (Chapters 8 and 9). To complement the constructivist approach a positivist methodology was adopted by conducting a questionnaire survey with several tourism suppliers (managers of tourism accommodations, managers of tourism attractions and representatives of city councils) of a destination not having a DMS – the Centre Region of Portugal (Chapters 10 and 11).

Data analysis included content analysis of data collected in DMSs and other destination platforms and through interviews, as well as statistical analyses performed using the statistical package basis *IBM SPSS 24*, including factor analyses and multiple regression analyses (Figure 1.9).





**Figure 1.9 - The research process based on design science research**

Due to the main goal of the research, it was found necessary to carry out a content analysis of DMSs at an international level to identify the main characteristics of DMSs that are operating nowadays. Therefore, twenty-three local and regional European and North American destination platforms referred as DMSs in the literature or by practitioners, were analysed (Chapter 8). In addition, other content analyses were performed to determine the gap separating the Portuguese national and regional portals from the multidimensional networks which, according to previous studies, are inherent to DMSs. More specifically, these analyses were undertaken to compare the functionalities provided by the Portuguese platforms with those conveyed by DMSs. Consequently, a set of content analyses were conducted, initially of the national online destination portal (Chapter 5) and, subsequently, of those of the seven regions of the country (Chapter 7).

Although the content analysis of websites was of great value, it was only able to shed light into the functionalities available in the DMSs' front-end websites, aimed at prospective visitors, not revealing their B2B functionalities available to the DMOs' own staff and to destination-based players. Therefore in-depth semi-structured interviews were conducted

with three major DMSs' solutions providers as well as with eleven European and North American local and regional DMOs, in order to increase knowledge in two areas: firstly, to grasp the current key distinctive functionalities of DMSs aimed at visitors and other destination players, and also the future development perspectives of their capabilities (Chapter 8); and secondly, to identify the main current practices concerning DMSs' management by the corresponding DMO, major reasons to adopt these systems, as well as the challenges inherent to their successful implementation (Chapter 9). The script of the interviews is presented in Appendixes I and II. Holding these interviews was also considered essential to include a constructivist perspective to the analysis of the factors influencing DMSs' adoption and successful implementation, able to complement the positivist approach on DMSs' adoption factors that will be adopted in this thesis.

When selecting which DMS providers to interview, first a CEO of the largest company in this field, which refers to itself as a DMS developer, was selected. Moreover, this company has developed DMSs which had been mentioned in previous research on DMSs. Through a snowball sampling approach, it was possible to identify the three major DMS providers worldwide, being two of them based in Europe and one in the United States. The Chief Executive officers (CEOs) of these three companies accepted to participate in this research.

When it comes to the selection of the DMOs to interview, the first two emerged from previous research on DMSs, since their platforms were extensively analysed in DMS-specific studies. Then, the DMOs created by the two major DMS developers previously mentioned were invited to participate in the study. A total of eleven DMOs' officials that accepted to be interviewed participated in the survey. Within each DMO, the interviewees were either the corresponding heads of marketing or of ICT services. All in-depth interviews were held via Skype calls and their length ranges from 45 minutes to 1 hour and 15 minutes. Every interview was recorded and subsequently transcribed.

The knowledge obtained about DMSs in the extensive literature review, complemented by the findings that emerged from the DMSs' content analysis and from the in-depth interviews to DMSs' developers and DMOs was instrumental to shape the last stage of the data collection process, where a positivist approach was followed. This last stage, following a positivist approach, consisted of a questionnaire survey with tourism players from Portugal's Centre region, representing three main elements of any tourism destination: (i) accommodation providers; (ii) local authorities (municipalities); and (iii) attraction management organisations. The main goals of this stage of the research were to understand the factors affecting the willingness to adopt a DMS by destination-based

stakeholders (Chapter 10) and the factors influencing the perceived relevance of specific DMSs' functionalities by those same stakeholders (Chapter 11). In the scope of this positivist research, two models were tested, one concerning factors influencing DMSs' adoption and another related to factors affecting the perceived importance of some DMSs' functionalities.

A pilot questionnaire was administered to 10 suppliers of tourism services. Little changes were introduced mainly regarding the wording of some questions. The final questionnaire is divided in four parts (Appendix III). The initial part of the questionnaire aimed to characterise the respondents' affiliate organisations, including their use of the internet and its IT-related initiatives (Part I). The next section includes a set of questions related to the respondents' knowledge and opinion about platforms of the Centre region of Portugal (Part II). The following sections was designed to obtain data on factors that may influence the adoption of DMSs as well as the importance assigned to several distinctive functionalities of this kind of systems (Part III). Finally, the last section includes questions related to the opinion of the respondents about: (i) the pertinence of implementing a DMS in the Centre region; (ii) their own willingness to adopt that same DMS; as well as (iii) the most suitable ownership, management and financing models of the DMSs to be implemented (Part IV).

The questionnaire was administered to 326 respondents representing the Centre's region accommodation subsector (n=93), attraction managers (133), and local administrations (100) for a period of four months, from April to August 2018. After the identification of potential participants, they were contacted via telephone calls, in which the scope of the study was explained, and their participation was requested. An e-mail with the link to the questionnaire was subsequently sent to all the contacted players who had previously accepted the invitation to participate in the survey.

The data obtained were subjected to several statistical analyses by using the statistical package basis *IBM SPSS 24*. Besides descriptive statistics, a first Principal Component Analysis (PCA) was undertaken to identify the factors influencing the adoption of DMSs, such as the relevance of the destination's tourism sector, organisational features of the respondents' organisations, the eventual constraints derived from the technology and business models inherent to DMSs as well as the pressure from the external environment (i.e. exerted by either tourism organisations or other tourism destinations). A second PCA was performed to confirming that the scale of the perceived usefulness of DMSs was unidimensional. Afterwards, multiple regression analyses were undertaken in order to understand how the factors influenced the respondents' perspective on the pertinence of

implementing a DMS in the Centre region, as well as their own willingness to adopt that same DMS (Chapter 10).

To analyse the factors that affect the importance of the distinctive functionalities of DMSs, two PCAs were also used. A first one to identify factors representing the relevance of specific types of functionalities and another to identify dimensions of factors that may influence the importance assigned to these functionalities. In addition, multiple linear regressions were carried out to grasp the impact of each factor in the perceived relevance assigned by respondents to each dimension of DMSs' functionalities previously identified (Chapter 11).

## **1.5 Thesis' structure**

The present thesis consists of a compilation of scientific documents presented in twelve chapters and is structured in five parts, being composed of, as illustrated in Figure 1.10:

- Part I – Introduction;
- Part II – Theoretical scientific works – DMS concept and adoption factors;
- Part III – Empirical scientific works – Characterisation of DMSs;
- Part IV – Empirical scientific works – Factors influencing DMS adoption;
- Part V – Conclusion.

In addition, Figure 1.11 represents how the different methodological approaches drawing from DSR were employed in the several stages of the research process. The core of the research is included in parts II, III and IV, corresponding to the scientific articles and book chapters presented in chapters 2 to 11 (see Table 1.2).

THESIS STRUCTURE		
Parts	Chapters	Research aims
Part I: Introduction	Chapter 1	Relevance of the theme, objectives, methodology and structure
- Part II - Theoretical scientific works: DMS concept and adoption factors	Chapter 2	eTourism: Concept, impacts and trends
	Chapter 3	DMS: Concept and distinctive functionalities
	Chapter 4	Factors influencing DMS and IOIS adoption and success
- Part III - Empirical scientific works: Characterization of DMSs	Chapter 5	Dimensions and functionalities of the Portuguese official destination online platform
	Chapter 6	The relational dimension of DMSs: The use of User-Generated-Content by DMSs
	Chapter 7	Content analysis of Portuguese regional DMOs' online platforms & comparative analysis with DMSs
	Chapter 8	Distinctive functionalities of DMSs aimed at visitors and destination players
- Part IV - Empirical scientific works: Factors influencing DMS adoption	Chapter 9	Frameworking DMSs' adoption processes, business models and management practices
	Chapter 10	Factors influencing the willingness to adopt a DMS by tourism stakeholders of the Centre region
	Chapter 11	Factors influencing the relevance given by Centre's tourism players to individual DMS functionalities
Part V: Conclusion	Chapter 12	Discussion, conclusions, limitations and further studies

Figure 1.10 - The thesis' structure

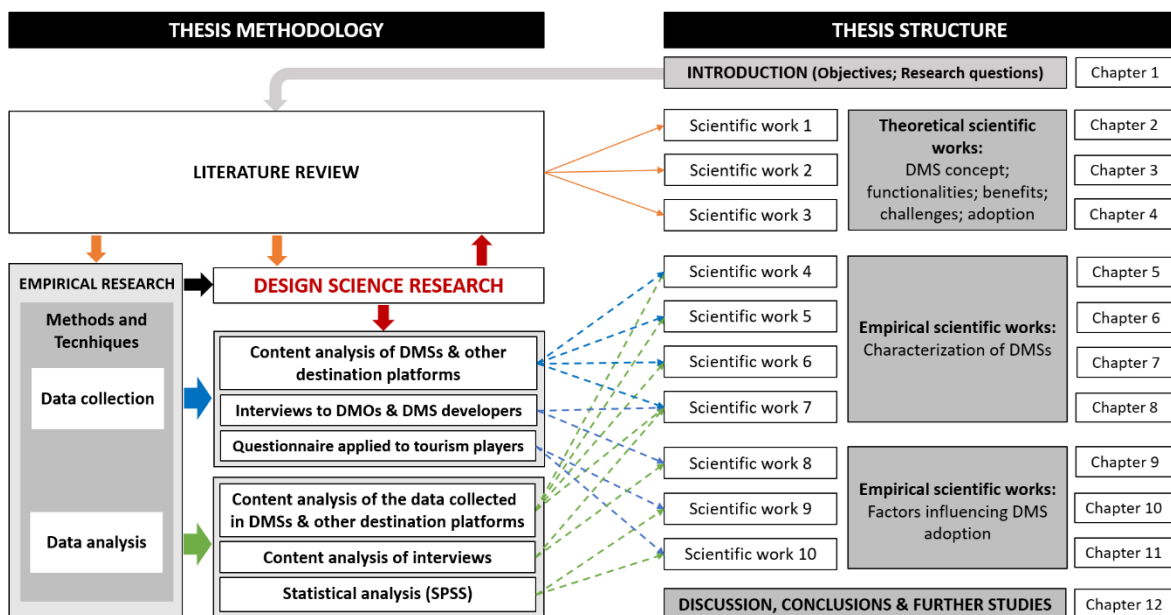


Figure 1.11 - The methodology within the thesis' structure

**Table 1.2 - Scientific works included in the thesis**

Chapters of the thesis	Scientific works
2	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2015). The evolving value of e-tourism for suppliers and visitors. In <i>Hospitality, Travel, and Tourism: Concepts, Methodologies, Tools, and Applications</i> (pp. 131-155). Hershey & New York: IGI Global.
3	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2014). Destination Management Systems: Creation of value for visitors of tourism destinations. <i>International Journal of Technology Management</i> . Special issue: <i>Technology Management for Sustainable eTourism: Challenges and Opportunities</i> , 64(1), 64-88.
4	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2014a). Destination Management Systems implementation. In M. Khosrow-Pour (Ed.), <i>Encyclopedia of Information Science and Technology, Third Edition</i> (pp. 3636-3645). Hershey & New York: IGI Global.
5	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2012). The role of DMS in reshaping tourism destinations: An analysis of the Portuguese case. <i>Journal of Information Technology and Tourism</i> , 13(3), 161–176.
6	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2013). Destination Management Systems: Improving the tourism experience by empowering visitors. In M. Kozak, L. Andreu, J. Gnoth, S. Liebe, & A. Fyall (Eds.) <i>Tourism Marketing: On Both Sides of the Counter</i> (pp. 138-155). Cambridge: Cambridge Scholar Publishing.
7	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (--). Tourism supply integration in Destination Management Systems: The case of Portuguese regional destination Web Platforms (To be submitted to a scientific journal).
8	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (--). Destination Management Systems: Key distinctive functionalities aimed at visitors and destination suppliers. <i>Journal of Global Information Technology Management</i> (undergoing review).
9	Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2020). Destination management systems' adoption and management model: Proposal of a framework. <i>Journal of Organizational Computing and Electronic Commerce</i> , 30(2), 89-110.
10	Estêvão, J. V., Teixeira, L., & Carneiro, M. J. (--). Factors affecting the adoption of Destination Management Systems by stakeholders: Proposal of an explanatory model. <i>Journal of Quality Assurance in Hospitality &amp; Tourism</i> (under review).
11	Estêvão, J. V., Teixeira, L., & Carneiro, M. J. (--). Factors influencing the relevance of DMSs' functionalities: The stakeholders' perspective. <i>International Journal of Electronic Commerce</i> (under review).

**Part I – Introduction** - only includes **Chapter 1**, which corresponds to the introduction of the thesis. It is divided in five subsections addressing the study's relevance (subsection 1.1), the study's objectives and research questions (subsection 1.2), a literature review intended to contextualise the main concepts and issues underlying the thesis (subsection 1.3), the methodology adopted in the thesis (subsection 1.4) and, finally, the thesis structure (subsection 1.5).

**Part II - Theoretical approach to the DMS concept and adoption factors** - comprises Chapters 2 to 4, where extensive literature review on DMSs is made. It contains one article published in a scientific journal and two book chapters.

**Chapter 2** is entitled *The Evolving Value of E-tourism for Suppliers and Visitors* and was published in the book entitled *Hospitality, Travel, and Tourism: Concepts, Methodologies, Tools, and Applications*. Based on previous research, this book chapter aims at exploring the main impacts and trends that the dynamic use of the Internet within the tourism sector – the so-called e-tourism – has originated in each of the sector's main stakeholders, including suppliers, intermediaries, Destination Management Organisations and visitors.

It is a conceptual study on e-tourism, focusing on its role in optimising tourism's supply chain management. Given the main topic of this thesis – DMSs -, it seemed necessary that the first study to be presented was a more general introduction to the use of Internet within the tourism industry, including the emerging challenges to the stakeholders as well trends, such as the use of UGC and ensuing implications. This first study introduces the four web platforms' dimensions proposed by Wang and Russo (2007) and Li and Wang (2010), namely: (i) information; (ii) communication; (iii) transactions; and (iv) relationship. This framework which categorises the four main capabilities that may be conveyed by web platforms is adopted in this thesis to classify the functionalities of DMSs.

**Chapter 3**, entitled *Destination Management Systems: Creation of value for visitors of tourism destinations*, is an article published in the *International Journal of Technology Management*. This study aims to clarify the concept of DMS by identifying, through the literature, the main differences between DMSs and other DMO web-applications/websites regarding functionalities targeted at potential visitors of destinations. For this, an extensive literature review including relevant scientific articles and book chapters on this topic was undertaken.

In order to achieve a broader perspective, each functionality was classified following two criteria: (i) The web platform dimension – information, communication, transactions and relationship (Li & Wang, 2010; Wang & Russo, 2007); and (ii) the destination component to which the functionality belonged according to the classification proposed by Cooper, Fletcher, Wanhill, Gilbert and Fyall (2008) – attractions, amenities (e.g. accommodation), access (e.g. transportation means, routes), ancillary services (often non-profitable tourism services on-site such as tourism information offices and signage) – to which a fifth component named Complementary General Requirements (CGR) was added.

Following the conceptualisation of DMSs, the theoretical approach of **Chapter 4** moved on to analyse previous research on the factors influencing the adoption of these systems. This document entitled *Destination Management Systems Implementation* is a chapter published in the *Encyclopedia of Information Science and Technology*. Due to the scarcity of studies encompassing the factors explaining the adoption of DMSs, it seemed pertinent to broaden the scope of the literature review to the adoption of other types of technologies with similarities to DMSs. Given the fact that DMSs are IOISs applied to tourism destinations (Sigala, 2014), it was considered appropriate to complement the adoption factors portrayed in DMS-specific studies with those identified in IOIS-research. Drawing from this twofold literature review, as discussed in subsection 1.3.3.3, three types of factors were identified as influencing the decision to adopt a DMSs and an IOISs as well as the success of its implementation, namely (i) DMSs' technology and business models; (ii) organisational factors; (iii) external environment. This chapter was particularly helpful to the later stages of the qualitative and quantitative investigation underlying this thesis, as it provided a comprehensive framework of the factors influencing DMSs' adoption.

**Part III - Empirical approach to the characterisation of DMSs** - is an attempt to further characterise DMSs through empirical analyses, encompassing four chapters (5 to 8). The first and the fourth were published as articles in scientific journals, the second was published as a book chapter, while the third is an article that is going to be submitted to a scientific journal.

The **Chapter 5**, entitled *The role of DMS in reshaping tourism destinations: An analysis of the Portuguese case*, is an article published in the *Journal of Information Technology and Tourism*. Based on previous research on DMSs, its main purpose is to systematise the range of functionalities of these systems, their advantages for DMOs, destination tourism businesses and attractions as well as visitors. In addition, the article seeks to determine the



main requirements that foster or rather inhibit their successful implementation. The advantages referred in previous research on DMSs were grouped in three categories, namely (i) destination's coordination, integration and planning; (ii) disintermediation and optimisation of revenues; (iii) promotion, visibility and effective presence in the market.

The article additionally explores the main factors that influence DMSs' implementation as stated in the literature. Three types of requirements were identified in previous literature: (i) cohesion among tourism stakeholders and destinations' strategic vision; (ii) Destinations' e-tourism awareness; (iii) match between the type of adopted DMSs and the stakeholders' needs.

This article also aims to provide an analysis of the Web platform used for promoting Portugal as a tourism destination ([www.visitportugal.com](http://www.visitportugal.com)), as well as to identify the potential benefits and requirements associated with the creation of DMSs in Portugal.

**Chapter 6**, entitled *Destination Management Systems: Improving the tourism experience by empowering visitors*, is a chapter published in a book entitled *Tourism Marketing: On Both Sides of the Counter*. It aims to address the implementation of UGC tools by DMSs. One objective of this chapter is to analyse the relevance that researchers have been giving to the implementation of Web 2.0 functionalities and, namely, UGC applications, in the DMSs. At a first sight, one would expect that UGC tools would be profusely referred in DMS-related research due to their potential in enhancing capabilities usually attributed to these systems, such as visitors' empowerment (Buhalis & Matloka, 2013), and optimised/closer relationships with the demand (Sigala, 2014).

This chapter also aims to analyse whether DMSs have Web 2.0 functionalities and which of these functionalities have been implemented in DMSs applications. In order to achieve this aim, a content analysis of national, regional and local destination platforms consensually considered as DMSs was undertaken to examine the presence of UGC tools in the analysed DMSs.

**Chapter 7**, entitled *Tourism supply integration in Destination Management Systems: The case of Portuguese regional destination Web Platforms* is an article that is going to be submitted to a journal. The main objective of this article was to examine the differences and similarities between the official online platforms of the Portuguese regional DMOs and DMSs.

Therefore, to achieve this aim, first, an extensive literature review on functionalities of DMS-specific and DMS-nonspecific platforms was conducted. This literature review was complemented by a content analysis of Portuguese regional DMOs' web platforms.

**Chapter 8**, entitled *Destination management Systems: Key distinctive functionalities aimed at visitors and destination suppliers*, corresponds to an article submitted to the *Journal of Global Information Technology Management*. This chapter seeks to provide a comprehensive overview of the functionalities that characterise DMSs and that differentiate them from other types of online destination platforms. To do so, the authors began by conducting a content analysis of twenty-three regional and local DMSs from destinations located in four European and two North American countries. The content analysis' primary purpose was the identification of their functionalities and respective dimension, drawing from Wang and Russo's (2007) above mentioned framework.

This chapter aims at contributing to provide valuable insights to the development of DMSs, by identifying the relevant DMSs' functionalities which differentiate these systems from the more traditional DMO websites. For this, firstly the potential functionalities of DMSs were identified based on an extensive literature review on DMSs. This literature review was complemented by an empirical study conducted in two steps. Firstly, a content analysis of DMOs located in the two world regions with more successful DMSs - Europe and North America - was carried out. Next, a set of interviews were conducted with representatives of the main companies providing DMSs' solutions and with people working in many of DMOs that adopted the DMSs previously analysed. The aim of this second step of the empirical study – interviews – was to complement the content analysis of DMSs by obtaining relevant insights on functionalities of DMSs that are not visible to the registered visitor.

**Part IV - Empirical approach to Factors influencing DMS adoption** - encompasses chapters 9 to 11 that consist of the last three empirical articles of the present thesis. It is comprised of three research works whose main goal is to contribute to the knowledge of the factors that influence the willingness of destination-based stakeholders to adopt a DMS. The first scientific work adopted a qualitative approach, while the two others used quantitative research techniques.

**Chapter 9**, entitled *Destination Management Systems' adoption and management model: Proposal of a framework* is an article published in the *Journal of Organizational Computing and Electronic Commerce*. This scientific work intended to overcome the gaps in the

literature regarding DMSs' adoption factors as well as practices and challenges concerning the management of these systems. More specifically, this article aims to identify: (i) reasons for DMOs to adopt DMSs; (ii) challenges inherent to the adoption and implementation of DMSs; (iii) DMSs' management and business models; (iv) DMSs' benefits as perceived by DMOs; and (v) challenges and future perspectives for DMSs. In order to achieve these aims, interviews were conducted with relevant organisations for DMSs' development and with several American and European DMOs.

**Chapter 10**, entitled *Factors affecting the adoption of Destination Management Systems by stakeholders: Proposal of an explanatory model*, is an article submitted to *the Journal of Quality Assurance in Hospitality & Tourism* and is currently undergoing review. Adopting a quantitative approach, the present paper empirically tests the impact of a comprehensive range of factors on DMS adoption using the data of a questionnaire survey carried out with managers of tourism attractions, managers of tourism accommodation and representatives of city councils in a regional Portuguese tourism destination with no DMS. Based on the results obtained, a model - DMSs' Adoption Model (DeMSAM) - is proposed.

**Chapter 11**, entitled *Factors influencing the relevance of DMSs' functionalities: The stakeholders' perspective*, is an article submitted for publication to the *International Journal of Electronic Commerce* and is currently under revision. Its main goal is to shed light into the factors that influence the relevance that destination-based players attribute to specific functionalities that typically differentiate DMSs from more traditional tourism destination platforms. This research work is, in a way, the logic continuation of the previous one (Chapter 10). To achieve the article's aim, a questionnaire survey was carried out with managers of tourism attractions, managers of tourism accommodation and representatives of city councils in a regional Portuguese tourism destination with no DMS.

**Part V - Conclusion** - is the last part of the present thesis, corresponding to **Chapter 12**. This chapter begins with conclusions drawn from the thesis, followed by a presentation of the main theoretical and practical implications for the tourism sector. This final chapter encompasses the artefact of the DSR developed based on the results obtained in the ten scientific works included in the thesis, which provide guidelines to DMOs aiming to implement DMSs. This chapter also addresses limitations of the thesis and provides suggestions for relevant future research on DMSs.



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## **Part II**

# **Theoretical scientific works: DMS concept and adoption factors**

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## CHAPTER 2

### The evolving value of e-tourism for suppliers and visitors

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#### Reference

Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2015). The evolving value of e-tourism for suppliers and visitors. In M. Khosrow-Pour (Ed.), *Hospitality, Travel, and Tourism: Concepts, Methodologies, Tools, and Applications* (pp. 131-155). Hershey & New York: IGI Global.

## 2. The evolving value of *e-tourism* for suppliers and visitors

### **Abstract**

The tourism industry is known to have an extensive use of the Internet, both on the supply and on the demand side. The steady and fast emergence of the Internet has dramatically changed the business processes within the sector, forcing suppliers and intermediaries to adapt to a scenario in which visitors have multiple and more flexible choices regarding the search, planning, booking and purchase of tourism services and products. This chapter aims at exploring the main impacts and trends that the dynamic use of the Internet within the tourism sector – the so-called *e-tourism* – has originated in each of the sector's main stakeholders, including suppliers, intermediaries, Destination Management Organisations and tourists.

**Keywords:** E-tourism; Travel 2.0; DMO; DMS; User-generated content; GDS; tourism destinations.



## 2.1 Introduction

The emergence of the Internet has completely transformed the global economy, namely the relations among suppliers and between them and their customers, optimising management, Business-to-Business (B2B) cooperation and production practices (Castells, 2001). Nowadays, Information and Communication Technologies (ICTs) continue to have a profound effect on the economies and societies where they are used (Ho, Kauffman, & Liang, 2007).

Regarding the evolution of the Internet in terms of its users, the worldwide growth was exponential. Hence, according to the *Internet World Stats* (2011), while by the end of the year 2000 there were only 360.985.492 Internet users, the most recent data, concerning the year 2011, point to about two billion Internet users worldwide. Surely, the Internet penetration rate is very different between nations and continents. Thus, while in 2001, in North America the Internet penetration reached 78.3% of the population, the highest in the world, Africa only reached 11.4% in the same year. It is estimated that by the end of 2011, the world average penetration rate will be around 30.2%. In the US alone, the online market in terms of the value of commercial transactions rose up from a market share of only 20% in 2003 to 33% in 2009, representing a total of 91 billion dollars in e-commerce transactions (JupiterResearch, 2011).

According to Öörni (2004), electronic markets substantially benefit from ICTs such as the Internet, since product information can be disseminated with a higher speed, quantity and quality. Due to the nature of the tourism sector, which is highly intangible and also demands suppliers to promote their products to potential customers at a global scale, tourism was, undoubtedly, one of those sectors which were more dramatically transformed by the advent of the Internet (World Tourism Organisation Business Council, 1999). In fact, according to Werther and Klein (2000), tourism is perceived as a leading sector and even as a driver of Business-to-Consumer (B2C) e-commerce.

The advent of the Internet opened a whole new range of possibilities but also created challenges to individual tourism suppliers and to destinations as a whole. According to Buhalis (2003) the Internet brought some key innovations, such as “melting” down geographical barriers in both B2B and B2C perspectives, which enhanced the capacity of tourism suppliers to act at a global level with much less financial costs, and also allowed tourists to become more informed, autonomous and demanding.

However, given that tourism is a multidisciplinary sector composed by many different actors ranging from national airlines to family-managed restaurants, there is a considerable gap regarding the use of the Internet among the various tourism subsectors. Egger and Buhalis (2008) state that even in the same subsector there might be considerable differences in the level of Internet usage and *e-readiness*.

In such a volatile scenario it is not easy for the academia and for the strategic players within the sector to keep up with new trends in terms of e-tourism. However, perhaps more than ever, to gain competitiveness, it is essential to analyse how Internet affects and will affect the tourism industry in the future.

In this context this chapter aims to: a) analyse the way Internet has transformed the tourism sector as a whole as well as different subsectors in particular; b) identify which challenges and competitive advantages e-tourism brings to tourism suppliers and intermediaries; c) analyse new trends of e-tourism that empower consumers, such as Travel 2.0.

## **2.2 Background**

Regarding the conceptual framework required to analyse the ideas conveyed in this chapter, it was considered adequate to start by approaching the concept of tourism system and, in a second moment, to illustrate the role of e-tourism as an enhancer of tourism's supply chain management (SCM).

### **2.2.1 The concept of tourism system**

According to the World Tourism Organisation (2001), the nature of the tourism sector is inherently defined by a complex variety of inter-relations established between the diverse actors. These interactions should be considered, under a systematic approach, as an ensemble of interdependent stakeholders evolving dynamically. Also, in order to better understand and analyse the wide and complex range of interrelations within the tourism industry, it is necessary to provide a theoretical framework in order to study the tourism sector.

One of the first researchers to approach tourism as a functional system was Gunn (1972), suggesting that "when a state, province or country contemplates improvement and expansion of tourism development, it has to consider tourism in its totality, not just a few

parts” (Gunn, 1972, p. 11). The author argues that although it is obvious that every part involved in tourism must prove to be successful, “equally important is how they interrelate” (Gunn, 1972, p. 11), recognising both the relevance of integration among various stakeholders and the poor connectivity patterns between them usually observed at the destination level. However, also according to Gunn (1972), it is often difficult to realise how the different tourism stakeholders may/should interrelate in order to maximise benefits deriving from tourism. Consequently, the author suggests a functional tourism system, understood as a broad perspective of how tourism works in order to effectively coordinate and integrate tourism stakeholders through functional planning processes. Therefore, Gunn’s (1972) tourism system is divided in two sides – the market side and the supply side. In the first one Gunn identifies one component: tourists – including their behavioural patterns and their ability to travel. On the supply side Gunn (1972) identifies four components: information/promotion; transportation; attractions; and services. Before, during and even after their travel experiences, tourists should be given the possibility to use each one of these components. Thus, at the destination level, suppliers must coordinate efforts and establish a value chain that can add value to each supplier’s services and satisfy tourists’ expectations.

Another important author in the study of tourism systems is Leiper. Although recognising the need to understand tourism dynamics through systems’ theory, Leiper (1990) considers that Gunn’s model incurs in the failure to explicitly recognise the interactions between the components of the tourism system and the environment, and argues that, in the perspective of systems’ theory, tourism should be seen as an open system. The author’s model suggests that the tourism system encompasses three main tourism components – the geographical element, the tourism sector and the tourists.

As **geographical elements** Leiper (1990) points out the traveller-generating region, the tourist destination region and the transit route region. The traveller-generating region is where tourists come from. It is the market of origin, which is stimulated to travel by both pull and push factors. Leiper (1990) considers the transit route region not only the route tourists use for traveling from generating regions to destinations, but also the routes they undertake while leaving one visited place to reach another one. Finally, the tourist destination, one of the most relevant components of the tourism system, is the main pull factor affecting tourist’s motivation to travel and is where most suppliers of tourism and non-tourism services are located and where the tourists can fulfil their temporary goals of travel and go through a memorable tourism experience. As outlined by the author, destinations should

provide visitors with varied attractions consciously aimed at alluring pre-determined types of tourists. To do so, the development of planning and management strategies is particularly relevant and requires some kind of leading entity (usually belonging totally or partially to the public sector) acting as a catalyst of the pursued planning objectives.

The second element of Leiper's system is the **tourism sector** (also addressed as tourism industry by some authors), which is the set of businesses and organisations that help to promote the tourism product. According to Leiper (1990) various actors of the tourism system may be located in the previously mentioned geographical elements. In the traveller-generating region, tourists can find travel agents and tour operators. The destination region is where most of the tourism businesses available to tourists can be found, such as attractions, the hospitality industry, activities and ancillary services. In the route region, one can find, for example, many transportation companies.

The third element of Leiper's tourism system is the **tourist demand**. The author considers that tourism is a complete and comprehensive system in which tourists play an important role and, as such, should not be viewed in a somewhat narrow perspective as passive consumers of services (Leiper, 1990). Although, on the one hand, tourism often increases tourists' knowledge, provides pleasant escapes from stressful modern living and fosters multiculturalism, such as outlined by Przeclawski (1990), on the other hand, tourists can help to improve the tourism environment, to enhance the images of the destinations, to push the tourism industry forward and, consequently, to maximise the whole tourism system.

Hall (2008), whose focus on tourism planning takes him to emphasise the spectrum of relationships established among destinations' stakeholders, defines a system "as an assemblage or combination of things or parts forming a complex or unitary role" (p. 50). According to Leiper (1990) a system can be defined as a set of elements interacting with one another. Although recognising that systems' analysis is an abstract construction rather than the reality itself, Hall (2008) recognises that "we all have our ideas, models or theories about how the world or people operate. These are our abstractions which we use to understand the world, explain what is happening, and act accordingly in various situations" (Hall, 2008, p. 49).

A rather similar approach to Leiper's tourism system is proposed by Hall (2008), which argues that different types of systems' models have been used in tourism studies, according to the interest of the analysis. As an example, the author considers that the three main basic elements that should be identified in a system designed to analyse tourism at a geographical

level are the generating region, the transit region and the destination region (Hall, 2008). However, a systems' model, focused on a geographical level, is unlikely to be the most appropriate in a more economical and commercially oriented perspective because it will tend to privilege a land use approach highlighting issues such as environmental sustainability or tourism impacts rather than economical ones (Getz, 1987). To demonstrate that the elements of a tourism system are not (should not be) static and should change according to the perspective of analysis, Hall (2008) quotes the rather untypical and commercially oriented Mill and Morrison's tourism system that incorporates four elements that differ from the previously discussed model: market, travel, destination and marketing. According to Mill and Morrison (1998), the tourism functional system is like a spider's web – touch one part of it and the reverberations will be felt throughout.

According to Cunha (2001) the tourism sector can be considered a system because it consists on an ensemble of elements that establishes interdependent connections among themselves. These connections have spatial and functional natures that include source, transit and destination regions. Cunha (2001) stresses the need to approach tourism as a functional system at all levels (academic, political, and economical, among others). Analysing tourism as a functional system is crucial as it is not enough to know and describe each of the actors of the system but rather to understand the interdependencies among them and how a certain actor affects others (MacIntosh & Goeldner, 1986).

Leiper suggests that systems "where the elements, and the system as a whole, are also interacting with environments" are considered open systems (Leiper, 1990, p. 546). As Cunha (2001) argues, open systems are those influenced by externalities where one can observe a continuous flow of inputs and outputs. Leiper (1993) suggests that tourism systems are very open systems because, besides the interaction that exists among its components, it also interacts with multiple diverse environments. Also, according to the same author, the tourist demand is the main responsible for the emergence of tourism systems, as it assumes the main role in generating businesses, transit routes and destinations. Consequently, Leiper (1990) argues that it is a fallacy to define the tourism supply, in itself, as a system, as it is originated and moulded by tourists. From the moment tourists "set out, places assume the roles of generating regions, transit routes and destinations. When they begin using services in tourist markets, the service-based component of the industry begins producing" (1990, pp. 547-548).

The previously noticeable variety of perspectives that different authors use to analyse the tourism system demonstrates the diversity of priorities of research in the area of tourism and leisure. In fact, while some investigators tend to privilege a perhaps more pragmatic analysis of the tourism system focused on the tourism product *ready to sell* to the demand, others tend to prioritise the components that, in a first instance, make a destination more or less cohesive and sustainable, focusing the analysis on the nature and variety of components inside the destination.

In order to exist and keep competitive, a tourist destination must possess a set of components capable of meeting the demand's needs and requirements (Cooper, Fletcher, Gilbert, & Wanhill, 1998). Again, authors with dissimilar perspectives and research interests identified different types of tourism destination components. Cooper et al.'s (1998) understanding of the components in tourism is subordinated to the destination and its internal competitiveness and sustainability. The main components of destinations proposed by Cooper et al. (1998) are: attractions, comprising natural and artificial resources and events; amenities, which include accommodation, food and beverage and retailing and other services; access, namely the set of transports and accessibilities to/from and within destinations; and ancillary services, usually non-profitable services, such as tourism information offices, often developed by public or public-private bodies, such as Destination Management Organisations (DMOs).

When facing the need to select one the most appropriate approaches to classify the components of tourism destinations on which to base the present research, and that could be used in the analysis of the dynamic relationship between the Internet and the tourism industry, it seemed that Cooper et al.'s approach would be the most adequate one to adopt. The present chapter will not analyse the role and advantages of e-tourism to the first component outlined by Cooper et al. (1998) – attractions – as it will focus on specific services within the tourism sector, namely amenities (hotel industry), access (transportation) and ancillary services (Destination Management Organisations). To these destination-based services it was considered adequate to add a fourth subsector on which e-tourism has been playing a major role: tourism intermediaries.

Regarding the competitiveness of destinations in general and of suppliers in particular, it is paramount to establish an effective supply chain management (Zhang, Son, & Huang, 2009). As will be discussed in the next subsection, e-tourism has an indispensable role to play in this process.

### **2.2.2 E-tourism as an enhancer of tourism's supply chain management**

Nowadays, individual businesses no longer compete as isolated bodies but rather as supply chains (Lambert & Cooper, 2000). Thus, companies should not only focus on their intra-organisational business functions (e.g. management and administration, human resources, finance and accounts), but also on their inter-organisational business functions, such as supply chain management (SCM) (Lee & Lan, 2007). Supply chains consist of the alignment of firms that bring products or services to the market, demanding the establishment of a network of organisations involved, through linkages, in processes and activities that produce value to the consumer (Christopher, 1992, Lambert, Stock, & Ellram, 1998, Mentzer, De Witt, Min, Nix, Smith, & Zacharia, 2001). However, the simple fact that supply chains exist does not mean that they are properly managed or even managed at all (Mentzer et al., 2001).

In order to remain effective and competitive, supply chains require SCM, which demand ongoing and systematic management efforts from the organisations within the supply chain (Lambert & Cooper, 2000). According to Chou, Tan and Yen (2004), SCM can be seen as both a managerial philosophy and as a set of managerial processes. Regarding the first, which Mentzer et al. (2001) referred to as Supply Chain Orientation, SCM adopts a systems' approach considering the supply chain as a single body rather than a set of fragmented entities in which each firm directly and indirectly affects the results of the other supply chain members (Ellram & Cooper, 1990). As a set of managerial processes, SCM allows the management of relationships, information and materials across enterprises, delivering enhanced customer service and economic value to consumers (Chou et al., 2006).

The tourism industry is no exception as it must create and maintain effective supply chains linking individual businesses to their target market(s). Regarding supply chain management within the tourism industry, studies are still very limited (Zhang et al., 2009). Official tourism bodies, usually designated as DMOs, are often responsible for planning and executing marketing programmes to serve the strategic goals of the respective regions or countries (Douglas & Mills, 2004). Destination supply chain management is a challenging process for DMOs due to the destinations' many independent suppliers and service providers, often dispersed and fragmented (Uysal, Chen, & Williams, 2000). Additionally, adversary relations are often the norm within tourism destinations (Zhang et al., 2009). Thus, DMOs should not only engage in promotional initiatives of their offerings, as they often do, but also

play the leading role regarding the destination development process and the coordination among all destination stakeholders, including in fostering adequate supply chains for their destinations (Buhalis, 2000, Hall, 2008, Page & Hall, 2003).

Web-marketing is likely to be nowadays' most relevant and an impacting vehicle of destination marketing due to its growing importance and because of its effectiveness and efficiency in terms of global presence, communication and of the possibilities of generating interaction flows within destination stakeholders (Presenza, Sheehan, & Ritchie, 2005).

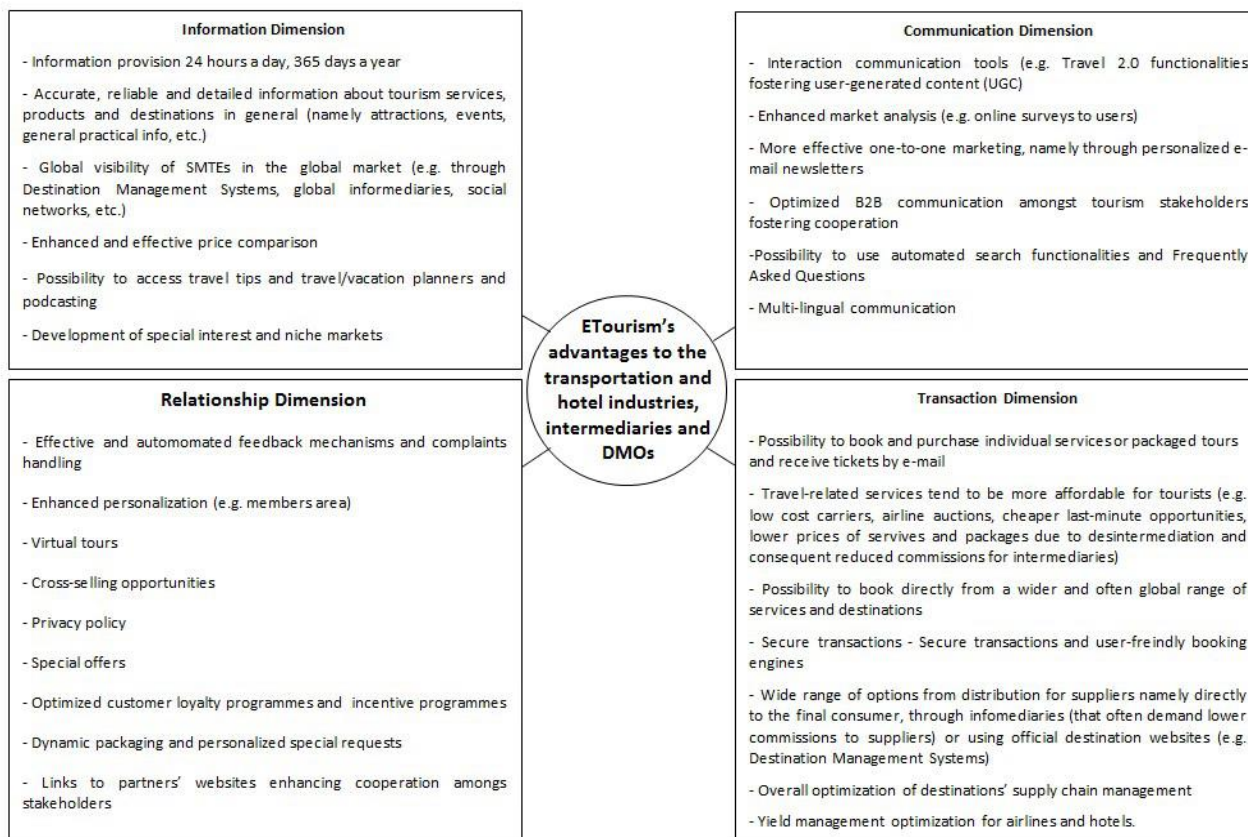
### **2.3 Challenges and advantages fostered by e-tourism to different tourism stakeholders**

The presence of the Internet in travel and hospitality is growing at a fast pace. Over two-thirds of travel and hospitality firms consider their websites as important competitive tools and 60% of them believe that the Internet is essential to obtain new customers (Baloglu & Pekcan, 2006).

As previously referred, the present section aims at describing and exploring the main challenges and advantages that e-tourism has been fostering within the following stakeholders of the tourism activity: transportation, hotel industry, intermediaries and DMOs.

The advantages that the Internet can bring to each of the different tourism suppliers are intimately related to the types of contents and functionalities that they implement on their own web applications. Li and Wang's (2010) evaluation of Chinese destination websites proposes an assessment model of contents and functionalities contemplating five dimensions, one of them being purely technical – Technical Merit Dimension – and the other four more related to specific contents and functionalities available to users, namely information, communication, relationship and transaction dimensions. Excluding the technical merit dimension, the other four dimensions proposed by Li and Wang (2010) seem appropriate to serve as a basis to illustrate some of the most important advantages that the Internet can bring to the previously referred tourism stakeholders. Figure 2.1 illustrates the potential advantages of e-tourism to those same stakeholders in general, related to each of the four dimensions proposed by Li and Wang (2010).





**Figure 2.1 - Advantages of e-tourism to the transportation and hotel industries, intermediaries and DMOs**

**Sources:** Based on Aksu and Tarkan (2002); Ankar (2008); Andersson (2008); Baloglu and Pekcan (2006); Blum and Fallon (2003); Buhalis (2003); Casielles, Martín, and Vázquez (2004); Chu (2001); Chung, and Law (2003); Egger and Buhalis (2008); Egger and Wörndl (2008); Gilbert, Powell-Perry, and Widijoso (1999); Ham, Kim, and Jeong (2004); Kaldis and Kaldis (2008); Law and Leung (2000); Law and Hsu (2005); Li and Wang, (2010); Lubbe, B. (2008); Murphy, Forrest, Wotring, and Bryman (1996); Nalazek (2008); Sigala (2002); SITA (2007); The European e-Business Market Watch (2006); Wei, Ruys, van Hoof, and Combrink (2001) and Zafiroopoulos, Vrana, and Paschaloudis (2006).

### 2.3.1 Transportation

Although linkages to outside of the destination are essential to bring tourists to a certain destination, it is also crucial to ensure mobility to tourists inside the destination and to integrate transportation and corresponding infrastructure (such as cycle ways) in the overall tourism experience. Cooper et al. (1998) highlight the importance of having a creative approach to transportation at the destination as it can help diversify and maximise the tourist experience. As innovative examples of transportation inside a destination, the authors include scenic drives; park and ride schemes; shuttle buses for walkers; cycle ways;

explorer buses. The creative integration of certain means of transportation in the destination's tourist experience is often linked to its particular features in terms of mobility. For instance, some of the major tourism attractions of certain destinations are the traditional means of transportation of their communities that were often maintained and improved mainly to optimise tourist experiences. Some examples of this are the tramways of Lisbon or San Francisco which are a tourism landmark for both cities and the scenic railway heritage routes that, in terms of promotion, are often the aggregator element of complex and diverse tourism experiences in rural areas.

Regarding transport infrastructure, Page (1999) suggests that the development of tourism requires that same infrastructure in order to facilitate the free movement of tourist traffic. However, despite its relevance, the author highlights the fact that most studies on tourism transports have traditionally overlooked transport infrastructure by focusing on mobile forms of travel, such as rail travel, air travel and car-based trips.

Although considering the importance of providing safe and comfortable means of transportation along with planning and maintaining adequate connection infrastructures such as roads and railways, Leiper (1999) argues that terminal facilities, such as ports, airports and railway stations, which provide the context in which the tourist embarks in the mode of transport, ensuring a smooth interaction between the supply and the demand, is particularly important for the sector.

In its approach to one of the most important elements of the access component – the transportation - the World Tourism Organisation (Organización Mundial del Turismo, 1998) suggests that the development of tourism has always been intimately connected with the development of transportation. This is due to the fact that tourism demands “the means to reach the destination as well as the means tourists use to move at the destination” (Burkart and Medlick, 1981, as quoted by Organización Mundial del Turismo, 1998, p. 109).

Regarding the importance of transportation to the tourism sector, Holloway (2002) argues that it has been one of the most relevant prerequisites behind the arise of tourism as an industry. The author stresses that the two main factors that determine the accessibility of destinations are price – that is highly influenced by the costs of transportations to tourists - and the time it takes to travel from origin markets to destinations. Holloway (2002) especially emphasises the role of the aviation industry in the fast global spreading of source markets and destinations around the world.

According to Egger and Buhalis (2008), the **airline** industry is still dominated by senior carriers and a considerable number of smaller airlines. The aviation sector is considered one of the most sophisticated and digitalised industries as it depends on highly technological stakeholders, such as airport infrastructures or aircraft manufacturers.

According to Davison (2002), the deregulation of the air space, first in the USA (1978) and followed by Europe (1987 to 1997) fostered competition between airlines and demanded a more cost-efficient management from airlines. Deregulation led to a structural change in the market, increased productivity, improved customer service and lower prices (Holloway, 2002).

The Global Distribution Systems (GDSs), namely *Galileo*, *Amadeus*, *Worldspan* and *Sabre* were traditionally the most prominent distribution channel for airlines, as they allowed any travel agent to book and sell tickets from most carriers (Egger & Buhalis, 2008). According to Egger and Buhalis (2008) “they were effectively developed as travel supermarkets in the pre-Internet era and their primary objective was to connect travel agencies with airlines” (p. 264).

Although GDSs are still an important part of the distribution strategy of airlines, being the most important link between airlines and intermediaries, the Internet has been diminishing their relevance since it allows airlines to sell their own tickets without the need of third-party intermediaries. A good example of this fact is the emergence of the low-cost airlines, which sell almost every seat in their inventory directly through the Internet. Considering the 2006 European Commission *e-Business Watch* (2006), in 2005, *Ryanair*, the Irish biggest low-cost airline in the world, sold around 95% of its tickets directly to the final clients through the Internet.

According to Klein, Könhe and Öörni (2004), the first subsector within tourism that better grasped and took advantage of the Internet was the airline industry, mostly due to its already strong technological nature. The authors suggest that airline tickets seem especially appropriate for online distribution since they can be easily reproduced and distributed online. Hence, the fact that low cost carriers have enormously grown from the mid-90s is especially due to the possibility, given by the Internet, to sell their tickets directly to the general public without the need for intermediation from travel agencies. Airlines have increased the direct sale of their tickets through e-ticketing in order to save commission and other marketing costs, since the latter amount to up to 30% of the price of a ticket (Buhalis, 2003). According to Egger and Buhalis (2008), “while before the turn of the millennium it

was practically impossible to buy tickets via the Internet, today, in at least the business models of the low-cost carriers, it is the only way for customers, both B2C and B2B, to obtain tickets” (p. 264). Additionally, according to the results of *2007 Annual Airline ICT Trends Survey*, around 90% of the airlines currently use their websites as a distribution channel (SITA, 2007).

It is becoming ever clearer that ICTs and the Internet in particular, will become more and more indispensable to the operational and strategic dimensions of airlines. According to Buhalis (2003), the Internet will heavily support successful airlines not only regarding the marketing mix of airlines, as it will also determine their strategic thinking and will become more critical to their operations and strategy of airlines. It can therefore be foreseen that ICTs will not only establish all elements of the marketing mix of airlines in the future, but they will also determine their strategic directions, partnerships and even ownership (Egger & Buhalis, 2008).

Regarding its turnover, the **car hire subsector** is the second most important within the transportation sector. Large companies, such as *Avis* and *Hertz*, have long implemented ICT systems contemplating the Web, aiming to manage their extensive and disperse inventory and support their relationship with their customers, namely through direct online marketing. More recently, car hire companies have also been using the Internet to optimize their synergies with airlines, empowering customers to use their airline loyalty programmes' bonus points to rent a car from a partner company (Egger & Buhalis, 2008).

Concerning the **railway subsector**, only a minority of travellers tend to purchase train tickets though the Internet, with the exception of long-distance travels and fast trains such as the *TGV*. However, this tendency is gradually changing as there has been a recent increase in the number of online platforms developed by the railway industry. According to Egger and Buhalis (2008), *Bahn.de*, the German Railways website is a good example of this shifting trend, as it is not only one of the most visited travel portals in Europe but also allows dynamic travel planning and e-ticketing of train and bus transportation, also through mobile devices.

### **2.3.2 Hotel industry**

Accommodation provided by the hotel subsector is crucial within the tourism industry. According to Mill and Morrison (1998), accommodations can range from hotel chains to

camping sites and homes of friends and relatives. In terms of its economic weight, the same authors outline that lodging represent between one-fifth and one-fourth of the total expenditures of tourists. For the tourist demand, hotels are the physical and psychological basis of their tourist experiences.

The hotel industry is overwhelmingly diverse, namely in terms of the size and capacity of properties and types of management. Especially in regions where the hotel sector has a longer tradition, such as Europe, small, family-managed hotels coexist alongside larger multinational hotel chains adopting more systematic and, often, professional approaches to hotel management. Although the diversity in terms of types of hotel firms enriches the range of hospitality options of a certain destination, it also favours a digital gap within the same subsector, diminishing the capacity of the whole range of hotel businesses to have the same degree of *e-readiness* and, thus, effectively cooperate via the web.

Despite this diversity, according to Go and Pine (1995), the hotel subsector has been experiencing a global trend towards hotel chain affiliation. In fact, Kotler et al. (2003) suggest that the modern hotel industry is dominated by chains, managed in a highly competitive environment and using aggressive marketing strategies. In an empirical study conducted by Yeung and Law (2004) aimed at comparing the usability levels between the websites of hotel chains with those of independent hotels in Hong Kong, the authors demonstrated that the usability performance of hotels chains' websites was significantly better than that of independent properties (Yeung & Law, 2004).

Already in 1998, Mutch suggested that although smaller hotel firms could significantly gain benefits from information technologies (IT), perhaps even more than hotel chains, the effective use of IT, especially of the Internet, by this type of hotel firms, still remained scarce.

In fact, in comparison with the airline industry, the hotel industry as a whole was relatively slow to start using ICTs (Egger & Buhalis, 2008), especially due to the predominance, in this subsector, of small and medium-sized enterprises (SMEs) with lower levels of IT knowledge and less economical possibilities to invest in ICTs (Buhalis, 2003). However, larger hotel chains, such as the Intercontinental Group, have rapidly taken advantage of the Internet in innovative ways, such as in creating networks linking internal Property Management Systems (PMS) with online intermediaries allowing real-time reservations from travel portals operating at a global scale (O'Connor, 2008).

Despite the fact that the hotel industry was the least automated subsector within tourism, the fast growth of the Internet led to a gradual adoption of the Internet as an operational and strategic tool for hotels. Nowadays, according to Mathies and Weiermair (2003), ICTs, including the Internet, are used in four main areas of the internal operations of a hotel as well as in other four dimensions of the relationship of the hotel with their customers. Regarding the internal operations, ICTs are more widely used to manage the following: business infrastructure (Property Management Systems; Yield Management Systems allowing hotels fast real-time price changes and a more effective pricing policy instantaneously available to all users through the hotel's website; CRM systems, among others); human resource (personnel information systems); information (consulting and information systems); and procurement (eProcurement). Regarding the B2C and C2B dimensions, Mathies and Weiermair (2003) outline the role of ICTs in distribution, namely through the adoption of e-commerce, and of more appealing marketing practices, such as the widely implementation of more captivating functionalities allowing users to engage in virtual visits and enriched media (such as videos or panoramic photos) of the hotels.

### **2.3.3 Intermediaries**

The tourism industry is considerably heterogeneous in terms of the quantity and diversity of players, which are usually geographically dispersed and have scarce levels of cohesion. Additionally, although there is currently a tendency towards concentration within the sector (e.g. vertical integration), small and medium-sized tourism enterprises are still predominant. Thus, destinations as a whole and, especially, individual suppliers, often suffer from lack of visibility in the global market, justifying the need for intermediaries who can “bring together” different services, assembling multi-service products and promoting and selling them abroad (Buhalis, 1999).

In the pre-Internet era intermediaries within the tourism sector were traditionally divided in two main types of companies: tour operators and travel agencies. As will be discussed later, these actors still exist but now have to face fierce competition from new types of intermediaries, namely infomediaries (Law, Leung, & Wong, 2004). Tour operators can be considered aggregators, since they produce a new product by combining basic services or components. Travel agents, on the other hand, can be seen as information brokers, giving consumer relevant information and booking facilities (Werthner & Klein, 1999).

However, their relevance for tourism destinations goes far beyond distribution. In fact, although researchers such as Baloglu and Mangalolu (2001) recognise the importance of travel agencies and tour operators in developing, promoting and distributing destination packaged tours, they often have the ability and the power to decisively influence the imagery of destinations and, in some cases, of countries as a whole. This is especially common in regions and countries with scarce resources or strategies in terms of tourism development and promotion, which almost totally rely on the promotional effort of exogenous intermediaries to build a destination image.

Perhaps the tourism service suppliers that suffered the deepest changes through the advent of the Internet were tourism intermediaries. According to some researchers “the accessibility of online travel websites reduces the importance of travel agencies and might ultimately result in travellers bypassing travel agencies altogether” (Law et al., 2004, p. 101) which may lead to a scenario in which “traditional distribution channels will be replaced by electronic distribution channels” (Law et al., 2004, p. 106). However, the simplistic logic suggesting that the Internet would, in itself, guarantee direct interaction between suppliers and visitors, thus turning tourism intermediaries obsolete (Gellman, 1996), proved to be wrong (Gomis, 2005). In fact, although the Internet originated processes of disintermediation, in which individual companies were able to relate directly to their final customers, it is also true that the Internet gave origin to processes of reintermediation since it fostered the emergence of a new kind of online, global intermediaries capable of promoting and selling their own tourism packages to an also global audience without the need for local retailers (Buhalis, 2003). Since, on one hand, this relatively recent generation of intermediaries sell virtually the whole range of tourism services of most tourism destinations and, on the other hand, they developed new and innovative tools allowing a more participatory role of tourists in their travels’ planning and booking processes, they empowered tourists, by allowing them, for instance, to build their own personalised packages (dynamic packaging), to compare prices of different service providers and even to consult or insert comments, ratings and media files available to all users (Web 2.0).

It seems evident that having an official website helped SMEs such as independent hotels to improve their brand building and their Customer Relationship Management (CRM) initiatives. However, being most of the tourism sector worldwide composed by SMEs, the fact that a small company developed an independent website would not assure, by itself, global visibility and the possibility of avoiding the costly intermediation of tour operators. Another factor against small and medium-sized tourism enterprises (SMTEs) in terms of

Internet use is the fact that the Internet has, inherently, an enormous dispersion of information and the tendency of the demand is to search for websites that, somehow, aggregate that huge amount of data. As a result, shortly after the emergence of the Internet, the first online tour operators appeared and, in many cases, overcame more traditional offline intermediaries (Gomis, 2005).

So, at a first glance, the emergence of the Internet did not, in itself, solved the problem of SMTEs to distribute their offerings, only replacing offline intermediaries by online ones, such as *Expedia*, *Bookings* or *Lastminute*, three of the biggest and fastest growing intermediaries worldwide, that operate at a global scale, selling a global range of destinations to an also global demand, meaning that they often have more power over destinations' suppliers than the previous offline tour operators (Park & Gretzel, 2006).

#### **2.3.4 Destination Management Organisations**

In recent years, the entities usually responsible for the development of tourism destinations as a whole, often designated as DMOs, have also been developing web-based platforms, in most cases limited to an official website used for promoting the destination. However, a shorter number of DMOs have been able to establish and successfully develop destination web-based networks linking suppliers, usually designated as Destination Management Systems (DMSs). These systems empower official destination web platforms to go beyond the basic task of promoting their destinations, also allowing them to sell their offerings to prospective tourists (Dwyer, Edwards, Mistilis, Roman, & Scott, 2009; Pollock, 1995). By integrating the concepts of virtual reality in DMSs, DMOs can make the destination more accessible and may promote the destination in a more creative way (Guttentag, 2010). Additionally, since tourists are becoming active mobile technology users while visiting a destination, one can find in several countries a significant number of regional or local destinations that have or are developing new web-based tourism mobile services used to assist visitors on route and enrich their experiences (Martin, Alzua, & Lamsfus, 2011).

In terms of the relevance of the Internet in promoting and distributing accurate and up-to-date information and services of a certain destination, visitors are becoming more sophisticated and demanding. They are seeking online platforms that allow them to search for information about a destination, plan an individual experience and make the corresponding reservations, often using a single web application. However, most of these applications are privately owned and managed, such as *Expedia* or *Lastminute*. Publicly



owned and managed web applications of this kind, such as DMSs still remain rarely implemented by official, public tourism organisations (Buhalis, 2000).

Among the most frequently mentioned advantages of DMSs for both destinations' suppliers and visitors (Buhalis, 2003; Buhalis & Spada, 2000; Egger & Buhalis, 2008; World Tourism Organisation, 2001), regarding intra-destination development, one can outline enhanced visibility of small and medium-sized tourism enterprises (SMTEs) in the global market, which diminishes dependency on external intermediaries and, consequently, allows reaching higher revenues. In this context, according to Cooper (2006, p. 57), "clearly, small- and medium-sized enterprises can benefit from entering into alliances, clusters, or franchises to achieve mutually beneficial objectives or work through intermediaries such as tourist boards" in order to gain visibility. As Buhalis suggests (2003), the contribution of DMSs "to strategic management and marketing is demonstrated by their ability to integrate all stakeholders at destinations and also to reach a global market at a fairly affordable cost" (p. 283). Regarding the role of ICTs and, particularly, of DMSs in this process, Dwyer et al. (2009) suggest that "smaller players can benefit from technology as the Internet makes it possible for marketing activity to be undertaken on a more level playing field whereby small businesses can connect directly to consumers and to compete for market share on an even footing with larger firms" (p. 73). As a result of empirical evidence derived from a series of workshops comprising a range of Australian tourism stakeholders, the authors suggest that "smaller tourism providers need to form partnerships with Internet providers and online intermediaries to help them communicate their message via database marketing and information technology" (p. 73) such as DMSs.

Another major advantage of DMSs is the fact that they foster coordinated promotion and distribution of the whole destination leading to a higher cohesion among various stakeholders that share the same marketing and e-commerce platform. In fact, when analysing the utility of information elements available in destination portals, Teichmann and Zins (2008) consider that "the more features the website incorporates the more it can meet the needs of consumers at different information consumption stages" (p. 209). DMSs not only provide information about various elements of the destination as they also allow reservations. They also give members (usually, destination-based companies) access to privileged information and tools usually available for DMSs' affiliate members (image bank, destination's facts and figures, legal documentation).

However, the existence of high levels of cooperation among stakeholders is often considered a prerequisite to create and maintain DMSs. According to Ndou and Petti (2007) in destinations with low levels of cohesion, where there are low levels of coordination among stakeholders, DMSs can be seen as the means, rather than the end of a destination management policy. This means that the attempt to establish any kind of web-based destination management should be preceded by a change in the management process aimed at establishing the necessary cultural, organisational and technological conditions for any further steps regarding the strengthening of destination's competitiveness. Thus, any attempt to create a destination-wide web-based system should focus on the preliminary issue of establishing bonds of cooperation and spreading the message of the importance of choosing and pursuing a shared model for the integral and participated development of the tourism destination. Thus, even at the lower levels of its development, web-based platforms can help reshape destinations, enhancing B2B information flows and cooperation among various stakeholders (Sigala & Marianidis, 2010).

At a macro-economic level, DMSs can help entire countries diversifying their supply and its territorial distribution, and also communicating with a more autonomous and mature demand that does not look for package tours from traditional intermediaries. DMSs also contribute for a higher cohesion inside the destination and, consequently, to a more coordinated promotion of the destination. Secondly, as previously discussed, they provide SMTEs, usually marginal in the global market, a direct and effective presence/distribution through the destination portals provided by DMSs, diminishing their dependence on intermediaries (Buhalis, 2000; Ndou & Petti, 2007).

## **2.4 Travel 2.0 as a web-based tool empowering visitors**

Ever since the advent of the World Wide Web, an increasing number of travellers have been using the Internet for travel planning (Ye, Law, Gu, & Chen, 2011). However, until recently, most websites were built under a Web 1.0 perspective, in which the vast majority of users were only able to act as consumers of content (Cormode & Kirshnamouthy, 2008). More recently, the advent of Web 2.0 introduced a different and original philosophy allowing any user to become a content creator, thus democratising online content creation (Cormode & Kirshnamouthy, 2008).

Regarding the definition of Web 2.0, Egger (2010) suggests that, although this is still an unclear and relatively vague concept, which has led to harsh criticism of the concept itself,

Web 2.0 is a “collective expression comprising both the technical but above all the social and societal advances in the Internet” (Egger, 2010, p. 126).

Concerning the role of Web 2.0 in fostering coordination amongst organisations, Lee and Lan (2007) argue that with Web 2.0, the traditional knowledge management based on central information repositories has shifted into a more interactive conversational approach. This approach emphasises the integration and collaboration of knowledge creation amongst stakeholders (Lee & Lan, 2007). According to the authors, the most important advantage of Web 2.0 is that it fosters cooperation and creates new opportunities for dynamic knowledge and inter-organisational collective intelligence. Besides, Web 2.0 also presents clear collaborative advantages since novice users, with limited web skills, are able to contribute with their expertise to the virtual communities.

Sigala (2011) was one of the various authors who made a conceptual approach to the concept of Web 2.0 defining it as a set of tools of “mass collaboration as they enable and empower Internet users to actively and simultaneously collaborate with others for producing, consuming and diffusing Internet-based information and applications” (p. 608). Also, according to Sigala (2011), Web 2.0 gave origin to two major features – user-generated content (UGC) and social networks – which have dramatically transformed the way users search, distribute, share and create information. Thus, UGC or consumer-generated media (CGM) is a result of Web 2.0, which is a new form of word-of-mouth that serve informational needs by offering non-commercial, detailed, experimental and up-to-date information with an access beyond the boundaries of one’s immediate social circle” (Yoo & Gretzel, 2011, p. 610). The main Web 2.0 applications that empower UGC are online communities and discussion forums, blogs, online reviews and podcasting (namely video and photo sharing) as well as wikis (Gray, Thompson, Clerehan, Sheard, & Hamilton, 2008).

Regarding the recent development of UGC there is evidence that its development and sharing, made possible by Web 2.0 applications, is continuously increasing (Casaló, Flavián, & Guinalíu, 2011, Parra-López, Bulchand-Gidumal, Gutiérrez-Taño, & Díaz-Armas, 2011, Sigala, 2008, Yoo & Gretzel, 2008). In some countries, such as the US, a substantial majority of consumers search for fellow consumers’ product reviews online and most of these reported that they had a more decisive role on their decision-making processes than reviews posted by professionals (Casaló et al., 2011).

Nowadays, Web 2.0 is changing the way that consumers engage with information presented via the Internet (Del Chiappa, 2011) and is having major implications in the way companies

relate to their publics such as: the opportunity to exchange, systematise and evaluate information via users (collective intelligence); the possibility to obtain feedback and record users' behaviour in order to systematically adapt and enhance offerings (perpetual beta); among others (Egger, 2010).

Currently, the "interactive web" made possible by Web 2.0 has a major role in the tourism industry and is particularly suited to the sector, especially due to the intense interaction and communication levels inherent to travel and tourism (Egger, 2010). Being information the "lifeblood" of the tourism industry, the use and spread of Web 2.0 have an extensive impact on both tourism suppliers and visitors (Sigala, 2011).

The relevance of the Web 2.0 in tourism justified the adoption of the expression Travel 2.0 to designate Web 2.0 used within the tourism industry. Regarding the advantages that Web 2.0 and consequent UGC might bring to tourism businesses, Ye et al. (2011) empirically demonstrated that there is a close cause-effect relationship between the use of Web 2.0 by hotels and their online sales of rooms. In their analysis, the authors demonstrated that a 10% increase in the ratings of user reviews could boost their online bookings (Ye et al., 2011). Although commercially websites adopting Web 2.0 are rapidly emerging within the tourism industry, they are mostly developed by individual businesses or tourism intermediaries (Casaló et al., 2011). The use of Web 2.0 by destinations and respective official web applications yet seems to be only starting while it is still a virtually unexplored area in terms of research.

Regarding the role of Web 2.0 and resulting UGC in official destination websites in a B2C perspective, Yoo, Lee, Gretzel and Fesenmaier (2009) study the trustworthiness of travel related UGC, and argued that official tourism bureau websites would greatly benefit from supporting a venue for UGC contents, because they proved to be more trustworthy when featuring in official bureaus websites. However, there is evidence that regional and national tourism bureaus scarcely adopt UGC applications in their websites (Estêvão, Carneiro, & Teixeira, 2011).

Concerning the potential benefits of the Web 2.0 applications for destinations in a B2B perspective, the implementation of Web 2.0 by official destination bureaus also allows suppliers themselves to share and spread information through the destination's extranet that can prove to be useful in supporting DMOs' role aimed at maximizing interaction flows among internal destination suppliers and can be valuable in enhancing the pivotal role of DMOs towards a more collaborative destination management (Sigala & Marianidis, 2010).

Most studies encompassing Web 2.0 in tourism tend to focus on the demand's trust and behaviour towards the UGC it originates (Casaló et al., 2011; Del Chiappa, 2011; Yoo & Gretzel, 2011; Yoo et al., 2009) or rather explore the advantages they bring to visitors and to particular businesses or subsectors within the tourism industry (Sigala, 2011; Ye et al., 2011). However, the analysis of the implementation of these applications by destination websites, namely DMSs, yet seems to remain relatively unexplored in the literature. Although there is a gap in the literature in this scope, there is evidence that both advanced destination web applications - such as DMSs - and the Web 2.0 paradigm, share the goal of fostering a more direct, close and flexible relationship between destinations and respective publics.

On the other hand, private actors such as infomediaries (e.g. *TripAdvisor* or *Holidaycheck*), have a more homogeneous use of commercially oriented Web 2.0 tools, focusing on consumers' ratings and reviews of concrete products. Travel portals such as *TripAdvisor*, the most visited travel-related website in the world, are inherently Travel 2.0 web applications and are among the fastest growing websites globally. Regarding the comparative level of adoption of Travel 2.0 from different types of suppliers, it seems pertinent to refer an empirical study conducted by Schegg, Liebrich, Scaglione and Ahmad (2008), having the Swiss tourism system as a case study. The main results of this study demonstrated that the types of companies more committed to the implementation of Travel 2.0 tools were multinational hotel chains and international tour operators whereas the subsectors with a lower adoption of these tools were cable car companies, small and medium-sized Swiss hotels and local retail travel agencies (Schegg et al., 2008). The same authors highlight that these trends seem to be not only a characteristic of the Swiss tourism system but can be extrapolated to the global setting.

## **2.5 Future research work**

Although the present paper focused on the advantages of the Internet for the supply side rather than for the demand, it seems clear that e-tourism is empowering tourists to a greater extent. In fact, particularly due to the advent of the Internet and of the many options provided to tourists, they are becoming more demanding in terms of tourism services, they are asking for more specific and "niche" offers, they are getting more mobile and critical, but less loyal to specific destinations and services (Werthner & Klein, 2000). Simultaneously, another trend in terms of the demand is that, although more demanding and sophisticated, it is

becoming more sensitive to pricing as it is now able to quickly and comfortably compare prices, especially through aggregator websites. Also, the fact that visitors tend to engage more and more often in short-breaks, thus leading them to decide later which destinations to visit and which services to purchase means that there is a decreased time span between searching, planning and booking a specific travel. All these trends are both cause and consequence of the development of e-tourism in most, if not every, subsector of the travel and hospitality sector (Werthner & Klein, 2000).

However, the existing gap in terms of *e-readiness* from different stakeholders often does not allow tourists to plan and book an integral tourism travel online. Thus, it seems pertinent to suggest that future research in e-tourism focused on the development of strategies that can fill the existing gap between the digitalisation levels of various suppliers at the destination level. In other words, highlighting the destination's e-tourism strategies rather than only focusing on individual businesses seems to be a pertinent and necessary line of investigation.

Additionally, it is suggested that future research regarding Travel 2.0 addresses more intensively the reasons and solutions for the scarce use of Web 2.0 from specific subsectors within the tourism industry. The recognition of UGC as a valuable and trustworthy instrument for prospective tourists demands a more homogeneous and harmonious use of Travel 2.0 from all tourism suppliers and from destinations as a whole.

## **2.6 Conclusions**

In order to gain and maintain competitive, entire destinations and individual suppliers should be able to implement effective, multichannel e-tourism strategies and practices allowing them to cope with the new trends regarding the tourism demand. The simple fact that a DMO or supplier has Internet access and implements a website is no longer, in itself, criteria for success.

As seen in the case of destinations' e-tourism strategies, DMOs should be able to consider the Internet as not only an electronic promotional and informational brochure of the destination but should, most importantly, act as a network linking all suppliers and fostering interaction flows among these and connecting them, in bulk, with the demand markets. Thus, advanced destination websites are not only informational and promotional tools but also relational and transactional platforms responsible for higher revenues to local suppliers

as they often bypass the need for intermediation (Bédard & Louillet, 2008). Besides, the development of official destination web applications specialised in special interest tourism products, such as heritage cultural tourism, foster the diversification of the range of tourism products and correspondent demands' motivations (Baggio, 2008).

As previously discussed, different tourism subsectors have dissimilar approaches to the Internet, originating a gap in terms of the intensity and depth of e-business practices from various suppliers. As demonstrated earlier, the aviation subsector has long been in the forefront of ICT usage and innovation and e-tourism is not an exception. In fact, a clear evidence of the impact of the Internet in the aviation industry was that it originated a new type of airline – the low-cost – whose main success criteria is the direct e-ticketing with no need for intermediation, forcing the previously existing carriers to go online or go out of business.

Due to the geographical dispersion of the hotel business and of the fact that most of the accommodation units are still SMTEs, the Internet gives them the opportunity to directly relate to the final consumer through the hotel's own website or by the use of social networks (disintermediation). On the other hand, smaller hotels will not gain immediate visibility abroad just by implementing an attractive and functional website. Thus, the Internet provides them the chance to establish partnerships with new infomediaries, such as *bookings.com*, which often require lower commissions than traditional offline intermediaries (reintermediation).

Regarding tourism intermediation, the ending of the middleman within the tourism system which was often prophesied in the early stages of the Internet era could not be more wrong. In fact, online-based intermediaries - the infomediaries - are among today's fastest growing tourism firms, which were capable of spreading their offerings globally outperforming most of the traditionally offline-based intermediaries. Companies which did not simply exist only a few years ago, such as *Lastminute*, *Expedia*, *TripAdvisor* or *Booking*, just to name a few, are now competing and often threatening the traditional dominance of tour operators that have been in business for decades, much before the advent of the Internet. Another noteworthy regarding trend is that some of the so-called vertical portals, such as *Golf.com*, which did not have any relation to the tourism sector and were only aimed at globally bonding people sharing the same interests online, are now implementing their own tourism-related engines. Taking advantage of the visibility of their website amongst golfers globally, *Golf.com*'s managers decided to develop a tourism-related search, planning and booking

engine promoting and selling golf destinations and associated services, already menacing the predominance of traditional golf-related tour operators (Egger & Buhalis, 2008).

Lastly, an irrefutable evidence of the empowerment that Internet gives to tourists is the fact that the Web 2.0 in tourism is developing at a faster pace and depth than in most other sectors, enhancing viral marketing and the electronic-word-of-mouth (eWOM). Web 2.0 tools, which foster UGC, allow tourists to “give their reasons on the Web” (De Ascaniis & Morasso, 2011, p. 125). The specific current advent of Travel 2.0, is dramatically changing not only the way tourism firms develop their websites in terms of their philosophy and specific functionalities in order to empower UGC, as it is also encouraging entire destinations to change their promotional messages and tourism themes based on the viral marketing originated by UGC-specific websites, such as *TripAdvisor*. Such is the case of Lugano, one of the most prominent Swiss tourism destinations, which totally reimaged its marketing efforts and changed its tourism themes and slogans as a result of a systematic analysis of Lugano-related contents that tourists inserted in Travel 2.0 websites (De Ascaniis & Morasso, 2011). Additionally, as previously demonstrated, the past fears that Web 2.0 and UGC might not be a trustworthy source of information were dissipated by researchers, who demonstrated its high levels of trustworthiness amongst prospective visitors. However, although Travel 2.0 tools inaugurated a new era in the relationship between suppliers and the demand, with clear benefits for both sides, there is also a gap in terms of the implementation of such tools by different types of tourism stakeholders. Thus, while online intermediaries tend to be one of the businesses that most intensively implemented Web 2.0 functionalities, even taking into account all sectors of the economy, other tourism subsectors, such as independent hospitality providers or even official destination websites yet do not seem to have grasped the potential of Travel 2.0 and, in general, have scarcely given voice to past or potential tourists thought UGC.

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## CHAPTER 3

### Destination Management Systems: Creation of value for visitors of tourism destinations

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#### Reference

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### **3. Destination Management Systems: Creation of value for visitors of tourism destinations**

#### **Abstract**

Considering the important role of Information and Communication Technologies (ICT) in tourism, a growing number of Destination Management Organisations (DMOs) have been adopting more complex destination web-applications/websites to tourism destinations – Destination Management Systems (DMSs). However, the concept of DMS is far from being consensual. The present study aims to clarify the concept of DMS by identifying the main differences between DMSs and other DMO web-applications/websites regarding functionalities targeted at potential visitors of destinations. This study is carried out based on a comparison between DMS-specific and DMS-nonspecific sources (papers and book chapters). The results suggest that the major difference between DMSs and more traditional DMO websites relies in the transaction dimension. While DMS-nonspecific reviewed sources tend to focus more on informational functionalities, DMS-specific studies clearly highlight transaction tools. The study highlights the need to develop DMSs including a more varied range of transactional and communication/relationship functionalities.

**Keywords:** DMO; Destination Management Organisations; tourism destination websites; DMS; Destination Management Systems; functional requirements; functionalities; visitors; information and communication technologies.

### 3.1 Introduction

The emergence of the Internet has completely transformed the global economy, namely the relations among suppliers and between them and their customers, optimising management, Business-to-Business (B2B) cooperation and production practices (Castells, 2001). Nowadays, Information and Communication Technologies (ICTs) continue to have a profound effect on the economies and societies where they are used (Ho, Kauffman, & Liang, 2007).

Regarding the evolution of the Internet in terms of its users, the worldwide growth has been exponential. Hence, according to the Internet World Stats (2013), while in the year 2000 there were 360,985,492 Internet users worldwide, in June 2012 their number increased to 2,405,518,376, representing a growth of 566% in only twelve years. However, the Internet penetration rate is very different between nations and continents. Thus, while in June 2012, the Internet penetration reached 78.6% of the population in North America, the highest in the world, Africa only reached 15.6% in the same period, being the world average penetration rate around 34.4% (Internet World Stats, 2013). In the US alone, the online market in terms of the value of commercial transactions rose up from a market share of only 20% in 2003 to 33% in 2009, representing a total of 91 billion dollars in e-commerce transactions (JupiterResearch, 2011).

Electronic markets substantially benefit from ICTs such as the Internet, since product information can be disseminated with a higher speed, quantity and quality (Öörni, 2004). Due to the nature of the tourism sector, which is highly intangible and also demands suppliers to promote their products to potential customers at a global scale, tourism was, undoubtedly, one of those sectors which were more dramatically transformed by the advent of the Internet (World Tourism Organisation Business Council, 1999). In fact, according to Werthner and Klein (1999), tourism is perceived as a leading sector and even as a driver of Business-to-Consumer (B2C) e-commerce.

The advent of the Internet opened a whole new range of possibilities but also created challenges to individual tourism suppliers and to destinations as a whole. According to Buhalis (2003) the Internet brought some key innovations, such as “melting” down geographical barriers in both B2B and B2C perspectives, which enhanced the capacity of tourism suppliers to act at a global level with much less financial costs, and also allowed visitors of tourism destinations to become more informed, and autonomous.

The so-called Destination Management Organisations (DMOs) soon became aware of the potential relevance of the Internet in optimising destination marketing efforts. They recognised the potential of the Internet to increase the opportunities of contact with consumers and to do that at a substantially lower cost. According to Gartrell (1988), DMOs, often public or public-private entities (Pollock, 1995), should be the main actor fostering coordination amongst the variety of actors (public and private) of the destination. They should provide leadership within the local, regional or national tourism system, promote the development of sustainable tourism, provide some facilities and services to visitors, such as tourism information offices or signage, which complement the hospitality sector's offerings and enhance visitors' satisfaction levels towards the destination (Hall, 2000). Thus, in order to better fulfil their tasks, DMOs started to develop destination websites.

Nevertheless, traditional DMO websites are often limited to the task of promoting entire destinations without actively empowering a closer and more personalised relationship with potential visitors (WTO, 2004). These websites are typically limited to a mere informational dimension. However, in recent years, a small number of destinations have been able to implement and successfully develop advanced and more dynamic destination web platforms, the so-called Destination Management Systems (DMSs) (e.g. Pollock, 1995; Sussman & Baker, 1996; Buhalis, 2003; Collins & Buhalis, 2003). These platforms are networks linking the DMO to the whole range of destination suppliers (e.g. hotels, restaurants) and, at the same time, actively engage with the potential tourist demand. While traditional DMO websites are likely to be mere electronic brochures of destinations, only encompassing information to visitors, DMSs provide a network linking tourism actors, thus assisting DMOs to manage and coordinate the tourism development process in itself. Taking into consideration several definitions of DMS proposed (e.g. Pollock, 1995; Rita, 2000; Buhalis, 2003; Ndou & Petti, 2007), these platforms seem to encompass not only informational functionalities, but also a whole set of functionalities, including, for example, those that enable the purchase of goods and services through the website.

However, the concept of DMS is far from being consensual and, therefore, it is not easy to identify the functionalities that distinguish DMSs from other kinds of DMO websites. Although there is considerable literature on DMSs, most of it focuses on their advantages to destinations (e.g. Brown, 2004; Kärcher & Alford, 2008; O'Connor & Rafferty, 1997) or on the prerequisites or barriers to their implementation (e.g. Buhalis & Spada, 2000; Sussman & Baker, 1996; Alford & Clarke, 2009), often taking the form of case studies.

The present study intends to contribute to improve the value of DMSs, by fulfilling the research gap previously identified, specifically, to clarify the concept of DMS and help defining the frontiers of this kind of web-application. It is also aimed to identify the main differences between DMSs and other DMO websites regarding the functionalities targeted at potential visitors. This study will be carried out based on the analysis of literature on the destinations' web-applications/websites.

## **3.2 Theoretical foundations**

The present study intends to contribute to fulfil the research gap previously identified in order to clarify the concept of DMS and help defining the frontiers of this kind of web-application. However, a theoretical discussion of the use of Internet by DMOs, of the existing DMS's concept and of DMS's architecture, seems essential to grasp the relevance and implications of the subsequently described analysis.

### **3.2.1 Destination Management Organisations' use of the Internet**

Destinations are places with some form of actual or perceived borders, such as physical or market-created boundaries (Kotler, Bowen, & Makens, 2003). According to Buhalis (2003), destinations are amalgams of tourism products that should be offered to visitors in a cohesive and integrated fashion. Every destination is a bundle of components with different functions aimed at responding to visitors' needs.

The main components of destinations proposed by Cooper, Fletcher, Wanhill, Gilbert, and Fyall (2008) are: (i) 'attractions', both natural or man-made, that usually correspond to the pull factors generating tourism demand (e.g. beaches, monuments); (ii) 'amenities', which include all profitable or non-profitable tourism services and facilities that allow and/or facilitate tourism experiences (e.g. accommodation); (iii) 'access', that encompass transportation means, routes and terminal serving the destination; and (iv) 'ancillary services', often non-profitable tourism services on-site (e.g. tourism information offices and signage) usually delivered by DMOs. Middleton and Clarke (2002) suggest that tourism destinations present the following components: (i) 'attractions and environment' (e.g. landscape, monuments); (ii) 'destination facilities and services' (e.g. accommodation, restaurants); (iii) 'accessibility of the destination'; (iv) 'images of the destination'; and (v) 'price to the consumer' (sum of the costs of visiting the destination).

Most DMOs are not producers of tourism services. In general, they do not engage in selling any goods and services of the destination to visitors and are not responsible for the quality of specific isolated tourism services. According to Crouch (2007), while private individual tourism suppliers strive to promote their own offering, the DMOs are often seen as the entity that markets a destination as a whole. Although DMSs often foster or develop planning and development processes aiming at enhancing the destinations' quality and balance, one of the DMOs main functions is to promote destinations. As Middleton and Clarke (2002) argue, they have a major role in marketing the tourism products of a country or a region in a coherent way. However, despite the fact that a considerable part of local, regional and national DMOs spend the largest portion of their budgets in costly promotional initiatives, often using mass media (e.g. television, radio or press advertisements), only a few of them develop marketing efforts by means of a systematic approach (Crouch, 2007). Thus, as suggested by Kotler et al. (2003), the desire to develop a recognised destination-brand presents a difficult marketing challenge to DMOs.

The technological revolution empowered by the advent of the Internet has had a dramatic impact in the operation, structure and strategy of tourism-related organisations (Buhalis, 2003). Both the ways of acquiring tourism products (Buhalis, 2003) and the ways by which tourists search for information (Wöber, 2002) and comment on their travel experiences (Yoo & Gretzel, 2010), have been gradually but consistently changed. The Internet has radically transformed the way and intensity in which tourists and tourism destinations interact. It has become the main vehicle used by DMOs to communicate with past, present and potential future visitors.

Choi, Letho, and O'Leary (2007a) argue that official destinations websites provide information for tourists while promoting the destination's image (at local, regional or national levels). Many DMOs strongly strive to place and promote their online communication, combining diverse kinds of functionalities to assist visitors in their search stage, providing information on flights, accommodations, maps and directions, weather attractions (Crouch, 2007). After the decision has been taken, visitors tend to acquire more specific information on concrete suppliers and purchase tourism services in other types of web platforms, such as Travel Search Engines (TSE) or the suppliers' own websites (Choi et al., 2007).

DMOs usually operate on the Internet through their own promotional websites, often static brochure-like platforms (World Tourism Organisation, 2004). More recently, mainly due to the advent of Web 2.0 (O'Reilly, 2005), the online presence of DMOs has dispersed itself



and spread to social network websites (Mich & Kiyavitskaya, 2011). However, only a scarce number of destinations have been able to successfully implement an official web presence reaching beyond the information dimension (World Tourism Organisation, 2004) and providing a one stop-only service also allowing tourists to book/purchase services dynamically (e.g. dynamic packaging), while directly communicating with the destination (Buhalis, 2003). The systems that offer these opportunities are usually referred to as DMSs.

### **3.2.2 Destination Management Systems**

Given the fact that the present study will focus on DMS-specific functionalities, it seemed pertinent to include a conceptual approach which will include the main advantages and architecture scenarios inherent to this kind of systems.

#### **3.2.2.1 The blurred concept of Destination Management System**

Although there is still not a universally adopted concept of DMS (Egger & Buhalis, 2008), there is large consensus in considering these systems, when successfully implemented, more advanced and beneficial than traditional official destination web platforms which are often limited to the basic task of promoting destinations. In fact, DMSs go much beyond the promotional sphere. Under a B2B perspective, they assist destinations to jointly and coherently promote and sell their offerings to prospective visitors while allowing more systematic communication flows between suppliers aiming at fostering collaboration efforts within the destination (Dwyer, Edwards, Mistilis, Roman, & Scott, 2009; Pollock, 1995). Under a B2C/C2B perspective, DMSs allow visitors to search, plan and dynamically purchase tourism products without leaving the official destination information system (IS) (Egger & Buhalis, 2008). Although arguing that DMSs are systems underpinning the primary objective of a DMO – promotion – Rita (2000) recognises that they normally include booking and purchase tools, encompassing a “desire to use computer and communication technologies to provide what has been called visibility and accessibility - an information and reservations approach” (p. 2).

#### **3.2.2.2 The main advantages of DMSs**

Among the most frequently mentioned advantages of DMSs for both destinations' suppliers and visitors (Brown, 2004; Buhalis, 2003; Buhalis & Spada, 2000; Egger & Buhalis, 2008;

Petti & Solazzo, 2007; Pollock, 1995; Rita, 2000; World Tourism Organisation, 2001) regarding destination development, one can outline enhanced visibility of small and medium-sized tourism enterprises (SMTEs) diminishing their dependency on external intermediaries and, consequently, allowing them to reach higher revenues (Buhalis, 2003; Cooper, 2006; Ndou & Petti, 2007). Dwyer et al. (2009) suggest that the Internet allowed smaller firms, often family-ran, to engage in marketing activities in direct contact with prospective visitors, enabling them to compete for market share with larger firms.

Another major advantage of DMSs is the fact that they foster coordinated promotion and distribution of the whole destination leading to a higher cohesion among various stakeholders that share the same marketing and e-commerce platform. In fact, when analysing the utility of information elements available in destination portals, Teichmann and Zins (2008) consider that “the more features the website incorporates the more it can meet the needs of consumers at different information consumption stages” (p. 209). DMSs not only provide information about various elements of the destination as they also allow reservations (Buhalis, 2003). They also give members (usually destination-based companies) access to privileged information and tools usually available for DMSs’ affiliate members (image bank, destination’s facts and figures, legal documentation).

At a macro-economic level, DMSs can assist entire countries diversifying their supply and its territorial distribution, and also communicating with a more autonomous and mature demand that does not usually search for pre-assembled package tours from traditional intermediaries. DMSs also contribute to a higher cohesion inside the destination and, consequently, to a more coordinated promotion of the destination. DMSs usually act as hubs connecting internal resources of the destinations with external ones (Inversini & Cantoni, 2009), emphasising the marketing role of the destination toward the visitors. They are often defined as complex systems which facilitate the management of a wide range of requests from different users and stakeholders of a DMO (Buhalis, 2003). DMSs enhance DMOs’ ability to assist the visitors’ experience before, during and after the visit (Gretzel, Fesenmaier, Formica, & O’Leary, 2006) as well as to coordinate all the partners and industries involved in the production and delivery of tourism goods.

### **3.2.2.3 DMSs’ architecture**

Although DMSs are considered the most advanced web platforms available to DMOs, evidence clearly shows that, since their inception in the mid-90s, only a few destinations

were able to successfully develop and implement such systems (Alford & Clarke, 2009; Buhalis & Spada, 2000). This poor record in terms of DMSs' implementation success is mostly due to tourism destination configurations (Ndou & Petti, 2007) and stakeholders' attitudes rather than to mere technological issues (Sussman & Baker, 1996). Additionally, not all DMSs have the same system architecture, as the levels of *e-readiness* and development of DMOs' e-tourism strategies also tend to differ from a destination to another.

Petti and Solazzo (2007) identified several types of DMSs' technological architectures suitable to different stages of destination configuration and coordination proposed by Ndou and Petti (2007): autonomous; cooperation; leadership; and distributed leadership. The DMS configurations proposed by Petti and Solazzo (2007) focus on the transactional capabilities of DMSs. Petti and Solazzo (2007) argue that in the first destination configuration, characterised by poor tourism planning, no decisional centres, fragmented supply and low levels of ISs use (Ndou & Petti, 2007), DMSs are unlikely to emerge and the DMO is the only possible actor managing the destination, informing suppliers by a fax or GSM message when tourists asks for a service.

Within the cooperation stage, where the supply is relatively structured, there is a limited number of *ad hoc* decisional centres and most suppliers have legacy ISs (Ndou & Petti, 2007), the DMO is still the only stakeholder managing the DMS, which is able to register service requests, availability and process transactions directly on the suppliers' IS (Petti & Solazzo, 2007). In the third stage (Ndou & Petti, 2007) – leadership – the supply is structured, the DMO is the single decisional centre that coordinates the supply and the DMS plays a major role in the coordination, promotion and distribution of the destination (Petti & Solazzo, 2007). The fourth and last destination configuration proposed by Ndou and Petti (2007) – distributed leadership – is characterised by a strong maturity of the tourism destination suppliers in terms of the accumulation of high managerial and technological humanware. At this stage suppliers have a reduced need for a DMO, tending to self-organise (Ndou & Petti, 2007). According to Petti and Solazzo (2007), in the distributed leadership stage, each of the suppliers publishes their own offerings on there is, through a Universal Description, Discovery and Integration (UDDI) registry, while the DMS allows suppliers to have their own services and to publish them as Web Services on a UDDI registry. In case the supplier has its software application on its own IS, it must develop a proxy component following technological standards for Web Service or for Application Programming Interface (API). In this scenario, the DMS can look up the UDDI registry and build an ad-hoc proxy component in order to use the tourism businesses.

Brown (2004) also addresses two types of DMSs concerning 'Bookability'. The author argues that some DMSs have 'Real Time Booking' capabilities, with suppliers committing to provide updated availability and pricing at all times allowing the DMS to produce instant booking information. 'Pseudo-Real Time Booking' DMSs also require suppliers to provide availability and pricing information but ask users to make a book enquiry that will be later confirmed or rather refused by the supplier. Indeed, the DMSs' need to operate an integration of systems of different stakeholders requiring different access levels, according to the type of stakeholder, using Graphical User Interfaces (GUI) or API/web services (Figure 3.1). Thus, DMSs are not only expected to hold a website open to everyone – namely prospective visitors - but also to create different user profiles aimed at both destinations' suppliers/intermediaries and the DMO itself. In a DMSs' context, the system is expected to support a user profile only accessible to the DMO's staff aiming to assist its own internal functions (e.g. allowing the staff of different DMOs' tourism information offices to access the central database, thus providing up to date and homogeneous information).

A DMS is also required to offer selected destination suppliers' admission to yet another user profile in which, for example, strategic data produced by the DMO (such as statistics) can be accessed. DMSs differ from more traditional DMO websites/web-applications since these later ones only have a user interface for prospective tourists and do not convey user profiles for DMOs staff or for destination-based actors. Thus, any comparison beyond functionalities not targeted to visitors (open user profile) would not be possible because most common destination websites do not simply hold them.

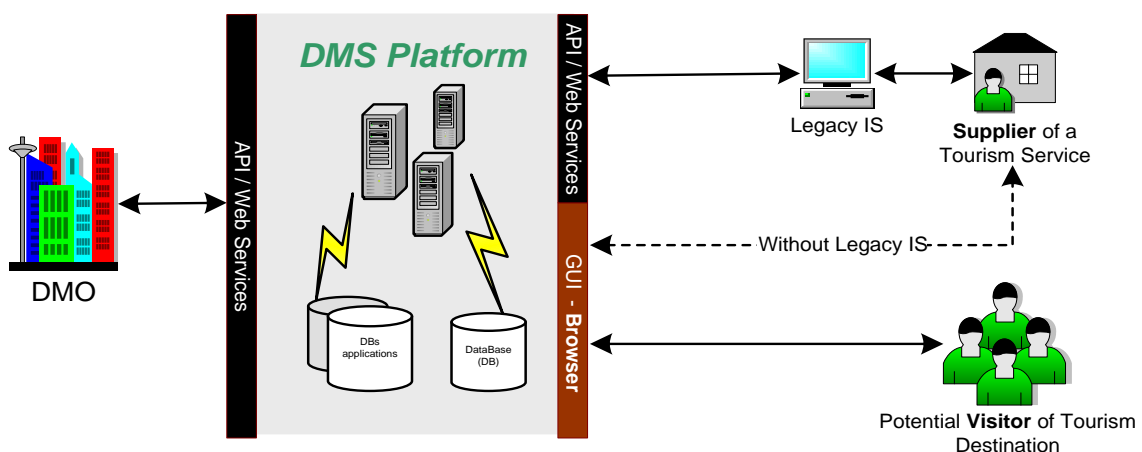


Figure 3.1 – The main actors of a DMS

By analysing the literature (e.g. Buhalis, 2003; Han & Mills, 2006; Wang & Fesenmaier, 2006) the major difficulty in distinguishing DMSs from other DMO web-applications/websites resides in visitor profiles, specifically on functionalities directed at visitors of tourism destinations, where differences between both types of systems may be harder to detect. According to authors such as Booch, Rumbaugh and Jacobson (1999), the elements needed to interact with systems can be designated as functional requirements. Both the literature on information systems, as well as on ICT in tourism, use different nomenclatures to designate these elements, such as 'functions', 'tools' and 'functionalities'. In the present study, these elements will be referred to as functionalities.

Previous research on tourism website functionalities - namely those evaluating website effectiveness - often categorise functionalities targeted at potential visitors of tourism destinations according to a set of pre-determined criteria that best fit each research goals. For instance, for website evaluations, a popular instrument among researchers is the Modified Balance Scorecard (MSC) developed by Mills and Morrison (Douglas and Mills, 2004), which groups functionalities according to technical aspects, user friendliness, attractiveness and marketing effectiveness. In eMICA – another model adopted by Doolin, Burgess and Cooper's (2002) for evaluating DMO websites - functionalities are classified in three groups – 'promotion', 'provision of information' and 'transaction processing' – each representing an additional layer of complexity (Doolin et al., 2002). Beldona and Cai (2006) identified three perceived levels of DMO websites' stickiness grouping functionalities into three categories: content, interactivity and promotional value. Another completely different perspective is suggested by Bastida and Huan (2012), which evaluated the city DMO websites, classifying functionalities in three groups according to the phases of travel preparation: 'information/tools visitors need before the trip', 'information/tools visitors need during the trip' and 'the website itself' (this last group encompassed functionalities not related to a specific stage of a travel preparation stage).

Other stream of research aims to assess the relevance of functionalities for different types of actors. Indeed, in order to assess the importance given by DMO CEOs to different DMSs' functionalities, Wang (2006) proposed a conceptual model classifying them into four dimensions according to their role: 'information'; 'communication'; 'transaction'; and 'relationship. Similarly to Doolin et al.'s extended eMICA model, the Wang's dimensions not only represent different sets of tasks performed by the website, but also additional levels of functionalities' sophistication, complexity and interactivity (Wang and Russo, 2007). The first dimension – information – refers to the types and levels of information that need to be

accessible in a DMS in order to attract visitors (e.g. visualisation of accommodation options, schedules and general descriptions of destinations' features). Communication functionalities (e.g. search functions, Frequently Asked Questions) are of paramount importance because any successful DMSs must provide tourists with appropriate communication mechanisms to enhance the understanding between consumers and suppliers. Transaction functionalities encompass, for example, reservation and purchase tools. They promote engagement between the destination and the consumer, previously strengthened by the trust built from a quality exchange of information and timely communication (Wang & Russo, 2007). Transaction functionalities are often challenging for DMO since they require high levels of involvement from local suppliers, up to date availability, pricing and booking confirmation from suppliers (Brown, 2004). The relationship dimension encompasses functionalities empowering long-lasting and positive relationships with potential and past visitors such as personalisation, customer loyalty programmes.

### **3.3 Methodology of the study**

The main objective of this study is to help clarifying the concept of DMS. Given that, as previously referred, the major difficulty in distinguishing DMSs from other DMO web-applications/websites relies on the set of functionalities targeted at potential visitors of destinations, the analysis of the current study focused on this kind of functionalities. In order to achieve the main objective of the study, first, potential functionalities of DMSs targeted at potential visitors were identified. These functionalities were identified based on an analysis of literature on DMSs and based on literature on web-applications/websites, not specific on DMSs. The literature not specific on DMSs encompassed studies regarding other web platforms which are not DMSs and, also, literature regarding DMO platforms in general, where the type of web platform was not specified. A content analysis of each source (paper or book chapter) was done, in order to identify all functionalities targeted at visitors.

All functionalities were grouped and later analysed following two main criteria. One of the criteria was the kind of requirement underlying the functionality. In this context, functionalities were grouped following a similar approach to that proposed by Wang and Russo (2007), into three dimensions: information, communication/relationship and transaction. Due to obvious similarities between the communication and relationship dimensions, as well as to the fact that only a relatively scarce number of functionalities were

found in each of the two dimensions, it was considered appropriate to classify them in the same group.

The other criterion adopted to classify the functionalities was the component of the tourism destination to which the functionality was related (e.g. attractions, access). The components of tourism destinations identified by Cooper et al. (2008) – *attractions*, *amenities*, *access* and *ancillary services* - were used to group all the identified functionalities. However, due to the broad nature of both attractions and amenities, each of these two components was divided into three subcategories. Thus, while the component *attractions* was split into *natural attractions*, *man-made attractions* and *events*, the component *amenities* was subdivided into *accommodation*, *intermediaries* and other *amenities*. However, the nature of certain identified functionalities excludes the possibility of relating them to any type of tourism destination component in particular. This is the case of the web platforms' 'complementary general requirements', which include contents and functionalities such as sitemaps, Frequently Asked Questions (FAQs), secure transactions, multi-languages, among others. This type of requirement is essential to ensure the good performance of the functional requirements of the system by ensuring the quality of the whole system. Thus, a fifth category – *complementary general requirements (CGR)* - was added in the second criteria.

Moreover, an analysis of the main differences between DMSs and other DMO websites regarding functionalities targeted at potential visitors, was performed. In order to carry out this analysis, the DMS-specific literature and the DMS-nonspecific literature was compared. Chi-square tests were used to identify statistically significant differences between DMSs and other DMO websites on the three dimensions of functionalities previously referred.

The papers were identified by searching in some of the largest and most popular online scientific databases in the field of study under analysis (e.g. *Science Direct*). Literature non-specific on DMSs was searched using groups of keywords such as 'destination websites', 'DMO websites', 'NTO websites' and 'City websites'. The search for studies on DMSs included keywords such as 'destination management systems', 'destination marketing systems' and 'destination information systems'. Two other relevant publications in the field, not included in the most popular databases previously searched - 'Journal of Information Technology and Tourism' and the 'proceedings of ENTER' (the International Federation for Information Technologies and Travel & Tourism's annual conference) -, were also consulted

online. Reference books in the field of technologies applied to tourism were also consulted to identify book chapters on the subject under analysis.

Only sources which included a quite holistic perspective of the components of tourism destinations and of types of functionalities were considered. Therefore, sources focusing on very specific features of the destination (e.g. gastronomy) or on very specific kind of functionalities were excluded from the study. Moreover, only studies encompassing lists or, at least, systematic enumerations of functionalities were analysed. In this study, a total of 48 sources (papers or book chapters) published between 1996 and 2012 were analysed: 22 specific on DMSs and 26 not specific on DMSs. Both the scope and research goals of the literature sources are considerably diverse. However, most reviewed sources encompass researches evaluating destination websites, case studies describing contents of functionalities of a specific destination web platform. Thus, while some studies enumerate and describe the whole range of functionalities of the destinations' web platforms (e.g. Li & Wang, 2010), others do not have such a systematic approach, only mentioning a few functionalities to exemplify certain functions or benefits inherent to a specific destination web application. Table 3.1 illustrates the scope of each of the analysed papers and book chapters.



**Table 3.1 – Reviewed studies and correspondent topics (continues)**

<b>Author(s)</b>	<b>Type of study</b>	<b>Research topic and goals</b>
<b>Baggio (2008)</b>	DMS-nonspecific	Case Study describing Rimini's DMO web-based platform
<b>Bastida and Huan (2012)</b>	DMS-nonspecific	Performance evaluation of Chinese tourism website's information
<b>Benckendorff and Black (2000)</b>	DMS-nonspecific	Case Study on Australian DMOs' web marketing
<b>Bédardand Louillet (2008)</b>	DMS-specific	Case Study describing Québec's DMS
<b>Beldona and Cai (2006)</b>	DMS-nonspecific	Evaluation study of 50 US rural tourism websites' stickiness
<b>Brown (2004)</b>	DMS-specific	Case study on the official Manchester DMS identifying its critical success factors
<b>Buhalis (2003)</b>	DMS-specific	Conceptualisation of DMSs
<b>Buhalis and Spada (2000)</b>	DMS-specific	Identification of success criteria for DMSs
<b>Cano and Prentice (1998)</b>	DMS-nonspecific	Study on the marketing and communication potential of Scottish DMO websites
<b>Çetinkaya (2009)</b>	DMS-specific	Descriptive study on the role of DMSs for destination competitiveness
<b>Chen and Sheldon (1997)</b>	DMS-specific	Identification of challenges encountered in the design of a DMS
<b>Cho and Sung (2012)</b>	DMS-nonspecific	Cross-cultural effects on perceived information value and performance evaluation in destination websites
<b>Choi et al. (2007)</b>	DMS-nonspecific	Identification of the image representations of Macau by analysing its DMO website, among other web sources
<b>Choi et al. (2007a)</b>	DMS-nonspecific	Study on the preferences and attitudes of consumers towards DMOs functionalities
<b>Collins and Buhalis (2003)</b>	DMS-specific	Analysis of the degree of development and use of DMSs in England
<b>Doolin et al. (2002)</b>	DMS-nonspecific	Evaluation of the level of website development in New Zealand's RTOs using the extended Model of Internet Commerce Adoption
<b>Douglas and Mills (2004)</b>	DMS-nonspecific	Comparative analysis of ten Caribbean NTO websites to determine differences in terms of technical aspects, user friendliness and marketing effectiveness
<b>Estêvão et al. (2012)</b>	DMS-specific	Study on the role of DMSs in the purchase of cultural tourism products
<b>Estêvão et al. (2012a)</b>	DMS-specific	Study aiming to identify potential benefits in adopting DMSs in Portugal
<b>Feng et al. (2003)</b>	DMS-nonspecific	Comparative evaluation study between US and Chinese destination websites
<b>Giannopoulos and Mavragani (2011)</b>	DMS-nonspecific	Comparative analysis of European national tourism websites
<b>Guthrie (2008)</b>	DMS-specific	Case study describing the DMS <i>Visitbritain</i>
<b>Han and Mills (2006)</b>	DMS-nonspecific	Methodology and testing techniques for tourism website evaluation
<b>Inversini (2011)</b>	DMS-specific	Study on web marketing and communication of cultural destinations
<b>Kao et al. (2005)</b>	DMS-nonspecific	Study on the satisfaction of Taiwanese tourists towards Singapore's NTO website
<b>Kärcher and Alford (2008)</b>	DMS-specific	Case study describing the DMS <i>Tiscover</i>
<b>Li and Wang (2010)</b>	DMS-nonspecific	Evaluation model for DMO websites
<b>Loda et al. (2009)</b>	DMS-nonspecific	Website content analysis aiming to determine the most frequently used elements

**Table 3.1 – Reviewed studies and correspondent topics (continuation)**

<b>Author(s)</b>	<b>Type of study</b>	<b>Research topic and goals</b>
<b>Luna-Nevarez and Hyman (2012)</b>	DMS-nonspecific	Content analysis identifying typical features of destination websites
<b>Milheiro (2006)</b>	DMS-nonspecific	Evaluation study on the usability of the Portuguese NTO website
<b>Miralbell et al. (2008)</b>	DMS-nonspecific	Case study describing the Spanish NTO web platform <i>Spain.info</i>
<b>Morrison et al. (2004)</b>	DMS-nonspecific	Study on the approaches to tourism and hospitality website evaluation
<b>O'Connor and Rafferty (1997)</b>	DMS-specific	Case study on the Irish DMS <i>Gulliver</i>
<b>Pechlaner and Raich (2002)</b>	DMS-specific	Case study on the DMS <i>Tiscover</i> (Tyrol) aiming to analyse its role in the information process within cultural tourism products
<b>Qi et al. (2008)</b>	DMS-nonspecific	Evaluation of Chinese DMO website's usability
<b>Rita (2000)</b>	DMS-specific	Guidelines required for DMOs to achieve successful web marketing
<b>Schröksnadel (2008)</b>	DMS-specific	Case study describing the Austrian-based DMS <i>Feratel</i>
<b>So and Morrison (2004)</b>	DMS-nonspecific	Content analysis aiming to measure the effectiveness of East Asian NTO websites
<b>Stepchenkova et al. (2010)</b>	DMS-nonspecific	Evaluation study of 967 US DMO websites assessing overall technical functionality, customer friendliness/usability and marketing effectiveness
<b>Sussman and Baker (1996)</b>	DMS-specific	Exploratory study on the record of DMSs and questioning the robustness of the concept
<b>Teichmann and Zins (2008)</b>	DMS-nonspecific	Approach for measuring perceived utility of information elements on DMO Websites
<b>The European eBusiness Market Watch (2005)</b>	DMS-specific	European Commission report on DMSs analysing two of these systems successfully implemented in the EU: <i>Tiscover</i> (Tyrol) and <i>Gulliver</i> (Ireland)
<b>Wang (2008)</b>	DMS-specific	Study aiming to assess the critical factors of Web-based DMSs used by US DMOs
<b>Wang and Fesenmaier (2006)</b>	DMS-nonspecific	Web marketing practices of US DMOs
<b>Wang and Russo (2007)</b>	DMS-specific	Study proposing a conceptual model regarding DMS functions
<b>Wei and Jiu-Wei (2009)</b>	DMS-specific	Study on the strategic dimension of DMSs
<b>World Tourism Organisation (2001)</b>	DMS-specific	Guidelines for DMSs' implementation by DMOs
<b>Zhou and DeSantis (2005)</b>	DMS-nonspecific	Website content analysis aiming to identify usability challenges and evaluate cross-cultural differences in international tourism websites

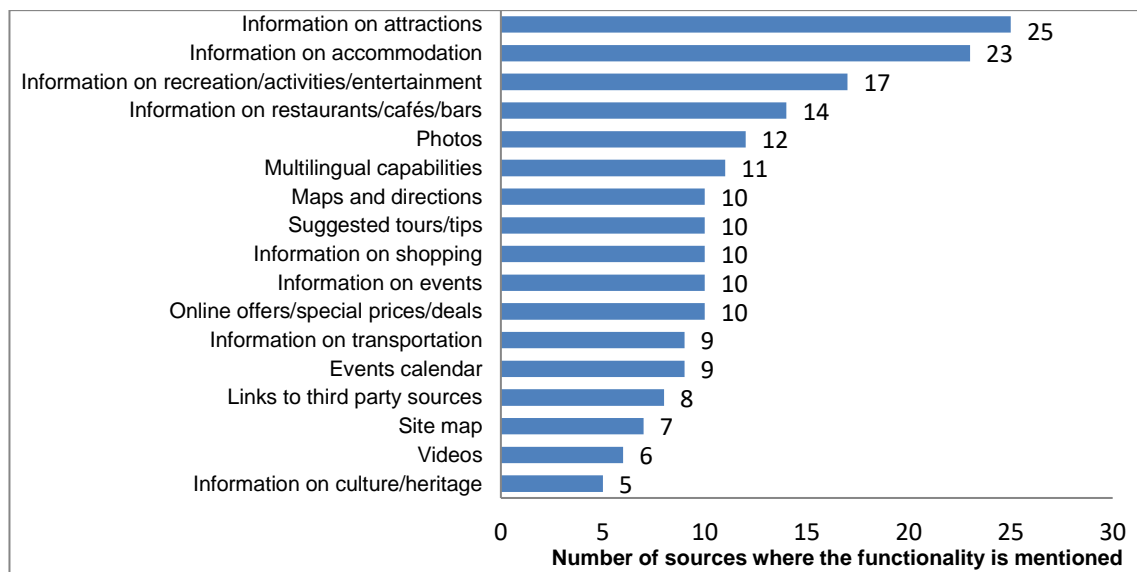
### 3.4 Results' analysis

In this section, the main outcomes of the present research will be presented and analysed. The section is structured in three subsections. First, the diversity of functionalities identified in the literature is discussed. Secondly, the overall frequency of references to the three adopted website dimensions – 'information'; 'communication/relationship'; 'transaction' – is

analysed. Lastly, a comparative analysis between the types of functionalities found in DMS-specific and DMS-nonspecific reviewed studies is done.

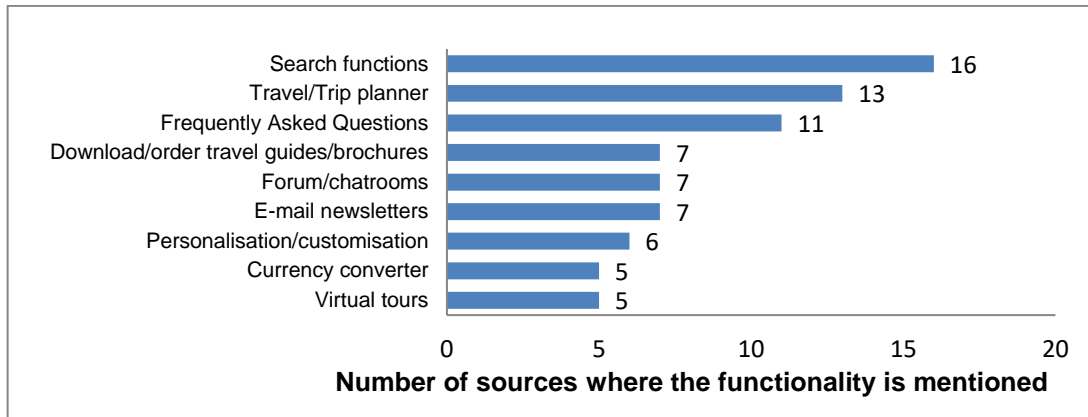
### 3.4.1 The variety of website functionalities identified in the literature sources

Regarding the variety of functionalities identified in the reviewed studies, it seems noteworthy that within the total of about 170 functionalities identified in the literature, the highest proportion (around 60%) fits in the information dimension which corresponds to the visualisation/querying of different kinds of information. As shown in figure 3.2, the most often identified information functionalities are ‘information on attractions’, ‘information on accommodation’ and ‘information on recreation/activities/entertainment’. Thus, this dimension has the highest variety of functionalities, followed by the ‘communication/relationship’ dimension (which includes about 30% of all the functionalities). Within this dimension, the more frequently referred functionalities are ‘search functions’ (not associated to a specific destination component), ‘travel/trip planner’ and ‘FAQs’ (Figure 3.3).



Note: Only functionalities mentioned at least in 5 sources are included in the figure.

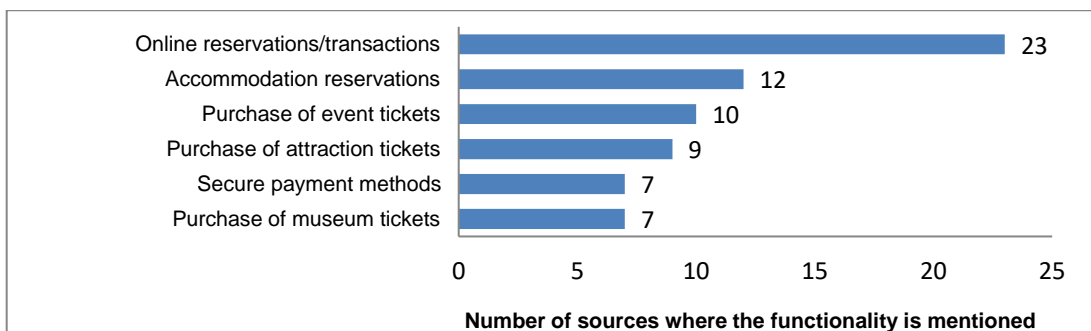
**Figure 3.2 - Most frequently referred functionalities in reviewed studies (information dimension)**



Note: Only functionalities mentioned at least in 5 sources are included in the figure.

**Figure 3.3 - Most frequently referred functionalities in reviewed studies (communication/relationship dimension)**

The lowest diversity in terms of references to functionalities is found within the transaction dimension (that encompasses around 10% of the functionalities identified). ‘Online reservations/transactions’ (not associated to a specific destination component), ‘accommodation reservations’ and ‘purchase of event tickets’ are the most often identified functionalities under the transaction dimension (Figure 3.4). The scarce variety of identified transactional functionalities may be explained by two main reasons: firstly, no transactional functions were identified within the ancillary services component because, as referred by Crouch (2007), these services are usually provided by DMOs for free. Secondly, because the transaction dimension is narrower than the other two dimensions regarding its types of functionalities. Thus, it does not inherently have a great diversity beyond the booking and purchase of tourism services.

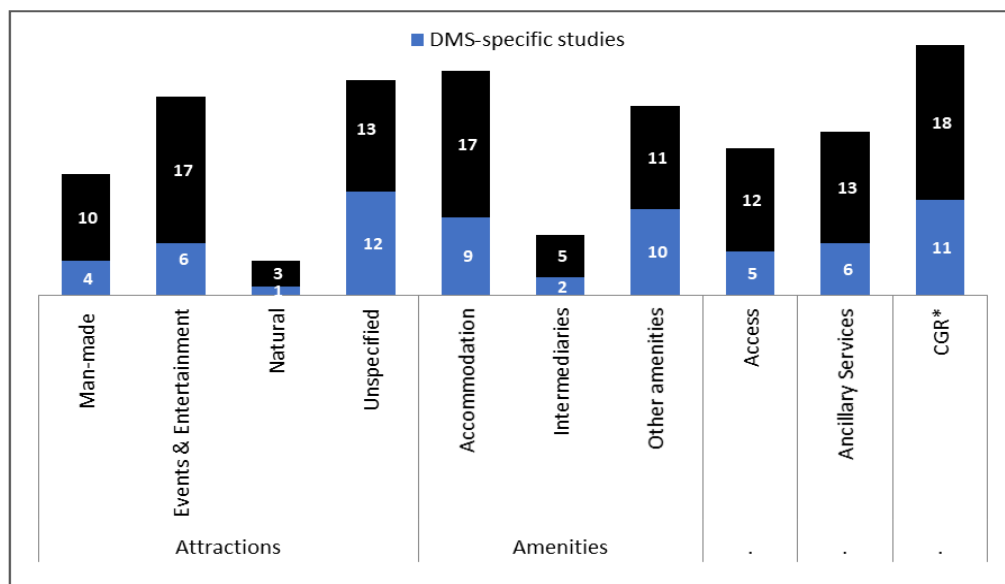


Note: Only functionalities mentioned at least in 5 sources are included in the figure.

**Figure 3.4 - Most frequently referred functionalities in reviewed studies (transaction dimension)**

### 3.4.2 Frequency of references to website functionalities per types of tourism destination components

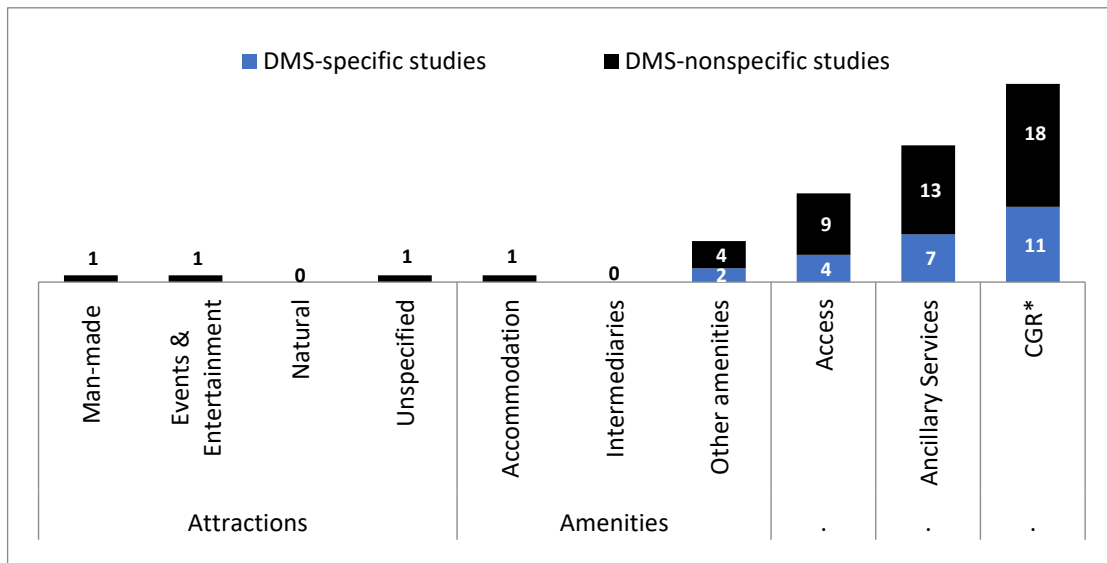
As far as the informational dimension is concerned, the visualisation of information on ‘CGR’ was identified in 29 sources and the ‘accommodation information’ in 26 out of the total 48 (Figure 3.5). Therefore, these two components are the most frequently mentioned ones in this scope. Although two subcomponents of the ‘attractions’ category – ‘events and entertainment’ (n=23) and ‘unspecified attractions’ (n=25) - were often mentioned in the analysed sources, functionalities related to ‘natural attractions’ received the least amount of references (n=4).



**Figure 3.5 - Number of references to types of informational functionalities**

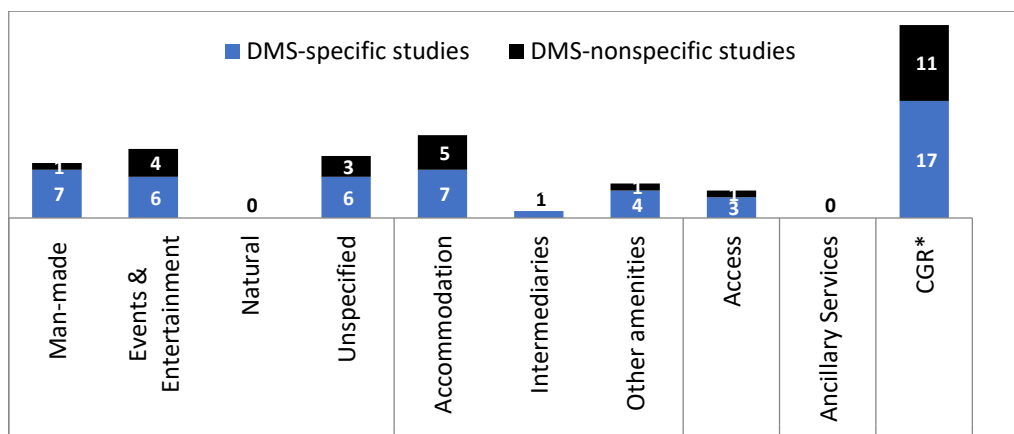
The communication/relationship functionalities found in the literature are more frequently associated to ‘CGR’ (n=29), to ‘ancillary services’ (n=20) and ‘access’ (n=13) (Figure 3.6). Few references are found on communication/relationship functionalities related to subcomponents of ‘attractions’ and of ‘amenities’. Perhaps ‘ancillary services’ is the most widely identified component within the communication/relationship dimension across the literature because, as already referred, these services are usually provided by DMOs and, in the last decades, DMOs’ major role has shifted from information provision to Customer Relationship Management, in which the development of communication tools fostering the direct relationship between destinations and visitors is extremely important. In the future, this tendency is likely to increase, as the growing relevance and adoption of social media

tools by DMOs' web applications further empower the relevance of destinations' web communication/relationship with visitors (Mich & Kiyavitskaya, 2011).



**Figure 3.6 - Number of references to types of communication/relationship functionalities**

Unlike the previous dimension, transaction seems to be more balanced regarding the number of references to each of the different destination components (Figure 3.7). The exception is the 'CGR', which is considerably more frequently referred (n=28) than all other nine categories. Transaction of 'accommodation' (n=12) and transaction of 'events and entertainment' (n=10) were, respectively, the second and third most often mentioned. As expected, by their inherently non-commercial nature, transaction of 'ancillary services' and transaction of 'natural attractions', received no references.



**Figure 3.7 - Number of references to types of transactional functionalities**

### **3.4.3 Comparative analysis between functionalities identified in DMS-specific and DMS-nonspecific literature sources**

As referred in the methodology section, from the total of 48 reviewed studies, 22 focused specifically on DMSs while the remaining 26 dealt with unspecified DMO websites. As also indicated earlier, this study's major goal is comparing DMS-specific and DMS-nonspecific sources in terms of references done to web functionalities. For each type of functionality identified in figures 3.5 to 3.7, a comparison is done between the percentage of DMS-specific studies and the percentage of DMS-nonspecific studies that mention that type of functionality. Ultimately, this analysis would allow researchers to assess which of the two types of literature sources – DMS-specific or DMS-nonspecific – gives more emphasis to each type of functionality.

As presented in table 3.2, chi-square tests revealed statistically significant differences between DMS-specific and nonspecific studies only in the transactional dimension ( $X^2=7.760$ ;  $p\text{-value}=0.005$ ). Interestingly, this dimension accounts for the highest percentage of references (95%) within DMS-specific studies and the lowest proportion (62%) amongst DMS-nonspecific researches. Although these differences are not significant when comparing the results for the first four destination components individually, they are quite considerable when confronting the frequency of DMS-specific studies referring 'CGR' transactions (77%) with that of DMS-nonspecific researches (42%).

While the information dimension was referred in 92% of DMS-nonspecific studies, it was present in 86% of those specifically encompassing DMSs. Noteworthy is also the fact that, within the information dimension, functionalities related to the 'attractions' component are the most widely identified in both DMS-specific and DMS-nonspecific studies, respectively in 64% and 81%. Contrastingly, functionalities related to 'access' are the least component in both types of studies. Some discrepancy is noticed between DMS-specific and DMS-nonspecific researches in each of the destination components taken into consideration. Thus, while, for instance, 'ancillary services' were only referred in 27% of DMS-specific studies, they are pointed out by 50% of DMS-nonspecific ones.

The results concerning the communication/relationship dimension are more similar in the two types of analysed studies. Overall, references to functionalities within this dimension can be identified in 77% of both - specific and DMS-nonspecific sources. Additionally, considerable similarities are detected on individual components. Thus, for example,

references to 'attractions' are found in 5% of the DMS-specific studies and in 4% of DMS-nonspecific analysed researches.

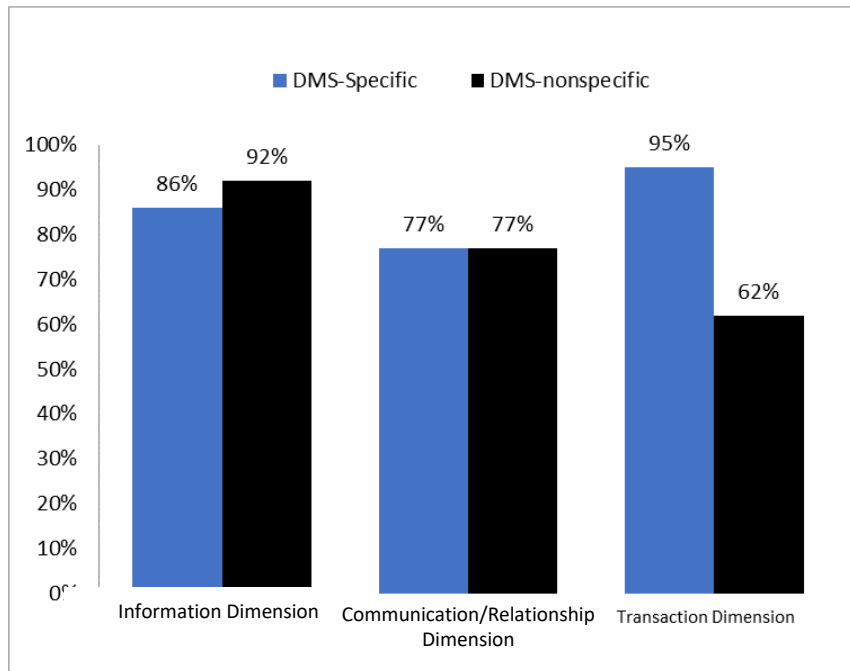
**Table 3.2 - References in the DMS-specific and DMS-nonspecific studies to functionalities, by dimension**

Component Types		DMS-specific (n=22)		DMS-nonspecific (n=26)		X <sup>2</sup>	p-value
		n	%	n	%		
Information	Attractions	14	64%	21	81%		
	Amenities	14	64%	20	77%		
	Access	5	23%	12	46%		
	Ancillary Services	6	27%	13	50%		
	CGR	11	50%	18	69%		
<b>Total references to the Information Dimension</b>		<b>19</b>	<b>86%</b>	<b>24</b>	<b>92%</b>	<b>a)</b>	
Communication / Relationship	Attractions	1	5%	1	4%		
	Amenities	1	5%	3	12%		
	Access	4	18%	9	35%		
	Ancillary Services	7	31%	13	50%		
	CGR	11	50%	18	69%		
<b>Total references to the Communication &amp; Relationship Dimension</b>		<b>17</b>	<b>77%</b>	<b>20</b>	<b>77%</b>	<b>0.001</b>	<b>0.977</b>
Transaction	Attractions	7	27%	5	19%		
	Amenities	8	36%	5	19%		
	Access	3	14%	1	4%		
	Ancillary Services	0	0%	0	0%		
	CGR	17	77%	11	42%		
<b>Total References to the Transaction Dimension</b>		<b>21</b>	<b>95%</b>	<b>16</b>	<b>62%</b>	<b>7.760</b>	<b>0.005</b>

Note: a) not valid



Figure 3.8 highlights the main differences between ‘DMSs’ and ‘DMO platforms not considered DMSs’. It reveals that the distinctive characteristics of DMSs rely on the functionalities included in the transaction dimension. The transaction functionalities are more predominant in ‘DMSs’, while the information functionalities are more predominant in ‘DMO platforms not considered DMSs’.



**Figure 3.8 - Differences between DMS-specific and DMS-nonspecific platforms according to their functionalities' dimensions**

### 3.5 Conclusions

The concepts of DMS proposed across the years point to a higher complexity of these systems in relation to more traditional destination websites. However, the scarcity of studies on DMSs and other DMO websites/web-applications providing a systematic identification of functionalities, make it difficult to grasp the actual differences between these two types of tourism destinations' web platforms.

According to the literature, the main distinction between DMSs and traditional DMO websites lies in the functionalities made available to the DMOs staff, for internally assisting and coordinating their operations, and those aimed at destination-based tourism businesses. In fact, as previously discussed, although DMSs are likely to encompass these functionalities, traditional DMO websites are almost entirely focused on the tourist demand

and, consequently, in promoting destinations. Although the literature highlights the differences above referred, regarding functionalities targeted to potential visitors of tourism destinations, the distinction between DMSs and traditional DMO platforms is far from being clear. The present study contributes to clarify the frontiers of DMSs considering functionalities targeted to potential visitors.

The comparison between DMS-specific studies and DMS-nonspecific studies analysed suggests that the major difference relies in the transactional dimension, particularly on transaction functionalities related to complementary general requirements (not associated to specific components of tourism destinations), that are more likely to be found in DMS. As far as the information and communication/relationship dimensions are concerned, differences are not so clear. The results also suggest that the diverse information functionalities tend to be present in almost all DMSs and traditional DMO applications, while the majority of communication/relationship functionalities analysed tend still to be scarce in these two kinds of platforms. This last situation can be explained by the fact that much of this dimension's functionalities are still in their infancy, at least compared to information and transaction dimensions.

The present research also provides some guidelines to the development of DMS. It is important that, alongside the investment in the informational dimension, DMOs also pay attention to the transactional and communicational/relationship dimensions of DMS, in order to increase the value of these systems to visitors. If DMOs want to take full advantage of their ISs and networks, they should evolve from the mere information and transaction dimensions towards underpinning a closer, more interactive and dynamic connection with their visitors through a broader and systematic use of tools empowering the relationship dimension.

Special attention should be given to include, in DMSs, the functionalities more frequently mentioned in the literature analysed, such as information on attractions, information on accommodation, information on recreational activities, search functions, travel/trip planner, FAQs service, online reservations/transactions – particularly reservations of accommodation and purchase of event and attraction tickets. The study also indicates a wide range of other functionalities that, besides not being frequently referred in the literature, may be included in DMSs to improve the value of these systems to potential visitors, such as: suggested tours, events calendar, download/order travel guides/brochures, virtual tours, and secure payment methods.

The analysis done in this study was strictly based on the literature. This may have been a limitation of this study. In order to overcome this limitation, future research should include content analysis of DMS platforms to identify the main functionalities already included in these kinds of systems. This study should be complemented by research designed to assess the relevance that visitors assign to the functionalities found in DMSs. Considering the constant evolution of technology, future research should be undertaken to evaluate the evolution of the 'DMS' and 'DMO platforms not considered to be DMS' and identify future changes in the "border" between them. We also suggest future works to develop an experimental prototype in order to validate the concept of DMS.

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## CHAPTER 4

### Destination Management Systems implementation

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#### Reference

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## **4. Destination Management Systems Implementation**

### **4.1 Introduction**

Destination Management Systems (DMSs) are considered the most sophisticated and effective web-based Information and Communication Technologies (ICTs) supporting tourism destinations' marketing efforts. However, their implementation processes have been remarkably challenging for the Destination Management Organisations (DMOs) that usually manage them. Evidence suggests that failure is considerably higher than success when it comes to developing and maintaining successful DMSs. Through an extensive literature review, the purpose of the present chapter is to explore which factors to consider when implementing a DMS.

### **4.2 Background**

The growing global competition among tourism destinations has enhanced the role of DMOs. A DMO is an official tourism body of a destination - country/state, region or municipality -, responsible for the management of tourism and for coordinating the multiple players engaged in the supply and distribution of tourism services of that destination (Ritchie & Crouch, 2003; Estêvão, Carneiro, & Teixeira, 2012). Destinations marketing efforts, often coordinated by DMOs, are one of the main sources of destinations' competitiveness (Bornhorst, Ritchie, & Sheehan, 2009; Ritchie & Crouch, 2003).

According to the World Tourism Organisation (WTO) (WTO, 2004), the major change that occurred in the operating environment of DMOs was the introduction of the Internet, which became the preferred medium for prospective tourists to search for and, to a lesser extent, purchase tourism products. Nonetheless, most studies suggest that most of these organisations have only been able to develop brochure-like destination websites that replace their traditional paper-based promotion, not adding value to destination marketing strategies (Ndou & Petti, 2007; Wang, 2008; WTO, 2004).

However, the emergence of DMSs, in the mid-90s, dramatically changed DMOs' e-tourism policies and goals, adding new dimensions and capabilities to DMOs online strategies. DMSs provide many advantages from the visitors' perspective, since they go much beyond the promotional sphere, also encompassing transactional and relational functionalities

aimed at visitors and at the various destination-based stakeholders. Under a B2B perspective, they support destinations to jointly and coherently promote and sell their offerings to prospective visitors while fostering networking and, specifically, more systematic communication flows among suppliers aiming at promoting collaboration efforts within the destination (Dwyer, Edwards, Mistilis, Roman, & Scott, 2009). Under a B2C/C2B perspective, DMSs allow visitors to search, plan and dynamically purchase tourism products without leaving the official destination Information System (IS) (Egger & Buhalis, 2008). However, the factors accounting for the successful adoption of DMSs and explaining their high rate of DMSs' failure are complex and go far beyond the mere technological dimension.

### **4.3 Factors affecting DMSs' adoption and success**

Despite its promised benefits, both for destination marketing and for the coordination of destinations' internal stakeholders, there are but a few success cases in DMSs' implementation (Alford & Clarke, 2009; Sigala, 2013). According to Buhalis and Spada (2000), most of DMSs' development initiatives have aborted in their initial stages.

Successful DMSs' development requires a systematic approach to understand key factors supporting its management and implementation from both business and technical perspectives (Wang, 2008). However, previous research has focused on narrow technological issues and often explains DMSs' failure based on the poor *e-readiness* of business suppliers or DMOs (Brown, 2004) or on the digital gap between different types of tourism organisations (Egger & Buhalis, 2008). Due to the scarcity and narrow focus of DMSs' research on factors that determine their success, and considering that DMSs are a form of Inter-Organisational Information Systems (IOISs) (Bédard, Louillet, Verner, & Joly, 2008; Sigala, 2013) - "ICT-based systems that enable companies to share information and conduct businesses across organisational boundaries" (Boonstra & de Vries, 2005, p. 485) -, literature on IOISs may also offer important insights on potential critical success factors of DMSs.

The present chapter's primary goal is to identify the main factors influencing the successful implementation of DMSs. Through an extensive literature review on DMSs and IOISs, it was possible to identify the following three main types of factors influencing successful DMSs' implementation: (i) DMSs' features (associated with technological issues and business model); (ii) organisational factors (both intra- and inter-organisational); and (iii) external environment (Table 4.1). A more detailed discussion of these factors is presented in the next sections.

**Table 4.1 - Factors influencing DMSs' adoption and success (continues)**

Types of factors	Factors	References	
		DMSs' research	IOISs' research
<b>DMSs' technology and business models</b>	DMS's geographical basis	Buhalis, (2003) Buhalis and Spada (2000)	
	Diversity and scope of DMSs' functionalities'	Li and Wang (2010) Wang (2008) Wang and Russo (2007)	
	Standardisation and compatibility between DMSs and other tourism related platforms	Guthrie (2008) Kärcher and Alford (2008)	Ramamurthy et al. (1999)
	DMSs' orientation (product vs market)	Buhalis (2003) Buhalis and Spada (2000) Mistilis and Daniele (2004) Wang (2008) Wang and Russo (2007)	
<b>Organisational factors</b>	Strategic orientation of the DMO	Buhalis (2003) Frew and O'Connor (1999) Mistilis and Daniele (2004) Sigala (2013) WTO (2004)	
	Conflicting ideas on the role of the DMO	Frew and O'Connor (1999) Mistilis and Daniele (2004) Sigala (2013)	
	Perceived costs and benefits of the DMS	Buhalis and Spada (2000) Mistilis and Daniele (2004) Rita (2000) Sigala (2003) Wang (2008)	Iacovou et al. (1995)
	Organisational readiness of DMSs' adopters	Buhalis (2003) Sigala (2013)	Chwelos et al. (2001) Iacovou et al. (1995)
	Relationships between organisations at the destination level	Gretzel and Fesenmaier (2004) Hornby (2004) Ndou and Petti (2007) Petti and Solazzo (2007) Sigala (2013)	Boonstra and de Vries (2005) Rodon, Pastor, Sesé and Christiaanse (2008)
	SMTEs' trust in the DMO	Bédard et al. (2008) Sigala (2013)	

**Table 4.1 - Factors influencing DMSs' adoption and success (continuation)**

Types of factors	Factors	References	
		DMSs' research	IOISs' research
<b>External environment</b>	Competitive pressure	Alford and Clarke (2009) Buhalis (2003) Sigala (2013)	Chwelos et al. (2001) Iacovou et al. (1995) Ramamurthy et al. (1999)
	Pressure and/or imposition from trading partners	Buhalis (2003) Horan and Frew (2007)	Boonstra and de Vries (2005) Chwelos et al. (2001) Iacovou et al. (1995)
	Government influence or imposition	Sigala (2013)	Chau and Hui (2001)
	Customer profile and expertise	Brown (2004) Buhalis (2000)	Ramamurthy et al. (1999)

### **4.3.1 DMSs' technology and business model**

The intrinsic characteristics of a DMS have been identified in previous research as strong determinants of DMSs' implementation and adoption success or failure (Buhalis & Spada, 2000). Some characteristics of DMSs that assume special importance in this scope are related to technical features and quality of these systems (e.g. functionalities, architecture, interactivity, user-friendliness), as well as to their business models, and correspond to the following characteristics of DMSs (Buhalis & Spada, 2000; Mistilis & Daniele, 2004; Ramamurthy, Premkumar, & Crum, 1999; Wang, 2008): geographical basis, functionalities' diversity and scope, standardisation and compatibility with other tourism-related platforms, and product vs market orientation.

#### **4.3.1.1 DMS's geographical basis**

One of the factors typically undermining destination-brands' success is their limited geographical scope which often results from administrative divisions, thus scattering development and promotional efforts of tourism products that should be carried out in unison (Lew, 1987). Regional approaches to tourism planning and marketing that would make more sense in terms of destination development are often replaced by the emergence of multiple local initiatives aiming at promoting one single community as a tourism destination, thus undermining its competitiveness and jeopardising the opportunity of

fostering more appropriate inter-municipal tourism development processes (Page & Hall, 2000).

According to Buhalis and Spada (2000), this problem is evident in DMSs' development since "the majority of DMSs has been implemented at local level and operates on a limited basis" (p. 474), which is one of the main reasons of collapse few years after their initial development. Buhalis (2003) argues that locally developed DMSs are usually managed by small and consequently more limited organisational structures regarding destination management and technological skill assets.

#### **4.3.1.2 Functionalities' diversity and scope**

The diversity of functionalities of a DMS greatly depends on the interest or knowledge that the system promoters and its associated members (the tourist suppliers) have, and on their ability to use and integrate DMSs in daily operations (Wang, 2008). Although most DMSs encompass informational, communicational, transactional and relationship-building functionalities, there is great variation regarding the extent to which these functionalities are integrated in those systems (Wang & Russo, 2007). According to Li and Wang (2010), the more a destination web-based platform is able to hold a more dynamic and interactive array of functionalities, such as those empowering e-commerce or Customer Relationship Management (CRM), the more effective it is likely to become.

#### **4.3.1.3 Standardisation and compatibility between DMSs and other tourism-related platforms**

Being, first and foremost, networks linking destination's actors, DMSs require that all adopting organisations, usually small and medium-sized tourism enterprises (SMTEs), are able to integrate DMSs' functions in their own organisations, requiring a certain degree of standardisation and compatibility between organisations' individual systems. In the IOISs' context, Ramamurthy et al. (1999) posit that incompatibility between systems adopted by different organisations may be a major problem for IOISs' adoption. According to Chau and Hui (2001), challenges related to technological standardisation and compatibility are decreasing, namely because recent systems are web-based, involving lower adoption costs.

However, due to the considerable digital gap within the tourism industry, standardisation and compatibility often depends on whether organisations have IS supporting their



operations (Egger & Buhalis, 2008). Moreover, the predominant local and regional territorial scope of such systems, developed independently by single regions or municipalities, also raises the problem of standardisation and compatibility among different DMSs and web-based destination platforms (Buhalis, 2003). Guthrie (2008) and Kärcher and Alford (2008) highlighted that one of the most relevant success factors of both the DMS *Visitbritain* and *Tiscover* is that, in both cases, most local communities share the same DMSs' interface, thus facilitating standardisation, compatibility and data sharing.

#### **4.3.1.4 DMSs' orientation (product vs market)**

A major constraint to DMSs' successful implementation relates to their predominantly product rather than demand orientation (Buhalis, 2003). Mistilis and Daniele (2004) argue that responding quickly to market changes is increasingly important for destination success and private players need freedom to react to market volatility. Public sector's involvement in DMSs' management may reduce timely and appropriate responses of DMSs to the market.

One key function of DMSs is the ability to establish and maintain interactive online relationships with past and potential future visitors (Wang & Russo, 2007). Additionally, the growing sophistication and awareness of the tourism demand implies that tourists increasingly expect tailor-made products (Novelli, Schmitz, & Spencer, 2006). Through the use of new technologies, DMOs should be able to understand their consumers' needs, and to target them individually with the right message at the most appropriate time (Novelli *et al.*, 2006). However, Buhalis and Spada (2000) found that DMSs' managers often "failed to identify the opportunity for DMSs to develop relationships with consumers" because "the after-visit information was rated as unimportant" (p. 476). Similarly, on his analysis of American DMSs' functions, Wang (2008) concluded that relationship functions were not being widely exploited by DMOs.

#### **4.3.2 Organisational factors**

As previously discussed, DMSs often arise from the initiative of public local, regional or national DMOs. Organisational factors are of special importance to the success of DMSs, namely (Frew & O'Connor, 1999; Mistilis & Daniele, 2004; Sigala, 2013; WTO, 2004; Boonstra & de Vries, 2005; Rodon, Pastor, Sesé & Christiaanse, 2008): the strategic orientation of the DMO, conflicting ideas on the role of the DMO, perceived costs and

benefits of DMSs, organisational readiness, relationships between organisations at the destination level and SMTEs trust in DMOs.

#### **4.3.2.1 Strategic orientation of the DMO**

According to Mistilis and Daniele (2004) private online commercial agencies are interested in selling individual products and may be “pushing” particular products based on revenues (e.g. commissions from suppliers) rather than the tourism development of a destination. Governments should establish standards and quality frameworks for the information provided in a DMS that private players are usually not able or inclined to consider (Mistilis & Daniele, 2004). However, as highlighted by both Ndou and Petti (2007) and the WTO’s 2004 survey on DMOs’ online practices (WTO, 2004), most DMOs do not have any kind of e-tourism strategy and only a few have managed to successfully implement a DMS.

Findings of Sigala’s (2013) nationwide study analysing factors affecting DMSs’ adoption in Greece suggest that the perceptions of destination actors about the DMO management practices are one of the most relevant determinants of DMSs’ adoption by destination stakeholders. In that study, the perceived managerial inefficiency and insufficient resources of DMOs were important inhibitors for DMSs’ adoption by private stakeholders. Likewise, Frew and O’Connor’s (1999) research aimed at assessing DMSs’ critical success factors also revealed that SMTE’s perceptions of DMOs as being bureaucratic and inefficient bodies are strong inhibitors of adoption. Thus, some main factors affecting DMSs’ implementation are related to the strategic orientation of the DMO. The lack of strategic orientation often leads to the DMOs inability to strengthen the competitiveness of the local industry, which is, in turn, one of the factors accounting for the inability to implement DMSs (Buhalis, 2003; Sigala, 2013).

#### **4.3.2.2 Conflicting ideas on the role of the DMO**

Since DMSs hold transactional capabilities, one of the most evident DMO-related barriers to DMSs’ implementation is that among both practitioners and academics, there is often the idea that DMOs are not carved to directly engage in commercial activities but should rather limit themselves to facilitate destinations’ success (Werthner & Ricci, 2004). Some authors suggest that the direct involvement of DMOs in transactional initiatives through DMSs may originate unfair competition between the public sphere and private actors that DMSs’

transactional abilities may replace (Sigala, 2013). Mistilis and Daniele's (2004) suggestion that public DMOs should initiate DMSs' development processes and eventually hand DMSs' management to private players is far from being consensual, as the involvement and leadership of the public sector is often considered relevant in development and operation stages, namely to ensure the balance of needs of the main stakeholders (Frew & O'Connor, 1999).

#### **4.3.2.3 Perceived costs and benefits of the DMS**

Although Iacovou, Bensabat and Dexter's (1995) qualitative analysis of seven IOISs case studies, concluded that overall perceived benefits have a moderate influence on IOISs' adoption, it suggests that direct and immediate perceived benefits are more influential to IOISs' adoption than long-term strategic indirect ones. This may be a constraint in a DMS context since its main role is to reshape the destination profile and value chain in the long term (Rita, 2000).

In order to be viable, DMSs must achieve sound financial performances. Hence, DMSs' managers ought to implement an efficient revenue model which is, to a large extent, determined by DMSs' type of ownership/management model. For example, the exclusively public nature of the DMS *Visitbritain* must have influenced the much-contested decision of not charging any commissions to organisations receiving bookings through the DMS's booking engine (Guthrie, 2008). Hence, *Visitbritain.com* totally relies on its DMOs' funding sources. However, DMSs emerging from public-private partnerships often charge commissions, usually lower than those practiced by private intermediaries such as traditional tour operators (Kärcher & Alford, 2008).

According to Buhalis and Spada (2000) and Sigala (2013), SMTEs' mistrust in DMSs' cost effectiveness and the reluctance to pay a commission to adhere and retain DMSs' membership inhibit DMSs' adoption by SMTEs. Moreover, since most people do not perceive DMSs' immediate benefits, public tourism organisations often suffer pressures to diminish or withdraw their funding efforts of such systems (Mistilis & Daniele, 2004). Shifts within the political power can also determine the lack of interest in initiatives of previous administrations - often adversary - and lead to the abandonment of DMSs' development processes.

#### **4.3.2.4 Organisational readiness of DMSs' adopters**

According to Horan and Frew (2007), DMSs are more likely to cater for the needs and interests of smaller businesses than traditional online distribution channels (Horan & Frew, 2007). Moreover, DMSs are also considered more beneficial to smaller businesses than to large companies (Buhalis, 2003), since most SMTEs do not possess the resources nor expertise to develop their own online distribution systems. However, SMTEs typically resist to the adoption of IOISs (Chwelos et al., 2001) or, specifically, DMSs (Sigala, 2013), either for lack of technological skills and resources or for scarce awareness of DMSs' direct and indirect benefits.

Perhaps the most frequently identified factor negatively affecting DMSs' implementation is the lack of innovation adoption by SMTEs. Hence, the usual inability to implement DMSs is often attributed to SMTEs lack of funds to invest in IT and to their inadequate technical human resources (Buhalis, 2003, Hornby, 2004).

#### **4.3.2.5 Relationships between organisations at the destination level**

Research has demonstrated that inter-organisational cooperation enhances destination competitiveness (Morrison, 1998). In order to prevent their marginalisation from Global Distribution Systems (GDS) and from larger tour operators' packaged tours, Buhalis (2000) posits that destinations ought to develop ICT-based networking to assist their collaborative marketing strategies and to bring small suppliers and e-tourists together. One of the main differences between these systems and regular destination portals is that they are a network linking tourism actors, enabling them to obtain multiple benefits, such as sharing information and engaging in B2B e-business.

Besides the important contributions of DMSs in fostering inter-organisational collaboration at the destination level, Petti and Solazzo (2007) remark that some level of pre-existing communication and cooperation among organisations are required for a DMS to be successfully launched. This means that the existence (or not) of a network of relations at a certain destination, and especially its reach and cohesion, strongly determine the ability to implement a DMS aiming at strengthening that same network.

According to Gretzel and Fesenmaier (2004), the implementation of a DMS does not automatically foster, *per se*, knowledge creation between organisations. Rather, it is the social capital gained from the establishment of inter-organisational relationships based on trust that empowers organisations and leads to destination competitiveness (Gretzel &

Fesenmaier, 2004). Although Sigala's (2013) extensive study on DMSs' adoption by Greek tourism actors highlights that this process is influenced by intra-organisational and technological factors, its results reveal their secondary role and state that inter-organisational and collaboration issues are the most relevant in the decisions to adopt DMSs. Being DMOs pivotal organisations regarding DMSs' implementation processes, the relationships between these predominantly public bodies and private companies is crucial to DMSs' success.

#### **4.3.2.6 SMTEs' trust in the DMO**

The lack of adhesion of SMTEs to DMSs may also result from the lack of trust of small organisations in the DMO's capabilities to lead the destinations' competitiveness efforts (Bédard et al., 2008). However, in some cases, negative attitudes of SMTEs' owners may not result from eventual DMOs' inefficiencies, but rather from the typical mistrust of private entrepreneurs in public entities (Sigala, 2013).

#### **4.3.3 External environment**

Few studies on DMSs (e.g. Bédard et al., 2008; Sigala, 2013) have addressed and empirically tested the influence of this type of factors in DMSs' adoption and success. However, they have significant role in the adoption of IS. Iacovou et al.'s (1995) research suggests that the external environment plays the major role in terms of IOISs' adoption by small organisations. External factors may include: competitive pressure within a certain sector, the imposition from trading partners to adopt or rather abandon a particular IOIS, government influence or imposition usually through laws and regulations, and the customer profile and expertise (Chau & Hui, 2001; Iacovou et al., 1995; Ramamurthy et al., 1999).

##### **4.3.3.1 Competitive pressure**

IOISs' research suggests that organisations are more likely to adopt IOISs when operating in a highly competitive industry in order to cope with intensive information and transaction flows quicker and more efficiently (Iacovou et al., 1995, Ramamurthy et al., 1999). According to Chwelos et al. (2001) the most important factor contributing to IOISs' adoption was competitive pressure.

Although there is a consensus regarding the growing competition among tourism destinations (Dwyer & Kim, 2003), most SMTEs are family-run and scarcely management-oriented (Alford & Clarke, 2009). Within the tourism sector, competition is likely to be higher among larger corporations (e.g. airlines, cruise companies and hotel chains) rather than within a SMTE context (Buhalis, 2000). Thus, the scarce competitive pressure inherent to most SMTEs that predominate in the tourism industry might inhibit DMSs' adoption (Alford & Clarke, 2009; Sigala, 2013).

#### **4.3.3.2 Pressure and/or imposition from trading partners**

Pressure exerted from partner organisations within the same value chain has also been considered an important determinant of IOISs' adoption (Iacovou et al., 1995, Chau & Hui, 2001), particularly in scenarios with high levels of dependency among organisations (Boonstra & de Vries, 2005). In the tourism industry, an example of pressure from trading partners in the adoption of an IOIS may be the pressure exerted by airlines on travel agencies to adopt GDSs in order to sell airline tickets (Raymond & Bergeron, 1997). Contrastingly, trading partner pressures may inhibit the use of IOISs. This is the case of tour operators' pressure on DMOs not to adopt DMSs or other IOISs that would endanger their predominant position as intermediaries and, eventually, replace them in the destination supply chain (Buhalis, 2003; Horan & Frew, 2007).

#### **4.3.3.3 Government influence or imposition**

Although research suggests that government influence on organisations regarding IOISs' adoption is not as relevant as the previous two external factors (Chau & Hui, 2001), it is clear that a legal framework fostering/allowing or rather prohibiting public tourism entities (i.e. DMO) to engage in supply chain management or even transactional efforts is likely to influence DMSs' adoption (Sigala, 2013). Unlike IOISs, which are mostly private initiatives, the public nature of DMSs' management increases the relevance of the public/governmental influence in SMTEs adoption decisions.

#### **4.3.3.4 Customer profile and expertise**

According to Ramamurthy et al. (1999) the level of customer expertise and sophistication may foster or rather jeopardise IOISs' adoption and success. Since DMSs are not only aimed at the internal destinations' coordination, must be extensively used by final customers in order to become viable (Brown, 2004), destinations adopting DMSs are likely to have

problems in attracting market segments who frequently purchase tourism products to traditional intermediaries. The predominance of package tours consumers, often having lower levels of independence and technological skills (Buhalis, 2000), may constitute a barrier to DMSs' implementation.

#### **4.4 Future research directions**

Due to the lack of literature on critical success factors regarding DMSs' implementation processes and considering the broad range of the critical success factors identified in the present study, future research on DMSs' adoption should aim at testing the relevance of these factors in several geographical contexts. Moreover, developing and testing holistic models including these factors would also be of utmost importance.

#### **4.5 Conclusions**

Through an extensive literature review on IOISs' and DMSs' adoption, this chapter suggests novel and pertinent perspectives to the analysis of DMSs' implementation and success. The chapter further identifies the three main factors considered relevant for DMSs' success and adoption: DMSs' technology and business models, organisational factors and the external environment.

More recent studies on success criteria or inhibitors of DMSs' development have adopted broader scopes of analysis, considering not only technological issues, but also other factors, including organisational (Wang, 2008) and inter-organisational (Bédard et al., 2008) ones. Most of such studies often conclude that intra-organisational and inter-organisational factors have more explanatory power of the (un)success of DMSs' adoption than the technological ones.

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## **Key terms and definitions**

**Destination Management Organisations (DMOs):** Typically, public or public-private entities responsible for the promotion and coordination of tourism destinations' development.

**Destination Management System (DMS):** Official web-based tourism destination systems aimed at supporting the informational, communicational, transactional and relational efforts with potential customers and between destination-based actors.

**Tourism E-Mediaries:** Online tourism intermediaries who sell virtually the whole range of tourism services of different tourism destinations.

**Global Distribution System (GDS):** Information systems-based network operated by a company allowing automated transactions between suppliers and intermediaries.

**Inter-Organisational Information System (IOIS):** Information systems shared by at least two organisations aiming to foster inter-organisational relations.

**Supply Chain Management (SCM):** Alignment of organisation that bring products to the market, demanding the establishment of a network of organisations involved, through linkages, in processes and activities that produce value to the consumer.

**Tourism Destinations:** Amalgams of tourism products that should be offered to visitors in a cohesive and integrated fashion within a certain well-defined geographical area.

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## **Part III**

**Empirical scientific works:**

**Characterisation of DMSs**

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## CHAPTER 5

### The role of DMS in reshaping tourism destinations: An analysis of the Portuguese case

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#### Reference

Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (2012). The role of DMS in reshaping tourism destinations: An analysis of the Portuguese case. *Journal of Information Technology and Tourism*, 13(3), 161–176.

## 5. The role of DMS in reshaping tourism destinations: An analysis of the Portuguese case

### Abstract

The growing competition among tourism destinations, the diversity of tourism suppliers and the sophistication of the tourism demand bring new challenges to destination competitiveness, making it a more dynamic and ongoing process. The emergence of the Internet as the main vehicle of promotion and distribution of tourism destinations' offerings has been presenting considerable advantages but also challenges to destination managers. Among the several Internet-based solutions aiming at enhancing destination competitiveness, Destination Management Systems (DMSs) have emerged as a relevant tool to increase destination competitiveness.

The present paper extends previous research by providing a literature review on the advantages of DMSs and by presenting a diagnosis analysis of potential benefits of DMSs creation in Portugal and of the current conditions to establish these systems in this country. The analysis reveals that the adoption of DMSs may provide a wide range of advantages for Destination Management Organisations (DMOs), the tourism industry and potential visitors, namely, at the coordination, disintermediation and promotion level. The study also suggests that DMSs may bring several benefits to the Portuguese tourism system, such as the diversification of tourism destinations, products, origin markets and distribution channels. Although some constraints seem to exist for creating DMSs in Portugal, the country's current tourism policies, the recent restructuring of regional tourism boards and some data concerning the *e-readiness* of the Portuguese tourism industry seem to favour the creation of these systems.

**Keywords:** Destination management systems, DMS, Tourism destinations, DMO, Competitiveness.



## 5.1 Introduction

When discussing the critical aspects leading to destination competitiveness, Ritchie and Crouch (2003) identified destination marketing as one of the main factors influencing the performance of destinations. In fact, Kotler, Bowen and Makens (2003) argue that the competitiveness of destinations does not depend solely on their capacity to internally plan and implement competitive tourist products but also on the ability of destinations to place their products in the market by using the most adequate distribution channels.

As important as the qualities of the destination itself is the way the destination presents its products to potential visitors. At this level, the influence that distribution channels have on destinations is not limited to the more or less appropriate manner in which tourist experiences are promoted and sold to the public (e.g. whether there is a match or rather a mismatch between the profile of the destinations' attractions and the type of tour operators' products and clients). Above all, distribution channels can determine the types of tourism products that destinations will be able to develop and the visitors they will be able to attract.

Very often, one of the main obstacles to the development of more sophisticated/alternative tourism products in a certain destination is the excessive predominance of traditional distribution channels, most of them practicing economies of scale (OMT, 2001). These channels often operate in mass tourism destinations, especially in coastal areas (OMT, 2001). According to Buhalis (2003), one of the main features that must be considered regarding tourism distribution in the future is the tendency of consumer behaviour towards the "Do It Yourself" (DIY), meaning that tourists are getting increasingly more autonomous when planning their own travels and purchasing services, often contacting suppliers directly and favouring new forms of Web-based promotion and distribution channels.

With the emergence of the Internet, the tourism industry also aims at disintermediation as a way to cut promotion and distribution costs and to interact directly with visitors. The Destination Management Systems (DMSs), a particular kind of Web platforms, are effective tools for destinations and individual suppliers to promote and distribute their offers directly to visitors (Bédard, Louillet, Verner, & Joly, 2008; Buhalis, 2003; Egger & Buhalis, 2008; Ndou & Petti, 2007; Pollock, 1995; Ritchie & Ritchie, 2002; Sussmann & Baker, 1996). The diversity of DMSs and corresponding functionalities make it difficult to establish a universal definition that can fit the remarkable range of existing DMS solutions. However, there is a

relative consensus that they are one of the most modern Information and Communication Technologies (ICT) applications supporting tourism destinations.

Although many advantages of DMSs were already identified, researchers also stress that several requirements must be met to permit their successful implementation. In Portugal, the tourism sector suffers from excessive concentrations – especially at geographical, motivational and seasonal levels - as well as from predominance and, to some point, dependency on traditional tour operators acting as distribution channels for the country's destinations (CTP, 2005). This scenario inhibits the advent of alternative destinations to those conveying “sun and sea” experiences, mostly distributed by external intermediaries. However, this situation may, at regional or local levels, be reversed by the implementation of Web-based platforms – such as DMSs - fostering internal cooperation between DMOs, tourism suppliers and other actors at the destination level. However, Portuguese destinations only have brochure-websites. One objective of this paper is to analyse the main potential advantages and prerequisites inherent to DMSs' implementation. This paper also aims to provide an analysis of the Web platform used for promoting Portugal as a tourism destination, as well as to identify the potential benefits and requirements associated with the creation of DMSs in Portugal.

## **5.2 Potential advantages of DMSs and prerequisites for their implementation**

### **5.2.1 The concept of DMS**

Although according to Buhalis (2003) we still do not have a universally accepted definition of DMS, several authors have already attempted to provide a definition of this kind of system. One of the first approaches to the concept of DMS was made by Pollock (1995), who defined it as the ICT infrastructure used by a Destination Management Organisation (DMO) to gather, store, manipulate and distribute information through various ways. However, perhaps the most relevant feature of Pollock's definition is the fact that DMSs allow transactions, bookings and other commercial activities.

In the early studies concerning DMSs, much relevance is given to its role as a marketing tool of destinations, that facilitates the promotion of tourism products of a particular destination - which might be a nation, region, town or other recognisable geographical entity – and that permits direct contact with the consumers (Sussmann & Baker, 1996).

In 2003, Buhalis (2003) highlights the interactivity promoted by this kind of systems and details on the information they may provide. He defined DMS as a collection of computerised information about a destination, accessible in an interactive way, usually including information about attractions and services, and incorporating the possibility of making reservations. Regarding its ownership and management, Buhalis also states that DMSs are usually managed by DMOs, which can be public, private or public-private organisations (Buhalis, 2003). Kazasis, Anestis, Moumoutzis and Christodoulakis (2003) corroborate the perspective of other authors by stating that DMSs are Web platforms offering information about destinations and, at the same time, promoting e-commerce activities.

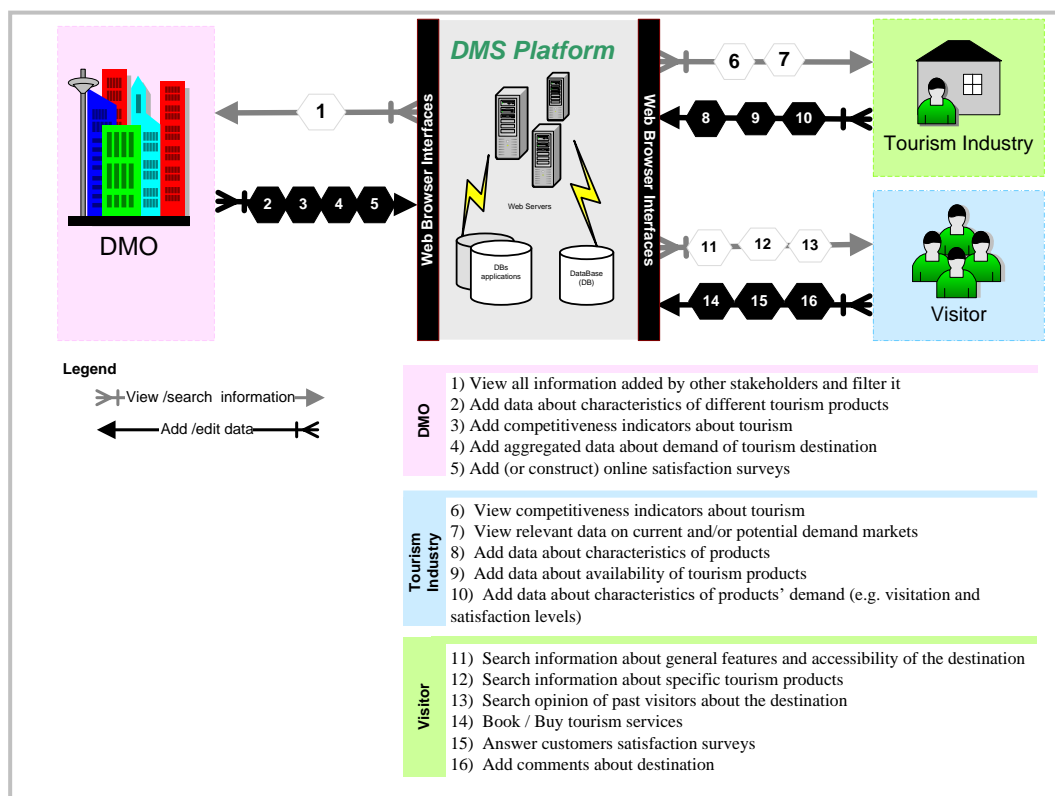
Collins and Buhalis (2003) and Frew and Horan (2007) provide a broader perspective of DMSs highlighting their integrative role. On one hand, Collins and Buhalis (2003) consider these systems a group of mechanisms that integrate different tourism services and products. On the other hand, Frew and Horan (2007, p. 63) stress that DMSs are systems that “consolidate and distribute a comprehensive range of tourism products through a variety of channels and platforms, generally catering for a specific region, and supporting the activities of a DMO within that region paying particular attention to supporting small and independent tourism suppliers”.

As may be observed, there are many approaches to the concept of DMS, due to the diversity of information it supports, as well as operations objectives (e.g. search and bookings) and stakeholders it involves. In this context, the management systems used by destinations may even be classified, according to their focus, as destination information systems (Bédard et al., 2008; Chen & Sheldon, 1997), strategic management systems (Bédard et al., 2008) or destination marketing systems (Rita, 2000; Ritchie & Ritchie, 2002; Wei & Jiu-wei, 2009; Wöber, 2003).

According to Chen and Sheldon's (1997) perspective, destination information system is a database system that integrates a broad range of information about a destination (namely tourism products and tourism infrastructures) making it accessible to both visitors and travel planners. Some authors (Rita, 2000; Ritchie & Ritchie, 2002; Wei & Jiu-wei, 2009; Wöber, 2003) have another perspective, focusing on the marketing component, and specifically referring to destination marketing systems. They consider them as useful frameworks that support all the marketing process, namely by: facilitating the promotion of tourism products; providing data to support suppliers' decisions; assisting travel planning.

Taking into consideration all the definitions of DMSs previously presented, it may be concluded that a DMS can be defined as a dynamic Web-based platform which integrates a wide range of information about a great variety of tourism products and infrastructure of a destination supporting different business plans (e.g. Business-to-Business - B2B, Customer-to-Business - C2B and Government-to-Business - G2B). Additionally, it allows the interaction with different stakeholders (e.g. suppliers from the tourism industry, DMOs and visitors) through different operations of data insertion and information visualisation. Due to the comprehensiveness of this definition, it will be used throughout this paper.

Across the years researchers have identified the stakeholders of DMSs as being DMOs, suppliers of the tourism industry (e.g. tourism attractions, hotels, restaurants, transportation companies, travel agencies) and potential visitors. The DMSs usually provide stakeholders a wide range of functionalities such as information search about the destination, data editing and purchase of tourism products. Detailed information about interactions and some specific functionalities of the DMSs may be observed in Figure 5.1.



**Figure 5.1 - Main functionalities common to most Destination Management Systems**

Due to the characteristics of this kind of systems, the adoption of DMSs may result in a wide range of advantages to their stakeholders. These advantages will be discussed in the next section.

## 5.2.2 The main advantages of Destination Management Systems

The complexity and the wide range of opportunities provided by DMSs make it difficult to identify the entire range of advantages of this kind of systems. Some advantages become especially important, namely those related to: (i) destination's coordination, integration and planning; (ii) disintermediation and optimisation of revenues; and (iii) promotion, visibility and effective presence in the market (Table 5.1).

**Table 5.1 - Main potential advantages of DMSs to destinations and visitors**

		Type of Stakeholder		
		DMO	Tourism Industry	Visitor
Type of Advantage	Destinations' coordination, integration and planning	<p><b>Improved planning strategies</b> (Ndou &amp; Petti, 2007; Ritchie &amp; Ritchie, 2002)</p> <p><b>Enhanced leadership capabilities at internal and external levels</b> (Egger &amp; Buhalis, 2008; Guthrie, 2008; Kärcher &amp; Alford, 2008)</p> <p><b>Improved coordination of destination stakeholders</b> (Bédard &amp; Louillet, 2008; Buhalis &amp; Law, 2008)</p>	<p><b>Coordinated promotion and distribution of the whole destination leading to a higher cohesion among various stakeholders</b> (Miralbell et al., 2008; Ndou &amp; Petti, 2007)</p> <p><b>More partnerships among</b> (Buhalis, 2003; Ritchie &amp; Ritchie, 2002)</p> <p><b>Acquisition of information at a lower cost</b> (general information about the destination and about the market) (Teichmann &amp; Zins, 2008; Wei &amp; Jiu-wei, 2009)</p> <p><b>Better knowledge of the customer profile and higher capacity to satisfy customer's specific needs</b> (Chathoth, 2007; Kärcher &amp; Alford, 2008).</p>	<p><b>Access to a reliable official destination portal</b> (Buhalis, 2003; Teichmann &amp; Zins, 2008)</p> <p><b>Possibility to search and plan tourism experiences through a one-stop-only platform</b> (Buhalis, 2003; Teichmann &amp; Zins, 2008)</p>
	Disintermediation and optimisation of revenues	<p><b>Optimised direct interaction with potential visitors</b> (Bédard &amp; Louillet, 2008)</p>	<p><b>Reduced transaction costs when selling products to visitors</b> (Buhalis, 2003; Egger &amp; Buhalis, 2008; Miralbell, et al., 2008; Wei &amp; Jiu-wei, 2009).</p> <p><b>Diversification and optimisation of demand segments visiting the destination</b> (Baggio, 2008; Buhalis, 2003)</p>	<p><b>Possibility to book and purchase directly from destination stakeholders</b> (Buhalis, 2003; Buhalis &amp; Spada, 2000; Egger &amp; Buhalis, 2008; Frew &amp; Horan, 2007; WTO, 2004)</p> <p><b>Optimised value for time and money when searching information</b> (Teichmann &amp; Zins, 2008)</p>
	Promotion, visibility and effective presence in the market	<p><b>Enhanced global visibility of the destination</b> (Collins &amp; Buhalis, 2003; Wei &amp; Jiu-wei, 2009)</p> <p><b>Coherent image and promotion of the destination</b> (Buhalis, 2003; Çetinkaya, 2009; Wei &amp; Jiu-wei, 2009)</p>	<p><b>Reduced marketing costs</b> (in comparison to traditional marketing channels) (Buhalis, 2003; Çetinkaya, 2009; Dwyer et al., 2009; Egger &amp; Buhalis, 2008; Wei &amp; Jiu-wei, 2009)</p> <p><b>Enhanced visibility of SMTEs in the global market</b> (Buhalis, 2003; Dwyer, et al., 2009; Egger &amp; Buhalis, 2008; Wei &amp; Jiu-wei, 2009)</p>	<p><b>More flexible and autonomous planning of tourism experiences</b> (Buhalis, 2003; Kazasis et al., 2003)</p>

### 5.2.2.1 Destination's coordination, integration and planning

Destination competitiveness usually requires the existence of DMOs capable of coordinating the tourism development and planning process. DMSs may enhance already existing planning processes or be an incentive for initiating such processes (Ndou & Petti, 2007) and, consequently, assist destinations in product development (Ndou & Petti, 2007; Ritchie & Ritchie, 2002).

Since DMOs are expected to coordinate destination stakeholders, they have to, in a first stage, coordinate their internal operations. DMSs may assist DMOs in this task through their intranets. Hence, according to Egger and Buhalis (2008) intranet solutions have a coordination role between the different operational units of a DMO. For example, the DMS *Tiscover* includes a range of modules that support a DMO's internal communication (Kärcher & Alford, 2008). According to Guthrie (2008), it is also possible to observe that DMS *Visitbritain* provided many internal benefits to the national DMO that resulted in clear competitive advantages, namely, in terms of the range of services offered and of statistics provided to the industry.

As stressed by several authors (e.g. Buhalis & Law, 2008) DMSs also permit the DMOs to better coordinate the destination stakeholders (e.g. accommodation units, restaurants and transportation companies). As observed by Bédard and Louillet (2008), the DMS *BonjourQuebec* has strengthened the leadership abilities of Quebec's Ministry of Tourism in promoting the growth of tourism industry and revenues in Quebec. At the destination level, these systems may have an important role, both promoting cooperation between the DMO and the tourism industry (Miralbell, Martell, & Viu, 2008) and among individual tourism businesses (Ndou & Petti, 2007; Ritchie & Ritchie, 2002). As many authors argue, by bringing all the actors together, the cooperation fostered by DMSs may often lead to the establishment of profitable partnerships and synergies within the tourism industry (Buhalis, 2003; Ritchie & Ritchie, 2002).

Other advantages that DMSs bring to the tourism industry are related to the acquisition of information. The use of DMSs may result in lower costs of information search (Teichmann & Zins, 2008) for the main tourism suppliers, namely because of the role that DMOs assume in the search and dissemination of information on behalf of tourism suppliers (Wei & Jiuwei, 2009). DMSs are especially important in capturing and spreading intelligence about the market (Kärcher & Alford, 2008) which may, along with the development of destination-wide

CRM (Customer Relationship Management) strategies, contribute to enhance visitors' satisfaction and loyalty to the destination (Chathoth, 2007).

Coordinated actions of both the tourism industry and the DMO also result in a lot of benefits to potential visitors. Concerning these actors, perhaps one of the main benefits of DMSs is the fact that they provide them access to a reliable platform, developed and managed by the destination itself. Simultaneously, they avoid the usual dispersion of Web-based destination information by consisting in a reliable one-stop-only portal encompassing a wide range of information about the destination (Buhalis, 2003). Teichmann and Zins (2008) even argue that the more features the website incorporates the higher its possibility to meet visitors' needs would be.

#### **5.2.2.2 Disintermediation and optimisation of revenues**

Concerning the growing role of DMOs in terms of destination development, Schröcksnadel (2008) argues that public tourism boards have become mentors and promoters of managerial activities of destinations, with the aim of sustaining its development using the potential of ICTs (Information and Communication Technologies).

According to the WTO (OMT, 2001) many destinations heavily depend on external wholesalers in terms of promotion and distribution. However, this dependency originated lack of local control over promotion and distribution, high costs associated with intermediation and, often, massive tourism development patterns.

Many destinations have been gradually trying to diminish their dependency on intermediaries by implementing mechanisms, such as DMSs, that allow them to interact directly with the market. For example, the official DMS of Quebec contributed to a higher autonomy of the destination from outside intermediaries (tour operators), which can partially explain why "the Quebec tourism market is comprised largely of individual tourists who plan their trips themselves" (Bédard & Louillet, 2008, p. 201). Since DMSs allow destinations to reach higher levels of autonomy from intermediaries, they may also reduce the costs of transactions with the market and optimise destination revenues (Miralbell et al., 2008). As several authors (Buhalis, 2003; Egger & Buhalis, 2008; Wei & Jiu-wei, 2009) suggest, this situation specially benefits small and medium-sized tourism enterprises (SMTEs).

Given that DMSs encompass a wide range of information about destinations and permit the creation of "tailor-made experiences", they play a crucial role in diversifying the destinations'

market and attracting a more sophisticated and profitable demand (Baggio, 2008; Buhalis, 2003). A good example is the case of Rimini, which was heavily dependent on sun and sea massive tourism. Through the implementation of a destination portal specially designed for cultural tourists, Rimini was able to diversify its tourism activity by developing low scale cultural tourism products (Baggio, 2008).

From the visitors' perspective, one of the main benefits provided by DMSs is that these systems allow them to search and plan tourism experiences but also to book and purchase them directly from the "destination" itself (Buhalis, 2003; Buhalis & Spada, 2000; Egger & Buhalis, 2008; Frew & Horan, 2007; WTO, 2004). The possibility to purchase the product directly from the destination portal is, perhaps, the most distinctive feature of DMSs in comparison to common destination portals. Teichmann and Zins (2008) argue that Internet itself helps visitors saving time and money in their travel arrangements. By avoiding disperse and unworthy information about destinations, DMSs may be even more helpful in this context.

### **5.2.2.3 Promotion, visibility and effective presence in the market**

A lot of researchers already remark the important role of DMSs in creating more efficient marketing strategies, both by increasing the destination's visibility (Collins & Buhalis, 2003; Wei & Jiu-wei, 2009) and by favouring the creation of an overall coherent image of the destination (Buhalis, 2003; Wei & Jiu-wei, 2009). By providing access to a large market, DMSs also permit appealing to niche markets (Çetinkaya, 2009).

Being the tourism industry highly fragmented and predominantly composed by SMTEs in a large number of destinations, the promotion of individual tourism business is often a hard and costly task. By integrating all the stakeholders at the destination level, DMSs allow them to reach a global market at an affordable cost (Buhalis, 2003; Dwyer, Edwards, Mistilis, Roman, & Scott, 2009; Egger & Buhalis, 2008; Wei & Jiu-wei, 2009). DMSs also permit to restructure the distribution channels at the destination level and decrease the distribution costs of the destination service providers (Çetinkaya, 2009).

According to WTO (OMT, 2001), one of the major trends in the tourism industry is that visitors are becoming more experienced, demanding and autonomous. DMSs may be an important tool for satisfying this increasing demand by making it possible for visitors to autonomously and easily create flexible and personalised experiences (Buhalis, 2003; Kazasis et al., 2003). Hence, as stressed by Buhalis (2003, p. 282), DMSs "can assist



developing a flexible, tailor-made, specialised and integrated tourism product". As also highlighted by Chen and Sheldon (1997), these systems play a crucial role in delivering unique experiences.

Despite the wide range of advantages brought by DMSs, only a few destinations have been able to successfully implement them. In most cases, the failure of DMSs happens when the prerequisites for successful DMSs development are overlooked. The next section will approach some of these prerequisites illustrating their relevance.

### **5.2.3 Some of the prerequisites for implementing Destination Management Systems**

Despite the existence of some cases of success, there is a clear contrast between the numerous cases of success of *eMediaries* (such as *Expedia* or *Lastminute*), that have a logical entrepreneurial approach to the global market and the lower number of successful implementations of DMSs. Several authors (Alford & Clarke, 2009; Ndou & Petti, 2007; Ritchie & Ritchie, 2002; Sussmann & Baker, 1996) seem sceptical concerning the capacity of destinations with multiple stakeholders to create and maintain a Web-based platform capable of promoting destinations and, at the same time, assist potential visitors in planning and buying tailor-made experiences.

Several authors have identified a wide range of prerequisites that must be considered to create and maintain successful DMSs (Buhalis, 2003; Chen & Sheldon, 1997; Collins & Buhalis, 2003; Ndou & Petti, 2007; OMT, 2003). However, since the case study presented in this paper analyses a destination that has not yet implemented a DMS, this section will focus on three main prerequisites that must be observed in the initial stages of DMSs implementation processes, namely: (i) cohesion among tourism stakeholders and destination's strategic vision; (ii) destination's e-tourism awareness; and (iii) match between the type of DMS and the stakeholders' needs.

#### **5.2.3.1 Cohesion among tourism stakeholders and destination's strategic vision**

Gretzel and Fesenmaier (2001) state that DMSs must, in a first instance, take into account and adapt to destination-specific features such as the level of collaboration among destination stakeholders, the intensity and depth of interaction, the social environment and the technological skills at the destination level.

However, several researchers stress that a certain level of cooperation among tourism entities of the destination is required to develop DMSs. To illustrate this, Ndou and Petti (2007) have used the three destination configurations established by Rispoli and Tamma according to the forms of coordination and the extent of control/integration of the supply: fragmentation; cooperation; leadership. They argue that in fragmented destinations, with a low degree of integration and control at the destination level, with a predominance of spontaneous investments, presenting an absence of decisional centres or destination management organisations, there is not a real possibility to develop DMSs.

Among the ten barriers for developing DMSs identified by Buhalis (2003), at least four of them are related to poor cohesion and strategic vision of destinations (e.g. lack of strategic orientation and consequent inability to strengthen competitiveness of the local industry). Alford and Clarke (2009) also corroborate that the lack of cooperation and coordination among public and private entities at the destination level is the main reason why it is so difficult to find successful DMSs. In fact, the exceptional cases of success among the attempts to establish DMSs are, very often, the consequence of a high level of cohesion among stakeholders within the destination and the result of their strong commitment in developing their own distribution channels (Alford & Clarke, 2009).

### **5.2.3.2 Willingness and ability to adopt ICTs in tourism**

Getting back to the ten barriers identified by Buhalis (2003), it is also noticed that one of them is the fact that DMSs require high levels of innovation and the tourism industry is “traditionally reserved”. Danielle and Frew (2008) corroborate Buhalis’ (2003) view and state that many SMTEs have a high reluctance in paying commissions and providing correct and updated data on availabilities, ending up undermining the potential relevance of DMSs. However, Buhalis (2003) also highlights that one of the reasons for the failure of these systems is the lack of interest and funding by the public sector. Additionally, Bédard and Louillet (2008) point out that the digital gap between the various tourism subsectors also contributes to the lack of success achieved in this area.

Quoting the 2004 study of WTO about the implementation of e-Business in 241 local and regional destinations surveyed worldwide, Ndou and Petti (2007) highlight that, in the same year, half of the surveyed DMOs were not implementing any kind of e-Business strategy. From the ones that were implementing it, only 5% declared to have completed the implementation and 12% still had not started the process.

Some examples of failure of DMSs, such as *Swissline* (Switzerland), *Hi-Line* (Scotland) and *BRAVO* (Great Britain), reveal that one of the main reasons of failure was that managers (often national DMOs) did not take into account the specific characteristics and *e-readiness* levels of the SMTEs that the DMSs were supposed to assist in promotional and transactional activities (Sussman & Baker, 1996).

### **5.2.3.3 Match between the type of DMS and the stakeholders' needs**

According to Collins and Buhalis (2003) it is difficult to identify the most appropriate model for DMSs. However, as Ndou and Petti (2007) suggest, it is paramount to ensure that DMSs consider the specificities of the destinations' tourism system.

One of the main problems regarding the mismatch between the destination stakeholders' needs and the type of developed DMSs is often an excessive focus in their technological features rather in adapting them to the tourism industry's needs and strategies (Buhalis, 2003; Alford & Clarke, 2009).

According to Ritchie and Ritchie (2002), one of the main reasons of failure or lack of the promised success of DMSs is that these systems are, in most cases, funded, designed and developed by government tourism departments with little direct involvement of industry operators. As such, as suggested by the authors, they do not reflect the information and research needs of the industry as a whole (Ritchie & Ritchie, 2002).

Two distinctive attempts to implement official destination portals in England can help one understand the importance of matching technology with tourism industry's needs. While the development of the 1995's English Tourist Network Automation (ETNA) was too focused on technological issues to the detriment of other aspects, thus failing to succeed (Alford & Clarke, 2009), *Visitbritain* proved to be a success by prioritising the communication between DMOs at all levels and heavily investing in the training of stakeholders, ensuring a strong commitment among the largest number of public and private actors (Guthrie, 2008).

## **5.3 Potential advantages and conditions for the implementation of Destination Management Systems in Portugal**

Following the analysis of both the advantages and prerequisites associated with DMSs, this section will approach the potential advantages underlying the development of DMSs in Portugal and the prerequisites for their implementation. The section starts with an analysis of the Web platform currently used to promote Portugal as a tourism destination and, later, a discussion of the advantages and conditions for implementing DMSs in Portugal is presented.

### **5.3.1 Analysis of the web platform for the promotion of Portugal as a tourism destination**

In order to assess how close or far the philosophy and specific functionalities of the Portuguese tourism portal – *Visitportugal.com* - are from those that DMSs usually convey, it was considered necessary to make an empirical analysis of contents and functionalities of the current national official Web platform. A first important characteristic of *Visitportugal.com* is that it is solely managed by the national public DMO – *Turismo de Portugal, IP* - only conveying unidirectional contents which, obviously, do not foster interaction flows with destinations' private stakeholders.

In terms of the methodology used to analyse *Visitportugal.com*, it was considered adequate to start by establishing a list of contents and functionalities not exclusively implemented by DMSs, but indispensable for any advanced Web destination platform and for DMSs themselves. Then, a content analysis of the platform was used in order to assess the existence or absence of the previously referred contents and functionalities in the Portuguese tourism national portal. In order to grasp the entire range of contents and functionalities available to users at *Visitportugal.com*, the authors of the paper registered at the website in order to have access to options not available to unregistered users. However, as will be demonstrated when discussing the main findings, little difference appears to exist between contents and functionalities available to both registered and unregistered users.

Li and Wang's (2010) evaluation of Chinese destination websites proposes an evaluation model contemplating five dimensions, one of them being purely technical – Technical Merit Dimension – and the other four more related to specific contents and functionalities

available to users, namely information, communication, relationship and transaction dimensions. Excluding the technical merit dimension, the other four dimensions and respective items used by Li and Wang (2010) seem appropriate to empirically analyse *Visitportugal.com* because two dimensions are common to most destination websites (information and communication) while the remaining two (relationship and transaction dimensions) are rarely conveyed by destination platforms and indispensable for more advanced platforms, such as DMSs. The Web platform *Visitportugal.com* was then assessed in order to check the existence or absence of the specific contents and functionalities associated with each of the four dimensions identified in Li and Wang's (2010) evaluation model. The results of the content analysis are summarised in Table 5.2.

The results of the empirical analysis of *Visitportugal.com* clearly confirm the predominantly informational nature of the official national Portuguese website. Among the eighteen items analysed under the informational dimension, only "shopping information" cannot be found in the national destination website. However, although the empirical analysis was predominantly quantitative, aiming to detect the existence or not of each item and not analysing to which extent each item is developed, it is noteworthy that, as far as items such as "attraction information" and "activities information" are concerned, little more information than the location, brief descriptions and the contacts of attractions. is provided.

Regarding the second dimension - the communication dimension -, which is more frequently found and more deeply and innovatively developed in DMSs, only three of the seven analysed items of this dimension were found at *Visitportugal.com*. Moreover, those three items - search function, Frequently Asked Questions (FAQ) and e-mail newsletter - are basic components of any website and can be usually found in most websites, even those with no commercial interests behind them. More advanced communication tools such as online forums and online surveys, that considerably empower users in the process of communicating with the destination and demand an ongoing and systematic handling of information flows by the websites' managers, do not exist at *Visitportugal.com*.

Concerning the relationship dimension, the scenario is even humbler, since only two of the ten analysed items are held by *Visitportugal.com*, namely personalisation and privacy policy. However, taking a more qualitative look at these two items, one can easily perceive that the functionalities underlying these items have some limitations. For instance, it is possible to personalise registered users' own area, but not inserting and editing user-generated content (UGC) to be available to other users. The fact that *Visitportugal.com*

completely disregards Web 2.0 tools, capable of conveying UGC, only supporting static information and a unidirectional information flow, highlights that the official Portuguese destination website is still somewhat far from the whole concept of DMS and of its dynamic and multidirectional information flows.

**Table 5.2 - Contents and functionalities held by Visitportugal.com associated with the web platforms' dimensions and items of Li and Wang's model (2010)**

Dimensions	Website items	Yes	No
Information Dimension	Attraction information	X	
	Activities information	X	
	Maps and directions	X	
	Destination background information	X	
	Themed products	X	
	Transportation information	X	
	Events calendar	X	
	Restaurant information	X	
	Travel guides/brochures	X	
	Travel agents	X	
	Accommodation information	X	
	Travel packages	X	
	Entertainment information	X	
	Local weather information	X	
	Shopping information		X
	Travel tips	X	
	Trip/vacation planner	X	
Linked to regional/city/area pages	X		
Communication Dimension	Search function	X	
	Interactive communication tools		X
	Online forum		X
	Comment box		X
	Online survey		X
	Frequently asked questions	X	
	Email newsletter	X	
Relationship Dimension	Personalisation	X	
	Complaints handling		X
	Best deals		X
	Virtual tours		X
	Cross-selling opportunities		X
	Privacy policy	X	
	Special offers		X
	Web seal certification		X
	Customer loyalty programmes		X
	Incentive programmes		X
Transaction Dimension	Online reservation		X
	Secure transaction		X
	Attraction tickets		X
	Events tickets		X
	Shopping carts		X

The last dimension, that concerns transactional functionalities, is scarcely held by official destination websites worldwide and is almost exclusively developed by DMSs. As one

would expect, from the five items identified by Li and Wang (2011) under this dimension, none of them can be found at *Visitportugal.com*. Taking into consideration the results of the content analysis of the Web platform currently used to promote Portugal as a tourism destination, which reveal that this website cannot be yet considered a DMS, it is important to identify the advantages and prerequisites for implementing DMSs in Portugal. These advantages and prerequisites are discussed in the next two sections.

### **5.3.2 Potential advantages of implementing Destination Management Systems in Portugal**

The discussion of the advantages of DMSs to Portugal is focused on the three categories of advantages identified in section 5.2.

#### **5.3.2.1 Destination's coordination, integration and planning**

In Portugal, the tourism sector is the most relevant economic activity, generating the highest contribution for the national GDP (10.5% in 2008) (Turismo de Portugal, 2009). It is also the sector that most decisively diminishes the Portuguese dependency on imports, as the inbound tourism is overwhelmingly predominant (CTP, 2005).

According to Cunha (2000), the advent of the tourism sector in Portugal was only made possible by both the collapse of the longest European dictatorship in the XX Century, in 1974, and the integration of Portugal in the European market, in the mid-80s. Also, according to Cunha (1997), in this decade Portugal had one of the fastest tourism growth rates in the world. However, the growth of the Portuguese tourism sector was mostly an exogenous-led process – namely by “sun and sea” tours operators and hotel chains - rather than a conscious, planned and endogenous-led development (Silva & Andraz, 2005). Consequently, since its early stages until today, Portuguese tourism suffers from chronic excessive concentrations at motivational, geographical, and seasonal levels. In this context, by providing opportunities for provide more information on the destination, for example, on its resources, and more efficient ways to communicate to different stakeholders of the destination, DMSs assume a critical role in efficiently planning the tourism development in the region.

Regarding the suppliers' predominant profile, the large percentage of the Portuguese companies related to accommodation, restaurants and cafes (40%) are very small

enterprises, integrating less than 11 employees (INE, 2011). This situation limits the development of successful strategies and, consequently, the visibility of Portugal, both due to the lack of financial and knowledge critical mass and to the difficulty of coordinating such a highly fragmented set of companies. Coordinating the fragmented set of the Portuguese tourism companies is, therefore, a big challenge.

In order to overcome the problems associated, both with the lack of critical mass in the territories of the previous regional tourism boards, and with the communication difficulties existing between these organisations and national tourism organisations, the Portuguese government introduced tremendous changes in the tourism organisation in Portugal. The old regional tourism boards have been replaced by a much-reduced number of regional tourism boards. The more recent regional boards created in 2008 (DL n°67/2008) face much higher challenges than their ancient counterparts, since their geographical areas of action are much larger, including a much higher number of municipalities. Therefore, they have to coordinate a higher number of tourism organisations in larger destination areas marked by a higher heterogeneity. These areas encompass a large number of municipalities, both from the coastal and inland areas of Portugal, with a higher diversity of tourism resources – including resources associated with sun and beach tourism, cultural tourism and ecotourism, among other. As referred in the literature review of this paper, a primary function of DMSs is assisting DMOs, such as those recently created by the Portuguese government, to become the actual leading actors of destinations and strengthen cohesion levels between stakeholders at the destination level.

### **5.3.2.2 Disintermediation and optimisation of revenues**

In 2007, the international arrivals to Portugal already reached more than 12 million, corresponding to a total of over 10 billion dollars in receipts (WTO, 2010). However, Portuguese tourism presents structural problems that have long been undermining the potential positive impacts in the socio-economic tissue of the country. Those problems are, at the same time, cause and consequence of Portugal's excessive concentrations concerning tourism. According to Cunha (2001), Portuguese inbound tourism is excessively concentrated in terms of origin markets, territorial distribution of tourism businesses and visitors, types of tourism products and seasonality. The ensemble of these concentrations is typical from countries with an excessive dependency on tour operators from foreign source markets. In 2008, the four major Portuguese markets represented 57% of the



international arrivals to Portugal (INE, 2009). Cunha (1997) argues that, historically, the competitiveness of Portugal as a destination, in terms of distribution, was largely based on the need of tour operators to enlarge their array of destinations, rather than in the internal capacity to develop attractive tourism products. In, 2005, the study *Reinventando o Turismo em Portugal* (Reinventing Tourism in Portugal) (CTP, 2005) corroborates this idea and focuses some of the main disadvantages of this situation such as the costs of intermediation (commissions), both at the micro-economic level (tourism destination suppliers being forced to reduce their margins) and at the macro-economic level (since the majority of tour operators are from foreign markets provoking a leakage of receipts to these countries) (CTP, 2005). According to this study, the tour operator's commission of a packaged tour having Portugal as the destination represents, on average, about 24% of the final price. Moreover, as most tour operators tend to operate on the basis of economies of scale, they usually focus on a standardised development of tourism products and a massive commercialisation of packaged tours, both typical of sun and sea destinations. Additionally, WTO (OMT, 2001) stresses that tour operators are usually stronger on massive tourism destinations such as sun and sea destinations in which the power of producers is fragmented.

The high concentration of the tourism activity on specific tourism products and in certain areas explains the strong seasonal concentration of the demand in Portugal. Proving it is the fact that, in 2008, the months of July, August and September alone accounted for 33% of the total number of guests and 36% of the total nights spent in hotel establishments (INE, 2009). These numbers are even higher in the area of Algarve – reaching up to 39% and 43%, respectively. The high seasonality of the tourism demand in Portugal is also limiting the revenues generated by tourism in Portugal.

The apparent anachronism between the excessive dependency on a small number of markets and the worldwide tendency to diversify origin markets through the use of new distribution channels, such as the DMSs, suggest that there would be great advantages if DMSs were used to promote Portugal as a tourism destination. The implementation of alternative distribution channels such as DMSs could also allow Portugal to overcome the disadvantages of having difficulty in promoting products when there are no economies of scale, either due to product specificities (e.g. many cultural or rural tourism products do not permit economies of scale) or because products are being sold in the low season.

### 5.3.2.3 Promotion, visibility and effective presence in the market

More than half of European tourists use the Internet when searching for tourism products and destinations (CTP, 2005). According to *MotivTur* (Cunha, Antunes, Teixeira, & Pina, 2005), one of the most ambitious studies on foreign tourists visiting Portugal, the Web is the most important source of information used by the most representative origin markets of Portugal. Taking into account the information above, information systems that are based on the Internet may be an important mean to enhance the promotion and visibility of Portugal as a tourism destination.

Regarding the territorial distribution of tourism, there is an obvious concentration of tourism businesses and visitors in some areas of the country, as already referred. According to the INE (2008), in 2007, in mainland Portugal<sup>1</sup>, the two smaller NUTS (Nomenclature of Territorial Units for Statistics) II - Algarve and Lisbon -, accounted, together, for more than half of the total Portuguese supply and demand. It is possible to notice that, apart from the Lisboa e Vale do Tejo region, which includes the capital of Portugal and, therefore, has the power to attract bigger and more diversified tourism markets, the highest concentration of tourism activities takes place in the Algarve, the NUTS II of mainland Portugal where sun and sea tourism has an overwhelming importance. According to the National Strategic Tourism Plan - PENT (Turismo de Portugal, 2006) -, in 2006, 41% of foreign visitors of Portugal sought sun and sea experiences (in Algarve alone this value rose up to 88%). *MotivTur* (Cunha et al., 2005) also reveals that sun and beach corresponds to the major attraction for these tourists when selecting Portugal as their destination. However, when referring to push factors, *MotivTur* (Cunha et al., 2005) remarks that cultural motivations are the strongest reasons influencing the choice of Portugal as a destination. The same study concludes that there is no correspondence between Portugal's main pull factor (sun and sea tourism) and its most relevant push factor (cultural motivations). This may suggest that Portugal has not been able to efficiently develop and promote cultural attractive products, taking advantage of the most appropriate distribution channels, namely DMSs. This kind of Web platform has a key role in this context since, as above referred, it makes the promotion of tourism products that do not achieve economies of scale easier. The next section will approach the current requirements for developing DMSs in Portugal.

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<sup>1</sup> Continental Portugal is divided in five NUTS II (North, Centre, Lisbon, Alentejo and Algarve)

### **5.3.3 Analysis of prerequisites for implementing Destination Management Systems in Portugal**

This section aims to analyse and discuss whether Portugal has some of the prerequisites presented in the literature review of this paper that are needed for implementing a DMS. An analysis is made on the several prerequisites previously identified, with the exception of the prerequisite “match between the type of DMS and the stakeholders’ needs”, since Portugal does not have a DMS yet.

#### **5.3.3.1 Cohesion among tourism stakeholders and destination’s strategic vision**

One of the main conclusions of the study *Reinventando o Turismo em Portugal*, which addresses the territorial and motivational concentration of Portuguese tourism, is that there are products that, despite not having a great relevance in the short-run, may have a vast potential in promoting the development of the more impoverished inland Portugal and in increasing national cohesion (CTP, 2005). Although there is a recognition that Portugal still depends a lot on the massive demand of sun and sea tourism, it is also visible that there is an intention to diversify tourism products and destinations in this country. By analysing the PENT (Turismo de Portugal, 2006), it is possible to observe that one of the main goals of the national tourism policy until 2015 will be, specifically, the promotion of a more balanced development of tourism throughout the Portuguese territory and the diversification of products and destinations in terms of types of tourism. Focusing on these goals, in PENT, ten tourism products were identified as priority products for development. The highest priority of the national and regional tourism policies seems to be the development of more diversified types of tourism, by providing incentives to products related to the specific natural and cultural heritage of the country in scarcely developed destinations (mainly in North, Centre and Alentejo).

The government policy on ensuring a more balanced tourism development is also visible in the reorganisation of regional tourism boards. The new regional tourism entities were created with the aim of providing Portugal a more efficient structure of regional tourism organisations regarding coordination and planning. In mainland Portugal, the establishment of DMSs in the NUTS II of Alentejo, Centre and North would be particularly important since these regions present quite low occupancy rates. The implementation is also important because a considerable number of tourism destination suppliers in these regions do not

have enough resources to effectively promote and distribute their products either individually or through traditional intermediaries (Silva & Andraz, 2005).

Besides attempting to overcome some lack of cohesion and coordination among tourism stakeholders, the Portuguese government is also developing efforts to create a more strategic vision to Portugal as a tourism destination. This may be observed in the before mentioned PENT (Turismo de Portugal, 2006), where the main objectives and strategic orientation guidelines for the Portuguese tourism industry are defined. Priorities regarding tourism destinations, markets and changes to introduce in tourism organisations are identified in this important plan.

### **5.3.3.2 Willingness and ability to adopt ICTs in tourism**

Looking at the panorama of the technological skills and structure within the tourism sector, it is particularly relevant to take into account data provided by the *2006 European e-Business Market Watch Report* (The European e-Business Market Watch, 2006). A relevant measure of the *e-readiness* of a certain tourism market is the percentage of companies ordering supply goods online (B2B relationship). In 2006, the European Union's (EU) average in terms of companies that have ordered goods online corresponded to 39% of the companies and 60% of employees. In the same period only 24% of the Portuguese tourism companies ordered goods online (the third lowest record in EU), representing 29% of the employees in the tourism sector (the second lowest in EU). However, this negative scenario changes if the ability of tourism suppliers to receive orders from customers online is analysed. According to the *2006 European e-Business Market Watch Report* (The European e-Business Market Watch, 2006), 38% of firms were able to accept online orders in 2006, while the average of the European Union was only 36%. Additionally, the same study highlights that, in 2006, 82% of Portuguese tourism businesses already had internet access (80% of them had broadband internet access), representing 88% of the sector's employees (76% of which had broadband access).

Each new tourism regional board already has its own destination portal. However, these portals' relatively scarce level of interactivity with potential visitors, that is easily noticed by the lack or even absence of functionalities allowing a dynamic interaction between users and destination portals (e.g. dynamic packaging; Web 2.0 tools such as forums, podcasting, ratings and reviews; interactive maps) makes it clear that there is no e-business strategy at neither regional nor sub-regional levels. These portals merely correspond to brochure

websites. In order to increase the competitiveness of destinations, DMOs can no longer be restricted to the provision of information, but should also create reservation systems that may be used by the several stakeholders of the destination (Çetinkaya, 2009).

The data above presented suggest that Portugal has some of the prerequisites needed for implementing DMSs in Portugal, given that the percentage of firms that accept online orders is higher in Portugal than in EU and all new created regional tourism boards have their own Web platforms. However, by another hand, Portuguese organisations seem to be not profiting from some technological opportunities, since many firms still do not order goods online. The implementation of DMSs would be of major importance in this scope, since they will extend the opportunities of communication among the tourism organisations of a destination and potential visitors of that destination by taking advantage of technology that these organisations already have. They would also open opportunity for new operations and actions to occur among those agents, such as booking and buying tourism services through the Web platform of a destination, based on technologies already available.

## **5.4 Conclusions**

Most authors agree that, according to today's tourist profile and demands, DMSs are, perhaps, one of the best promotion and distribution channels for destinations as a whole and for individual stakeholders in particular. Their reliability, the coherent destination image they convey, their flexibility (dynamic packaging), their diversity of supplies and the direct channel that they provide to individual tourists are some of the greater advantages they convey. However, most destinations (national, regional or local) still have not developed any kind of strategy aiming at DMSs development. Furthermore, most destinations that have tried to implement DMSs have met failure. Perhaps unexpectedly, the high rate of unsuccessful DMSs' implementation processes is not solely related to technological issues but rather the consequence of destination configurations, such as the existence of fragmentation patterns among destination stakeholders, scarce strategic vision from DMOs (or, even, the inexistence of such organisations), a mismatch between the developed DMSs and the needs and usage capabilities of destination stakeholders.

In the particular case of Portuguese tourism destinations, one can observe the existence of many of the obstacles usually undermining DMSs implementation processes. Additionally, as previously referred, in Portugal, the discussion around the need for destination online platforms, which can act beyond the promotion of destinations is yet to begin. At a first

glance, the low levels of cohesion of Portuguese destinations, together with the almost embryonic stage of most regional tourism organisations, can lead one to recognise the long and arduous path that Portuguese destinations still have to undertake before implementing successful DMSs. However, in terms of the current level of digitalisation of the tourism industry, Portugal is not too far behind from its European neighbours that have already been able to implement DMSs. Additionally, the recent restructuration of regional tourism organisations and the current national tourism policies indicate the existence of some basic conditions for the development of DMSs in Portugal. In this country, tourism organisations engaged in tourism planning and development should take profit of the new structure of tourism organisations at the regional level, which requires that tourism organisations work in a more coordinated way and communicate more with each other, in order to promote the development and use of DMSs. Strategies that lead organisations to communicate and cooperate more should be implemented. Moreover, incentives should be given so that tourism organisations make greater use of technologies they already have, in order to ensure that they will be better able to adopt and use DMSs.

DMSs may be especially beneficial to Portugal given their potential to attenuate the excessive concentrations of Portuguese tourism in terms of destinations, motivations, markets and distribution channels. This kind of Web platforms may also allow decreasing Portugal's dependence on some tour operators and enhancing the visibility of tourism products and destinations that are not based in economies of scale.

One of the main limitations of the present paper derives from the fact that the case study has been entirely based on secondary data. Future researches should involve empirical studies that identify potential destination-based stakeholders, their opinions about the need of creating DMSs in Portugal and the barriers for their successful implementation.

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## CHAPTER 6

### Destination Management Systems: Improving the tourism experience by empowering visitors

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#### Reference

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## 6. Destination Management Systems: Improving the tourism experience by empowering visitors

### Abstract

Although Destination Management Systems (DMSs) are intrinsically innovative due to both their technological prerequisites and to the cohesion among destination's components that they require, it is pertinent to ask how these broad and complex networks give visitors a more active role in planning their travel experiences.

The major goal of this chapter is to empirically analyse and evaluate how advanced DMSs are enabling visitors to play a more active role in building their experiences through the implementation of Web 2.0 functionalities.

Concerning this theme's relevance, although there are many studies analysing DMO's promotional websites, only a few have focused on the evaluation of DMSs' architecture. Furthermore, most of the research conducted in the area of DMSs focuses on destination-based stakeholders rather than on the demand and on the more dynamic role it tends to have in most areas of e-tourism.

**Keywords:** Destination Management Systems, Web 2.0, Information and Communication Technologies, Tourism destinations, Internet.

## 6.1 Introduction

In recent years, a progressively higher number of destinations compete to obtain or, at least, maintain, considerable tourism flows (Dwyer, Edwards, Mistilis, Roman, & Scott, 2009). One of the prerequisites and, at the same time, major tasks for destination competitiveness is achieving high levels of cooperation and coordination between stakeholders (Wang, 2008). However, tourism destinations are often composed by a mix of stakeholders of many kinds along with sometimes overlapping and opposite interests, which lead to fragmentation and undermining cooperation between them (Elbe, Hallén, & Axelsson, 2009). Thus, the usually designated DMOs should strive to bring destination actors together and to mobilise resources for a coordinated destination development rather than limiting themselves to undertake marketing efforts (Gretzel, Fesenmaier, Formica, & O'Leary, 2006).

In the meantime, travellers are progressively seeking for more flexibility in their travel arrangements and demanding for an effective provision of destination information (Chen & Sheldon, 1997). This has led to a more active role of DMOs, not only in fostering cooperation between destination stakeholders and conducting marketing efforts (Hall, 2008), but also, as predicted by the World Tourism Organisation (WTO) in 1999, in acting as a kind of intermediary between suppliers and the demand (WTO Business Council, 1999).

In parallel, the Internet is now the most relevant and influential source of travel information for tourists (Fu Tsang, Lai, & Law, 2010; Jani, Jang, & Hwang, 2011). In fact, the rapid development of information and communication technologies (ICTs) has dramatically changed the tourism sector and destinations were not immune to this process (Fu Tsang et al., 2010). Thus, nowadays, the competitiveness of destinations is highly determined by their capacity to satisfy information needs of local actors and visitors through ICTs based applications (Buhalis & Law, 2008; Höpken, Fuchs, Keil, & Lexhagen, 2011).

Regarding the adoption of ICTs by DMOs, one of the most relevant advances in recent years – since the 1990s - has been the emergence of DMSs (Buhalis & Spada, 2000).

DMSs are, first and foremost, a web-based internal network established between DMOs and the destination's tourism system aimed at optimising coordination amongst them by enhancing information flows. However, DMSs also enabled destinations to implement consumer-facing websites capable of a much higher degree of interaction with visitors in comparison to traditional destination websites (Buhalis, 2003; Buhalis & Spada, 2000; Pollock, 1995). Thus, DMSs usually include a set of functionalities that allow an enhanced and broader interaction between official destination websites and future visitors.

Regarding the optimisation of interaction levels between web applications and correspondent users, perhaps one of the most relevant paradigm shifts concerning the Internet was the implementation of Web 2.0 tools that support user-generated content (UGC), also referred to as consumer-generated media (CGM), allowing users to be an active part in building websites' contents (Casaló, Flavián, & Guinalú, 2011; Cox, Burgess, Sellitto, & Buultjens, 2009; Parra-López, Bulchand-Gidumal, Gutierrez-Taño, & Díaz-Armas, 2011; Sigala, 2011; Yoo & Gretzel, 2011). Thus, Web 2.0 and consequent UGC creation has fostered the dynamic relationship between consumers in the process of value creation and communication, contrary to the traditional perspective under which this process solely occurs between firms and customers. In fact, by empowering mass collaboration and communication, Web 2.0 tools and their consequent UGC empower users by giving them further chances to socially collaborate, network and learn (Sigala, 2011). The tourism sector's web applications are among those that registered the most considerable growth concerning UGC (Sigala, 2011; Yoo & Gretzel, 2011).

Regarding the research that has been conducted around the thematic of UGC applications in tourism, most studies seem to focus on the benefits of these applications for tourists and tourism businesses (Ascaniis & Morasso, 2011; Sigala, 2010; Xiang & Gretzel, 2010; Ye, Law, Gu, & Chen, 2011), on the trustworthiness of the information that tourists and businesses obtain through Web 2.0 (Del Chiappa, 2011; Cox et al., 2009; Yoo & Gretzel, 2010) and on the influence of personality in consumers' behaviour towards UGC (Casaló et al., 2011; Xiang & Gretzel, 2010; Yoo & Gretzel, 2011). With some exceptions, scarce research has been conducted in assessing the current extent of the use that different tourism suppliers and intermediaries make of the Web 2.0.

As official destination websites, such as DMSs, seek to establish closer and broader interaction flows with current and potential visitors, and UGC applications foster proximity and interactions between customers and businesses, it seems appropriate to make a relational approach to UGC and DMSs. One objective of this chapter is to analyse the relevance that researchers have been giving to the implementation of Web 2.0 functionalities and, namely, UGC applications, in the DMSs. This chapter also aims to analyse whether DMSs have Web 2.0 functionalities and which of these functionalities have been implemented in DMSs applications.

## 6.2 Literature review

### 6.2.1 DMSs vs. traditional official destination web platforms

Regarding the relevance of ICTs and of the Internet, in particular to promote and distribute information and services of a specific destination, Buhalis (2003) suggests that visitors are becoming more sophisticated and demanding, seeking one-stop-only online platforms which allow users the possibility of searching for information about several tourism services of a destination and making reservations in one integrated platform. However, as research findings suggest (Ndou & Petti, 2007; Sigala, 2009), most DMOs have still only developed brochure-websites which only allow tourists to receive promotional messages and general information about a destination.

Egger and Buhalis (2008) defined DMSs as a collection of computerised information about a destination, accessible in an interactive way and argues that they usually include information about attractions and services, incorporating the possibility to make reservations. Regarding their ownership and management, Buhalis (2003, p. 282) states that “DMSs are usually managed by Destination Management Organisations, which can be public, private or public-private organisations”. One of the first approaches to the concept of DMS was made by Pollock (1995), defining it as the ICT infrastructure used by a DMO to gather, store, manipulate and distribute information through various ways.

However, perhaps the most relevant and innovative aspect of Pollock’s definition is the fact that DMSs also allow transactions, bookings and other commercial activities. In the early studies concerning the concept of DMS, much relevance is given to their role as a marketing tool directed to the consumers. Primarily, a DMS is a marketing tool, that promotes tourism products of a specific destination, whether it is a country, region, town or a place of other geographical scope (Sussmann & Baker, 1996). DMSs can have up to three components (Sussman & Baker, 1996, p. 102):

- (i) a product database (of attractions, accommodation, travel information etc.);
- (ii) a customer database (of those using, or who have used, the database);
- (iii) a booking and reservation system.

There is evidence that the ability to handle bookings through the DMS’s reservation system transforms any destination portal from a computerised brochure to something significantly more powerful. When compared to the previously mentioned tourist *traditional* distribution

channels (intermediaries – tour operators and travel agencies – and the direct distribution done by each service provider), DMSs bring clear advantages to destinations as a whole and small and medium-sized tourism enterprises (SMTEs) in particular (Matloka & Buhalis, 2010; Sigala, 2009), by satisfying the needs of a more sophisticated and autonomous demand.

Among the most frequently mentioned advantages of DMSs for both destinations' suppliers and visitors (Buhalis, 2003; Buhalis & Spada, 2000; Egger & Buhalis, 2008; Sigala, 2009), one can outline:

- Enhanced coordination of destinations' promotion and distribution efforts by optimising cohesion and interaction levels amongst suppliers that share an official marketing and e-commerce web-based application;
- Improved visibility of SMTEs globally, allowing them a more autonomous distribution as well as diminishing their dependency on intermediaries;
- Optimised presence of destinations as a whole in the global market;
- More reliable, comfortable (*one-stop-only*), flexible (dynamic packaging) and independent means to search, plan and book the whole array of a destination's offerings through a single web-based application;
- Improved direct interaction between past and potential future visitors and the destination.

### **6.2.2 Web 2.0 in tourism**

Ever since the advent of the World Wide Web, an increasing number of travellers have been using the Internet for travel planning (Law, Qi, & Buhalis, 2010). However, until recently, most websites were built under a Web 1.0 perspective, in which the vast majority of users were only able to act as consumers of content (Cormode & Krishnamurthy, 2008). More recently, the advent of Web 2.0 introduced a different and original philosophy allowing any user to become a content creator, thus democratising online content creation (Cormode & Krishnamurthy, 2008).

Regarding Web 2.0, some authors suggest that, although this is still an unclear and relatively vague concept, which has led to harsh criticism of the concept itself (Egger, 2010),



Web 2.0 is a “collective expression comprising both the technical but above all the social and societal advances in the internet” (Egger, 2010, p. 126). Sigala (2011) was one of the various authors who made a conceptual approach to the concept of Web 2.0 defining it as a set of tools of “mass collaboration as they enable and empower internet users to actively and simultaneously collaborate with others for producing, consuming and diffusing internet-based information and applications” (p. 608).

Most researchers agree that Web 2.0 brought considerable benefits to organisations and to the general public. Benefits include users being more reliable information sources and, at the same time, allowing users a more interactive and flexible participation regarding content creation (Chiang, Huang, & Huang, 2009). Besides, Web 2.0 also enables richer user experiences and contents improvement through usage (Chiang et al., 2009).

According to Sigala (2011), Web 2.0 gave origin to two major features – user-generated content (UGC) and social networks – which have dramatically transformed the way users search, distribute, share and create information. UGC or consumer-generated media (CGM) is a consequence of Web 2.0 which Yoo and Gretzel (2011) argue that is “a new form of word-of-mouth that serve informational needs by offering non-commercial, detailed, experimental and up-to-date information with an access beyond the boundaries of one’s immediate social circle” (p. 610).

Regarding the recent growth of UGC there is evidence that its publication and sharing made possible by Web 2.0 applications is continuously increasing (Casaló et al., 2011; Parra-López et al.; Sigala, 2009, Yoo & Gretzel, 2008). In some countries, such as the US, a substantial majority of consumers search for fellow consumers’ product reviews online and most of these reported that they had a more decisive role on their decision-making processes than reviews posted by professionals (Casaló et al., 2011).

Nowadays, Web 2.0 is changing the way that consumers engage with information presented via the Internet (Davies, 2008; Del Chiappa, 2011) and is having major implications in the way companies relate to them, regarding the opportunity to exchange, systematise and evaluate information via users (collective intelligence); the possibility to obtain feedback and record users’ behaviour in order to systematically adapt and enhance offerings (perpetual beta), among other features (Egger, 2010).

Regarding the Web 2.0 applications available to consumers, it is noteworthy that they can be used in two different ways. A more passive use of Web 2.0 contents includes searching and reading other users’ contents while a more active use, usually designated as Web 2.0

authorship, implies the edition and insertion of contents by users (Gray, Thompson, Clerehan, Sheard, & Hamilton, 2011; Yoo & Gretzel, 2008).

According to Yoo and Gretzel (2011), the main Web 2.0 applications that empower UGC are online communities and discussion forums, blogs, online reviews and podcasting (namely video and photo sharing).

**Blogs** are a sort of personal journalism, presenting important opportunities to communicate information beyond the dominant narratives of tourism marketers (Pudliner, 2007). Reviews from past visitors are one of the most relevant travel-related UGC (Yoo & Gretzel, 2008). Contrary to other forms of Web 2.0, **travel reviews** are often very structured and are not aimed at documenting a personal experience but rather are directed at other potential visitors. Unlike all other functionalities, **user rating** (of the website's contents) focuses on the opinions of users about websites themselves rather than on the correspondent destinations. According to Yoo and Gretzel (2011) **online travel communities and forums** "have the longest tradition as online venues for travellers to engage in travel storytelling or share information and support travel planning" (p. 610).

**Photo and video sharing** have not been the object of academic analysis on its relevance for tourism businesses and destinations (Tussyadiah & Fesenmaier, 2009). However, a study conducted by Yoo and Gretzel (2010) about the use of Web 2.0 tools by American Internet users empirically demonstrated that the most common Web 2.0 activity was looking at other users' travel photos (67% of the sample) and the third most common one was watching videos from previous visitors (56.7% of the sample). Due to the relevance of the above-mentioned functionalities empowering UGC, the empirical analysis that will be described ahead, will only focus on these tools.

Being information the lifeblood of the tourism industry, the use and spread of Web 2.0 have an extensive impact on both tourism suppliers and visitors (Sigala, 2011). Especially due to the experiential nature of tourism products, Web 2.0 is particularly relevant for tourists because they often rely on other tourists' feedback when planning their trips (Yoo & Gretzel, 2010). With the rise of Web 2.0, travellers became able to more actively interact with their peers in creating, consuming and sharing data through the web, thus assisting them in their decision-making processes (Yoo & Gretzel, 2011).

Regarding the advantages that Web 2.0 and consequent UGC might bring to tourism businesses, it was empirically demonstrated that there is a close cause-effect relationship between the use of Web 2.0 by hotels and their online sales of rooms (Ye, Law, Gu, & Chen,

2011). The referred study indicates that a 10% increase in the ratings of user reviews could boost their online bookings (Ye et al., 2011).

Although commercial websites adopting Web 2.0 are rapidly emerging within the tourism industry, they are mostly developed by individual businesses or tourism intermediaries (Casaló et al., 2011). The use of Web 2.0 by destinations and respective official web applications yet seems to be only starting since it is still a virtually unexplored area in terms of research.

Taking into consideration the role of Web 2.0 and resulting UGC in official destination websites in a B2C perspective, it seems relevant to refer a study on the trustworthiness of travel related UGC which revealed that official tourism bureau websites would greatly benefit from supporting a venue for UGC because they proved to be more trustworthy when featuring in official bureaus websites (Yoo, Lee, Gretzel, & Fesenmaier, 2009).

Concerning the potential benefits of Web 2.0 applications for destinations in a B2B perspective, the implementation of Web 2.0 by official destination bureaus also allows suppliers themselves to share and spread information through the destination's extranet. This can be useful in supporting DMO's role aimed at maximising interaction flows among internal destination suppliers and can be valuable in enhancing the pivotal role of DMOs towards a more collaborative destination management (Sigala & Marianidis, 2010).

Most studies encompassing Web 2.0 in tourism tend to focus on the demand's trust and behaviour towards the UGC it originates (Casaló et al., 2011; Del Chiappa, 2011; Yoo & Gretzel, 2011; Yoo et al., 2009) or rather explore the advantages that Web 2.0 brings to visitors and to particular businesses or subsectors within the tourism industry (Sigala, 2011; Ye et al., 2011). However, the analysis of the implementation of these applications by destination websites, namely DMSs, seems to be relatively unexplored in the literature.

There is evidence that both advanced destination web applications, such as DMSs, and Web 2.0 as a philosophy and a set of functionalities, have in common the fact that they foster a more direct, close and flexible relationship between entities (such as destinations) and respective publics. Thus, it seems pertinent and relevant to investigate how and to which extent have destination web applications implemented Web 2.0.

This chapter aims to be a first step in filling the above-mentioned gap by exploring, in a first instance, the relevance that case studies in the literature on DMSs have been giving to their use of Web 2.0. In a second instance, the Web 2.0 functionalities that actually exist in the

same DMSs that were the object of the reviewed case studies will be empirically analysed. Furthermore, it is also considered as a relevant original approach to perceive whether there is a match or rather a mismatch between the actual Web 2.0 tools implemented by DMSs and the references made to these tools in literary sources.

The sole fact that, according to Yoo et al. (2009), official tourism bureau websites were proven to be the most reliable vehicle of UGC, justifies, by itself, the pertinence of diagnosing the current state of UGC usage by the type of official destination portals that are widely considered as those which more effectively interact with past and potential visitors: the DMSs.

### **6.3 DMSs' content analysis: Methods and materials**

As previously indicated, this chapter seeks to empirically evaluate the use of Web 2.0 applications by DMSs, namely the specific UGC-enabler tools they convey through a content analysis of Web 2.0 functionalities.

Regarding the choice of the specific DMSs that would be subjected to content analysis, since the concept of DMS is rather diffuse (Buhalis, 2003), it was not an easy task, just by analysing the consumer-facing area of DMO websites, to perceive if they were DMSs or just *brochure websites*. At a first glance, the existence of transactional functionalities in an official destination web application might be an indicator that the website is part of a DMS. However, it is not possible for a regular user to realise if a certain destination website is a network connecting suppliers and DMOs, enhancing destination's coordination, that are also prerequisites for a web application to be considered a DMS. Taking this fact into consideration, it seemed a more cautious and objective approach to analyse, in the present research, twelve destination web applications that were previously considered as DMSs in the literature, in order to identify the Web 2.0 tools that they convey. The selected DMSs were *Australia.com* (referred by Buhalis, 2003), the national Australian DMS; *BonjourQuebec.com* (Bédard & Louillet, 2008), the DMS from the Canadian province of Québec; *Feratel.com* (Schröcksnadel, 2008), a DMS provider for fourteen European countries; *Gulliver.ie* (The European eBusiness Market Watch, 2005), the national Irish DMS; *Holland.com* (Buhalis, 2003), the Dutch official DMS; *Jersey.com* (Buhalis, 2003), the DMS of the island of Jersey (United Kingdom); *Tiscover.com* (Kärcher & Alford, 2008), an Austrian-based DMS provider for various central European countries which is specialised in the Alps; *Visitbath.co.uk* (Inversini & Cantoni, 2009), the local DMS for the historic spa

city of Bath; *Visitbritain.com* (Guthrie, 2008), the national British DMS; *VisitFinland.com* (Buhalis, 2003), the Finnish official DMS.

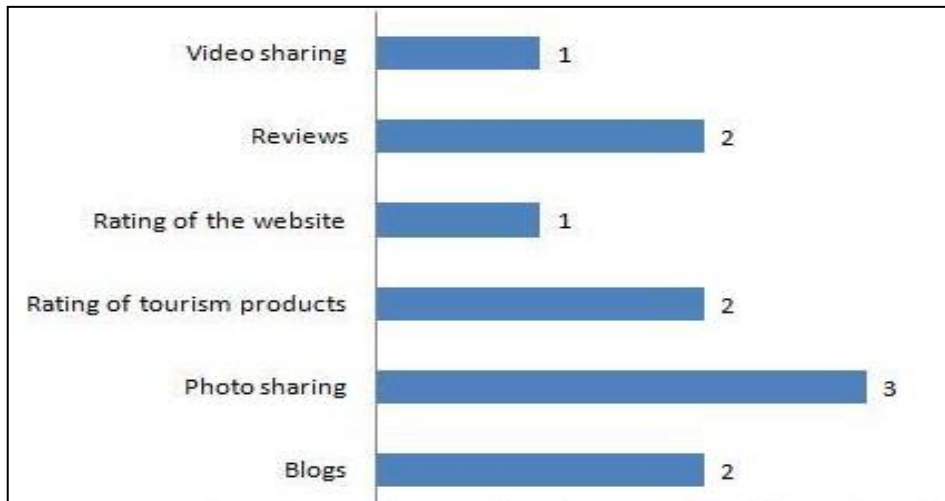
Based on the Web 2.0 applications that Yoo and Gretzel (2011) suggest as those empowering UGC, this study only considered Web 2.0 tools that were detected, at least once, in the literature review or in the content analysis of the DMSs. Some more technical Web 2.0 tools that most websites already have, such as content syndication or social tagging were not also taken into consideration, privileging a closer look at applications that foster the participation of users in the creation of DMSs' contents. Thus, the Travel Web 2.0 functionalities that were analysed were: Blogs; Photo sharing; Rating of tourism products; Rating of the website; Reviews; and Video sharing.

In order to maximise the search of Web 2.0 functionalities, it was considered necessary to make a user registration at each website, since some feedback and Web 2.0 applications might only be available for registered users. The website content analysis of the DMSs' functionalities was undertaken between May and July 2011.

## **6.4 Research and results**

The content analysis of the DMSs' functionalities revealed that some Web 2.0 functionalities may be found in several DMSs analysed and that there is a considerable diversity in terms of type of Web 2.0 applications used (Figure 6.1).

One of the most noteworthy results of the empirical analysis is that only half of the considered DMSs integrate Web 2.0 functionalities inside their corresponding consumer-facing websites. This was the case of *Australia.com*, *BonjourQuebec.com*, *Feratel.com*, *Gulliver.ie*, *Tiscover.com*, and *Visitbritain.com*. None of the other six analysed DMSs support any Web 2.0 tools, which does not mean that respective DMOs do not take them into consideration in their e-tourism strategies. In fact, although some DMSs do not include Web 2.0 tools, all of them have links to their official channels/pages in major Web 2.0 platforms such as *Facebook*, *YouTube* or *Flickr*. Regarding the six previously mentioned websites that support Web 2.0 tools and display UGC, Figure 6.1 summarises the findings in terms of their Web 2.0 tools.



**Figure 6.1 - Travel 2.0 applications found in the analysed DMSs**

Although most of the identified Web 2.0 applications can be found in the DMSs' websites themselves, there were three cases in which users' share of comments, photos and videos feature in another website which is attached to the main destination portal. This was the case of *Australia.com* and *Bounjourquebec.com*, that implemented aggregated websites aimed at having Web 2.0 functionalities and presenting UGC to all users (namely *Nothinglikeaustralia.com* and *Destinationquebec.com*) and *Gulliver.ie*, the national Irish DMS. Although *Gulliver.ie* includes some more commercially oriented Web 2.0 functionalities, such as services' reviews and ratings in *Gulliver.ie*, it is only possible to find an official travel *blog* in the more information-oriented Irish official website *Goireland.com*. However, since all these websites are aggregated to their main destination portals, they were considered as part of the correspondent DMSs.

As shown in Figure 6.1, *photo sharing* functionalities are the most frequently implemented Web 2.0 tool, existing in three of the analysed DMSs. In contrast, only one of the tested DMSs integrates *video sharing* and *ratings of the website* evaluating particular contents from the DMS. Regarding the possibility to share comments through *blogging*, only *Gulliver.ie* and *Feratel* have *blogs*. As previously mentioned, *Gulliver.ie*'s *blog* can only be found at *Goireland.com* and includes articles on more than twenty categories (e.g. Irish food and drink; Christmas in Ireland; Festivals in Ireland) which can be commented by any user after inserting name, e-mail and, optionally, website. *Feratel* also has a *blog* which is divided in eight categories, such as events, sports and news. Most of the articles and correspondent comments, which can also be easily submitted after stating name and e-mail, are written in the German language. *Visitlondon.com*, which is a local-level partner website of

*Visitbritain.com*, incorporates a *blog* that allows all users to comment articles on that local destination as well as to make remarks on other users' comments. However, *Visitbritain.com* itself does not have a *blog* for the national destination.

Regarding both *reviews* and *rating of tourism products* only *Gulliver.ie* and *Tiscover* support these functionalities. In both cases, it is only possible to attribute ratings and insert reviews on accommodation units and it is not possible to rate or review general features of the destination or other types of tourism businesses. In the case of *Gulliver.ie*, the website clearly states that only customers that have made reservations through the DMS's booking engine and that have already stayed at a certain accommodation unit can rate and review that same unit. Every user that searches for an accommodation can easily find past visitors' rates and reviews and there is no need to register and log on to access them. The average customer rating immediately appears next to the name of an accommodation unit and ranges from one to ten. In order to read textual reviews and consult individual and more detailed information one must simply click on *reviews* below the name of the hotel. Ratings from one to ten are divided in eight categories, namely: rooms; staff/service; restaurant; value for money; check-in; cleanliness; recommend to a friend and bar.

Past customers can also insert textual reviews about a particular hotel, which any user can easily access. In the ratings/reviews area, the Irish DMS also provides users information on the types of travellers that rated and/or reviewed a specific business. Here, the categories are: young couple; mature couple; business traveller; family with kids; tour group and other. The case of *Tiscover* is very similar to *Gulliver.ie*'s, since ratings and reviews are also easily accessible from the moment the results of an accommodation search appear on screen. The rating scale ranges from one to five but is much more detailed than *Gulliver.ie*'s since it includes decimals. Ratings are divided in only five categories, including: facilities; value for money; catering; offers (such as sports and leisure activities, wellness, among others); service sport (friendliness, helpful staff). It seems evident that, among all six analysed DMSs, *Gulliver.ie* and *Tiscover* are the ones that are more committed in developing more commercially oriented Web 2.0 tools such as customer ratings and reviews. This might be a result of the fact that they are partly owned and managed by private companies, which tend to have a more commercial approach to the market.

Among the twelve analysed DMSs, only Québec's supports ratings of the website, that also include short text reviews about the contents on the website itself. In the website's homepage, the option *share* gives access to an aggregated website designated *Destinationquebec.com*, including photos, videos and comments of Québec's past visitors.

To insert comments and ratings (ranging from one to five) on other users' photos and videos it is also necessary to register and log on.

Québec's DMS is also the only one that allows video sharing. In order to upload photos or videos of Québec, it is required to log on or create an account at *Destinationquebec.com*. This website presents more than 13,000 contributions in terms of photo and video sharing illustrating twenty-two tourist regions and twenty-three categories, such as architecture and scenery, events and festivals, hunting, restaurants and gastronomy, among others.

The photo sharing functionalities implemented by three of the analysed DMSs have considerable differences which seem relevant to address. In the case of *Australia.com*, there are two elements which make its Web 2.0 applications quite particular. Firstly, the website *Nothinglikeaustralia.com* was purposely implemented to hold Web 2.0 applications, such as comment and photo sharing. Secondly, this sharing is not a systematic and ongoing practice, but it was rather the result of a contest under which, only during less than a month, visitors from various countries could upload one photo and a text with up to 25 words illustrating their experiences when visiting the country. Although until the date that this chapter was conceived, every user could access to the uploaded photos and comments through *Nothinglikeaustralia.com*, this initiative was isolated and integrated in the 2011 Tourism Australia promotional campaign. *Bonjourquebec*'s photo sharing functionalities, which are available at *Destinationquebec.com* and, as previously mentioned, are the object of comments and rating of other users. The third DMS supporting photo sharing is *Visitbritain.com* that allows registered users to upload photos directly to the website through *Flickr*.

Concerning the six DMSs that do not support Web 2.0 functionalities inside the DMSs themselves, especially *YourSingapore.com* and *VisitFinland.com* give access to a considerable number of third-party websites conveying a wide range of Web 2.0 tools and extensively publicise them in their websites. In the case of *VisitFinland.com*, one of the options of the consumer-facing website's menu is *Interact and Share*, which consists of a sort of a gateway to third-party Web 2.0 sites on Finland, where users can directly connect to *YouTube*'s official channel of *VisitFinland.com* to see videos, to read and share comments and media on *VisitFinland.com*'s *Facebook* page and see or share photos of Finland on *Flickr*.

In the case of *YourSingapore.com*, the B2C interface of the DMS gives access to all the types of Web 2.0 tools but not on the official website itself. In fact, *YourSingapore.com* offers



links to *YouTube*, *Flickr*, *Facebook*, *Twitter* for video, photo and comment sharing. Additionally, it has an area named *YourSingapore News*, which gives access to blogs and travel websites contemplating Web 2.0 such as *CNNGo*, in which users can share and rate other users' comments. A further example of the importance that the Singapore national DMO gives to Web 2.0 tools, although not integrating them in its official website, is the fact that *YourSingapore.com* invites users to check the area of Tourism Singapore at *TripAdvisor*, where they can not only find rates and comments regarding specific tourism services, but are also able to make reviews and rate tourism services through the national DMO of Singapore's area in *TripAdvisor*.

From all the twelve analysed DMSs, only *Jersey.com* also has a link to the Jersey's area in *TripAdvisor*. *Jersey.com* also has links to major Web 2.0 platforms such as *YouTube* or *Facebook*. All the other three websites that do not integrate Web 2.0 themselves are also linked to their respective areas/pages on the most prominent media and comment sharing websites.

## 6.5 Conclusions

A relevant conclusion that can be taken from this chapter's empirical content analysis of the selected DMSs is that they use Web 2.0 tools in considerable different ways. While some DMSs, such as *Gulliver.ie*, use most of the Web 2.0 tools enabling UGC, others, such as *Australia.com*, only use a few and in an ephemeral manner. On the other hand, whereas other tourism agents, such as private *infomediaries* (e.g. *TripAdvisor* or *Holidaycheck*) have a more homogeneous use of commercially oriented Web 2.0 tools, focusing on consumers' ratings and reviews of concrete products, destination portals tend to have a considerably heterogeneous approach to UGC, sometimes neglecting potential advantages of Web 2.0. Thus, while, for instance, *Australia.com*'s use of Web 2.0 is integrated in ephemeral destination's promotional campaigns, having a more limited and instrumental scope, others, such as *Gulliver.ie* and *Tiscover*, privilege a more systematic, ongoing commercial facet of Web 2.0, highlighting customers rating and reviews on particular businesses. Another example of the differences between the use of Web 2.0 among analysed DMSs is related to the insertion or visualisation of UGC. While some DMSs limit access to Web 2.0 tools to registered users – especially for content insertion -, other do not require registration to users wishing to access Web 2.0 functionalities.

The empirical analysis shows that DMOs are not reluctant to let users judge their destinations' characteristics and quality, as one might conclude by only analysing the corresponding case studies. Although only six of the analysed DMSs support Web 2.0 functionalities, the remaining six do not appear to disregard UGC in their promotional efforts, but rather seem to prefer a different approach to Web 2.0 that privileges third-party websites with a global visibility (e.g. the links of *Jersey.com* and *Yoursingapore.com* directly to their pages in *TripAdvisor*).

However, it is also noteworthy that only two of the analysed DMSs – *Gulliver.ie* and *Tiscover* – focus on a commercially oriented Web 2.0 giving users the possibility to rate and review individual and perfectly identified businesses. The fact that both *Gulliver.ie* and *Tiscover* are managed by private sector entities might be a reason for their different approach to Web 2.0. The other four DMSs only use Web 2.0 for promotional purposes fostering UGC on general features of the destination, not allowing the evaluation of particular services and infrastructure. Thus, in future researches on this subject, it would be relevant to analyse if both the complexity of destinations originated by the variety of actors that comprise them, as well as the fact that DMOs must play the role of being the impartial official body representing and promoting destinations as a whole, are inhibitors to the implementation of Web 2.0 by official destination websites, such as DMSs.

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## **CHAPTER 7**

### **Tourism supply integration in Destination Management Systems: The case of Portuguese regional destination web platforms**

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#### **Reference**

Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (--). Tourism supply integration in Destination Management Systems: The case of Portuguese regional destination web platforms (To be submitted to a scientific journal).

## **7. Tourism supply integration in Destination Management Systems: The case of Portuguese regional destination web platforms**

### **Abstract**

Destination Management Systems (DMSs) are the most advanced Destination Management Organisations' (DMO) web platforms, conveying information and promotional messages aimed at visitors as well as interconnecting destination tourism players. Although DMSs can generate benefits to destinations, namely by increasing their visibility or facilitating the acquisition of specific products, only a short number of them have been successfully implemented. This may result from duties associated with the participation of the suppliers in DMSs and from the difficulty in identifying the functionalities necessary to provide visibility and benefits to the wide range of destination-based tourism suppliers. This paper firstly aims to contribute to a successful integration of the tourism supply in DMSs by: (i) analysing benefits and duties of suppliers when integrating DMSs; (ii) identifying functionalities that best integrate the supply of destinations in DMS platforms and traditional DMO websites. An extensive literature review is conducted to achieve these aims. The paper also aims to improve the integration of supply in Portuguese regional DMOs' platforms by: (i) analysing the similarities between these platforms and both DMS-specific and DMS-nonspecific platforms based on their functionalities; (ii) providing guidelines to improve the integration of supply in these platforms. A content analysis of Portuguese regional DMOs' platforms was performed to achieve these aims. The paper ends with conclusions and implications for managers of destination web platforms and tourism suppliers.

**Keywords:** Destination Management Organisations; DMO; Destination Management Systems; DMS; Web platforms; Internet; Tourism supply; Content analysis.

## 7.1 Introduction

The intangible nature of tourism products as well as the spatial distance between tourists and destinations prior to their consumption contribute to the relevant role of technologies, especially the Internet, in this industry (Buhalis & Law, 2008; Doolin, Burgess, & Cooper, 2002; Fernández-Cavia, Rovira, Díaz-Luque, & Cavaller, 2014; Yu, 2016). The Internet not only facilitates information provision, communication and establishment of relationships, but also allows electronic transactions, with a growing number of studies (Ghobakhloo, Hong, & Standing 2014; Truong, 2008) analysing the importance of electronic commerce in different contexts. Since the advent of the Internet, various subsectors within the tourism sector - e.g. airlines and hotels - have been using its possibilities regarding the promotion and distribution of their offerings (Berry & Jia, 2010; Buhalis, 2004; Klein, Köhne, & Öörni 2004; O'Connor & Murphy, 2004; Wei, Ruys, Van Hoof, & Combrink, 2001).

Some Destination Management Organisations (DMOs) - predominantly public or public/private entities responsible for coordinating tourism development and marketing initiatives at the level of national, regional or local tourism destinations -, are also trying to take advantage of the opportunities offered by the Internet (Shao, Rodriguez, & Gretzel, 2012; Wang, 2008). The implementation and management of official destination web platforms is usually amongst the diversified array of attributions of DMOs. However, the implementation of these platforms brings many challenges and not all the DMOs are able to face them successfully (Alford & Clarke, 2009; Hornby & Frew, 2004, Morrison, 2013). The non-profitable nature of some DMOs or the relatively recent widespread of this type of entities at local levels may partly explain their delay in adopting more attractive, sophisticated and dynamic web platforms (Mistilis & Daniele, 2005). Nonetheless, the global growing competition between tourism destinations and the resultant enlargement of the role and competences of DMOs has contributed to the improvement of their web platforms (Formica & Kothari, 2008).

Previous research suggests that the most advanced type of destination online platforms - Destination Management Systems (DMSs) - support a considerable large scope of functionalities aimed at visitors, destination suppliers and DMOs themselves (Brown, 2004; Kärcher & Alford, 2008; Locatelli, 2016; O'Connor & Rafferty, 1997). Unlike traditional destination platforms, mostly limited to conveying information and promotional messages to potential visitors, DMSs integrate more functionalities related to more complex content personalisation/customisation and transactions, being also considered electronic

commerce platforms (Buhalis, 2003; Buhalis & Spada, 2000; Inversini, Cantoni, & De Pietro, 2014; Pollock, 1995).

Although DMSs can bring a wide range of benefits to several components of the tourism supply of destinations, namely by increasing their visibility or facilitating their acquisition, they are not always easy to develop. This may be related to features such as the duties associated with the participation of the suppliers in DMSs and the difficulty of integrating, in these systems, all the functionalities necessary to provide appropriate visibility and benefits to the wide range of destinations' products. The existing literature tends to focus on the benefits of these systems for destinations and visitors (Brown, 2004; Buhalis, 2003; Buhalis & Spada, 2000; Egger & Buhalis, 2008; Petti & Solazzo, 2007; Pollock, 1995; Rita, 2000; World Tourism Organisation, 2001), often disregarding the advantages and obligations required to suppliers. There is also a lack of a comprehensive identification of functionalities related to the several components of supply of destinations that can be included in DMSs and that differentiate them from common destination web platforms (addressed as DMS-nonspecific platforms).

In order to fill these gaps, the present article highlights the advantages and requirements associated with the integration of components of supply of destinations in web platforms, emphasising the benefits and duties of services suppliers in that process. Moreover, it identifies potential functionalities of DMSs and of DMS-nonspecific web platforms, concerning each destination component, based on a literature review. Subsequently, a content analysis of the Portuguese regional destination platforms is performed based on the set of functionalities previously identified in the literature. With this analysis, it is intended to: (i) identify the functionalities related to each destination component most often present in these web platforms; (ii) analyse the similarities between these platforms and DMSs; and (iii) identify the differences between the platforms of the two types of Portuguese regional entities - one related to domestic promotion and the other to international promotion.

The present article begins with a theoretical approach aimed at contextualising the empirical study, addressing the components of tourism destinations, as well as advantages and requirements of advanced web platforms, such as DMSs. In this scope, the main aim is to highlight the advantages and requirements to supply agents of integrating destination supply components in these web platforms. The theoretical approach then moves on to a literature review on DMS-specific and DMS-nonspecific studies designed to distinguish these two types of web platforms concerning the type of functionalities they hold. The

subsequent sections correspond to the empirical study of the Portuguese regional destination web platforms. The methodology techniques are described and justified, the results of the analysis are presented, and theoretical and practical implications for both destination managers and suppliers are discussed in the conclusions.

## **7.2 Theoretical background**

Two generic goals underlie the following theoretical approach. First, in the two first subsections, the aim is to contextualise the readers on key topics such as tourism destinations' components, DMOs' advanced web platforms - DMSs -, as well as, advantages and requirements of the implementation of this type of platforms for service suppliers. Second, as far as the third subsection is concerned, a literature review on DMS-specific and DMS-nonspecific platforms is carried out, with the goal of identifying the main differences between these platforms regarding functionalities related to the several destination components.

### **7.2.1 Main components of the tourism destination supply**

A tourism destination is an amalgam of components interrelating amongst themselves in order to cater for memorable experiences (Crouch, 2011). Manente and Minghetti (2006) focus on the dynamic relational nature of destinations, defining them as "a group of actors linked by mutual relationships with specific rules, where the action of each actor influences those of others so that the common objectives are defined and attained in a coordinated way" (p. 23).

There is a noteworthy body of research on factors contributing to maximise destination competitiveness (Kozak & Rimmington, 1999; Murphy Pritchard, & Smith, 2000; Ritchie & Crouch, 2003). One of those factors is the development of a broad mix of attractions and supporting facilities and services, considered as supply components of destinations (Ritchie & Crouch, 2003).

Various approaches to the categorisation of tourism destination components can be found in previous research. Thus, for instance, Middleton and Clarke (2002) took a marketing-driven perspective, considering as destination components: (i) 'attractions and environment' (e.g. landscape, monuments); (ii) 'destination facilities and services' (e.g. accommodation,

restaurants); (iii) 'accessibility of the destination'; (iv) 'images of the destination'; and (v) 'price to the consumer' (sum of the costs of visiting the destination).

Other authors, who discuss the internal competitiveness and sustainability of destinations, such as Cooper, Fletcher, Wanhill, Gilbert, and Fyall (2008), identified the following four destination components related to the provision of attractions and supporting facilities and services: (i) attractions, the existing natural and artificial resources, both tangible or intangible (e.g. events); (ii) amenities, comprising the tourism and non-tourism services catering for visitors' needs, such as accommodation, food and beverage establishments and retailing; (iii) access to/from and within a destination, including transportation options and accessibilities; (iv) ancillary services, which can be defined as the predominantly non-profitable services, such as tourism information - often offered to visitors before, during and after their stays - by DMOs. These last entities are traditionally responsible for coordinating the tourism development and providing information to current and potential visitors (Bornhorst, Ritchie, & Sheehan, 2010; Presenza, Sheehan, & Ritchie, 2005).

The previous approaches to the destination components predominantly refer to tangible elements operating directly within the tourism industry or in close proximity to it (e.g. transportation). However, a stream of research on destination competitiveness, pioneered by researchers such as Crouch and Ritchie (1999) and followed by others (Enright & Newton, 2004; Gomezelj & Mihalič, 2008), also focus the importance of the dynamic processes of management and coordination rather than of individual actors. Crouch and Ritchie (1999) propose, as factors that influence destination competitiveness: (i) core resources and attractors, such as the destination's territory, culture and history, the tourism superstructure (e.g. accommodation) and also the heritage ties with potential demand markets; (ii) supporting factors and resources, which comprise the general infrastructure and services (e.g. education) which often foster tourism; (iii) destination management, focusing on the role of DMOs in maximising the other components, namely by enhancing the destination's appeal to potential tourists through marketing and coordinating initiatives at the destination level; (iv) qualifying determinants, consisting on temporary or permanent factors that might modify (positively or negatively) the role of the other three components, even if they are not specific to tourism – e.g. the perceived safety of the destination, its political and social context or its overall costs. In fact, these authors also highlight the important role of intangible elements, such as destination management, including collaboration practices amongst actors.

### **7.2.2 Advantages and duties inherent to the integration of tourism destination supply components in DMO web platforms**

Since the early years of the Internet, DMOs have been progressively trying to benefit from its global scope and relatively lower adoption and management costs to reach markets (Egger & Buhalis, 2008). Nonetheless, most DMOs were limited to the implementation of brochure-like websites only conveying information and promotion of destinations' general features and attractions (Buhalis, 2003; Morrison, 2013), partially, since in its early stages of development, the Internet did not possess today's set of capabilities (Doolin et al., 2002). Only in recent years have we seen the emergence of newer and more sophisticated dimensions of the web such as peer-to-peer online interactions or content personalisation/customisation by users (Kanellopoulos & Panagopoulos, 2008).

However, the long-lasting and still predominant static and merely informative nature of traditional DMO platforms may also result from the considerable digital gap between different stakeholders within the tourism industry, with divergent levels of ICT knowledge depending on the tourism subsector or the size of companies (Bédard, Louillet, Verner, & Joly, 2008). Based on the typology of technology adopters proposed by Rogers' (2010) Diffusion on Innovations Theory, the airline and hotel industries might be considered as innovators, whereas most DMOs have typically been laggards concerning e-tourism (Buhalis, 2003). The slower adoption of already existing dynamic and sophisticated web platforms by DMOs, when compared to other tourism subsectors, can also be attributed to the role that these bodies have traditionally played as mere information providers - mostly undertaken by local/regional DMOs within the destination - and promoters in source markets, often carried out by national DMOs (Hall & Page, 2003).

The global growing competition between tourism destinations has forced regional and local DMOs to gradually play a more active part in the planning and coordination of the tourism sector (Hall, 2008). The Internet provided DMOs with a more sophisticated and comprehensive set of solutions supporting their progressively strategic nature (Gretzel, Fesenmaier, Formica, & O'Leary, 2006). DMSs are the most advanced kind of official destination online platforms (Buhalis & Spada, 2000) that enable to improve destination management and coordination of tourism destinations by DMOs and even among other entities located or operating at the destination.

Although the specific functionalities, prerequisites and virtues of these systems to tourists, suppliers and DMOs have been previously addressed, mostly by tourism researchers (Buhalis, 2003; Inversini, 2010; Pechlaner & Raich, 2002; Pollock, 1995; Rita, 2000; Sigala, 2013; Sussman & Baker, 1996; Wang & Russo, 2007), the boundaries that differentiate them from other destination platforms are still unclear and the concept of DMS is not consensual. DMSs differ from other destination web platforms mainly because they are primarily inter-organisational information systems (IOIS) serving several stakeholders: (i) the DMOs (through intranets connecting its staff and bureaus); (ii) the tourism supply (sharing a common extranet provided by the DMS); and (iii) the tourism demand (the internet consumer-facing website, which is the most visible element of the system).

Estêvão, Carneiro, and Teixeira (2012a) identify three main type of advantages of DMSs for the destination's stakeholders, namely (i) destinations' coordination and planning; (ii) disintermediation and optimisation of revenues and promotion; (iii) visibility and effective presence in the market. Firstly, DMSs assist DMOs by fostering the internal coordination of activities and staff, facilitating the provision of accurate and coherent information to tourists, suppliers or potential investors. As argued by Pechlaner and Raich (2002) one of the main benefits of the implementation of a DMS in Tyrol, was the network established within the DMOs offices and its respective staff, distributing timely and accurate information, as well as norms of conduct and procedures for its employees.

Moreover, as described by Guthrie (2008) when analysing the British national DMS (*Visitbritain*), these systems often integrate the web platforms of lower territorial/administrative levels (regional, sub regional and local). From the moment a local DMO inserts information about, for instance, a small special event, it becomes visible in the sub regional, regional and national versions of the DMS, gaining a global visibility it would not reach otherwise. In most cases of successful DMS implementations, they became the DMO's infostructure, boosting their ability to fulfil their pivotal roles of local suppliers' coordination and online promotion of the destination (Bédard & Louillet, 2008; Buhalis & Law, 2008; Estêvão et al., 2012a).

Lastly, by directly engaging with prospective, current and past visitors in all stages of their tourism experiences, DMSs often allow DMOs and tourism suppliers to bypass external intermediaries, such as tour operators, thus fostering disintermediation processes that clearly benefit small and medium-sized tourism enterprises (SMTEs) (Bédard & Louillet, 2008). By directly distributing services individually or in packages - usually through dynamic



packaging functionalities - DMSs help reducing the commissions that suppliers traditionally pay to intermediaries (Buhalis & Spada, 2000). DMSs may also enhance the suppliers' ability to diversify and optimise their demand segments attracting more sophisticated and autonomous visitors which tend to avoid the usually less flexible and customised offerings of tourism intermediaries (Bédard & Louillet, 2008). DMSs are also beneficial by establishing a network of collaboration through which suppliers may communicate regularly but, more importantly, develop, promote and sell complementary tourism products (Miralbell, Martell, & Viu, 2008).

However, in order to benefit from the large set of advantages of DMSs, higher commitment and coordination levels are required from the destination stakeholders, including DMOs and service providers. Although DMSs facilitate communication and interaction flows within one DMO and between various ones operating at distinct territorial or administrative levels, it is also true that they require higher engagement levels of DMOs' staff regarding information sharing (Guthrie, 2008; Pechlaner & Raich, 2002). The biggest threat to successful DMS implementation processes do not derive from technical aspects but rather from destinations' cohesion and coordination levels (Ndou & Petti, 2007). In general, the success of DMSs is highly determined by the DMO's ability to coordinate destination players and to persuade them to integrate the DMS (Sigala, 2013).

Unlike traditional destination platforms, DMSs cannot be adopted and developed by DMOs in isolation from other individual businesses and attractions (Sussman & Baker, 1996). By being destination-wide collaborative IOIS, DMS must be a network shared by as many actors as possible within the destination's tourism industry (Buhalis, 2003). Hence, part of the success of the DMSs derives from the number and variety of destination players they integrate (Ndou & Petti, 2007). This can be quite an insurmountable task in contexts with a considerable digital gap, such as the tourism industry. For a DMS to provide real-time information about the destination's supply, cooperation of other service suppliers is required (Guthrie, 2008). For instance, in order to enable processing real-time accommodation availability searches or reservations, the DMS must dynamically interact with hotel Property Management Systems (PMSs). From a hoteliers' perspective, this requires establishing a partnership with a distinct type of platform, providing access to the hotel reservation system (Brown, 2004). Moreover, most DMSs require destination suppliers to play an active role in the DMSs' content insertion and management process (Kärcher & Alford, 2008).

Nowadays, the widespread cooperation between destinations' individual players is not only an advantage of DMSs, but a requirement for its more dynamic tools to succeed. For instance, real-time dynamic packaging tools allowing tourists to combine various destination services also require combined efforts amongst the service suppliers.

In order to accomplish all the previously mentioned tasks, DMSs must convey functionalities capable of extending the mere informational dimensions of traditional destination platforms to more sophisticated and demanding ones. Wang and Russo (2007) proposed a conceptual model classifying the functionalities held by DMO web platforms into four dimensions according to their role: 'information'; 'communication'; 'relationship'; and 'transaction'. These dimensions represent different sets of tasks performed by the platform and also additional levels of functionalities' sophistication, complexity and interactivity (Wang & Russo, 2007). It seems safe to suggest that every destination platform is expected to include the first two types of functionalities – for example by providing information about its tourism supply (e.g. resources) and giving users the possibility to communicate with the destination's agents, using real-time chats with the DMO staff or through more traditional options, such as comment/request forms. However, the majority of destination platforms do not possess transactional functionalities allowing tourists to book and purchase tourism products, nor contemplate a relationship dimension, offering users the possibility to customise and personalise their own product, typically through dynamic packaging and customised member areas (Brown, 2004; Locatelli, 2016; Ndou & Petti, 2007).

For a DMS to thrive and endure, it must ensure widespread representation and association of destinations' attractions, amenities and ancillary services along with transportation providers to/from and within the destination (Frew & O'Connor, 1999). The next section will discuss the relevant functionalities that DMSs may encompass to represent the several components of tourism destinations' supply.

### **7.2.3 Relevant functionalities to the integration of tourism destination supply in DMS-nonspecific and DMS-specific platforms**

In order to identify the types of functionalities associated with the supply which are more likely to be present in DMS and non-DMS platforms (more traditional official destination web portals), a literature review of scientific articles, book chapters and theses concerning DMS-specific and DMS-nonspecific platforms, was carried out. As seen in Table 7.1, a total of 66 sources published between 1996 and 2018 were identified and analysed, 26 of which contemplate DMS-specific platforms while 40 of them focus on DMS-nonspecific ones.

It is relevant to highlight the diverse nature and goals of the literary sources. Some of them included detailed descriptions and enumerations of functionalities, while others only named a few of them as examples. Regarding empirical studies, one can identify, in one extreme, performance evaluation studies thoroughly and extensively enumerating numerous functionalities and, in an opposite extreme, more generic approaches to destination web platforms focusing on their advantages rather than on specific functionalities. This may have influenced the results obtained because, in general, the analysed studies on DMS-nonspecific platforms appear to refer functionalities in more detail than DMS-specific approaches, which seem more generic and focus on the description of the advantages of such still relatively unknown systems. This may explain why, on average, the studies on DMS-nonspecific web platforms refer to a considerable larger number of functionalities than those on DMSs.

In order to facilitate the analysis of the functionalities identified in the literature, it was necessary to classify them according to two criteria. The first criterion was the destination component to which they are related to, and functionalities were classified considering the Cooper et al.'s (2008) suggestion - attractions, amenities, access and ancillary services. Functionalities not specifically associated with a destination component in particular but designed to improve the quality of the information system (IS) in general, namely its navigability, security or performance (e.g. privacy policy), were classified in a fifth category - General Complementary Requirements (CGR).

**Table 7.1 - Literature review on DMS-specific and DMS-nonspecific platforms**

References	
DMS-specific	DMS-nonspecific
Bédard & Louillet (2008)	Alzua-Sorzabal, Zurutuza, Rébon, & Gerrikagoitia (2015)
Brown (2004)	Baggio (2008)
Buhalis & Spada (2000)	Bastida & Huan (2012)
Buhalis (2003)	Beldona & Cai (2006)
Çetinkaya (2009)	Benckendorff & Black (2000)
Chen & Sheldon (1997)	Buhalis & Aramanggana (2015)
Collins & Buhalis (2003)	Cano & Prentice (1998)
Estevão et al. (2012a)	Capelo, Marques, Pinto, & Sousa (2012)
Estêvão, Carneiro, & Teixeira (2012)	Cho & Sung (2012)
Guthrie (2008)	Choi, Lehto, & Morrison (2007a)
Inversini (2011)	Choi, Lehto, & O'Leary (2007b)
Inversini, Cantoni, & de Pietro (2014)	Del Vasto-Torrientes et al (2015)
Kanellopoulos & Panagopoulos (2008)	Doolin et al. (2002)
Kärcher & Alford (2008)	Douglas & Mills (2004)
Locatelli (2016)	Feng, Morrison, & Ismail (2003)
O'Connor & Rafferty (1997)	Fernández-Cavia, Rovira, Díaz-Luque, & Cavaller (2014)
Pechlaner & Raich (2002)	Ghanem & Elgammal (2017)
Rita (2000)	Giannopoulos & Mavragani (2011)
Schröksnadel (2008)	Han & Mills (2006)
Steinmetz & Fesenmaier (2013)	Hofbauer, Stangl, & Teichmann (2010)
Sussman & Baker (1996)	Jeon, Ok, & Choi (2018)
The European eBusiness Market Watch (2006)	Kao, Louvieris, Powell-Perry, & Buhalis (2005)
Wang & Fesenmaier (2006)	Kirářová & Pavlíčka (2015)
Wang & Russo (2007)	Li & Wang (2010)
Wang (2008)	Loda, Teichmann, & Zins (2009)
World Tourism Organisation (2001)	Luna-Nevarez & Hyman (2012)
	Martinez-Sala et al. (2017)
	Miguez-González & Fernández-Cavia (2015)
	Milheiro (2004)
	Miralbell et al. (2008)
	Morrison et al. (2004)
	Novabos, Matias, & Mena (2015)
	Park & Gretzel (2007)
	Qi, Law, & Buhalis (2008)
	So & Morrison (2004)
	Stepchenkova et al. (2010)
	Tansirevdi & Duran (2011)
	Teichmann & Zins (2008)
	Wei & Jiu-Wei (2009)
	Zhou & de Santis (2005)

The second criterion used to classify functionalities were the dimensions proposed by Wang and Russo (2007) before mentioned - 'information'; 'communication'; 'relationship'; and 'transaction' -, which provided insights on the actions that each functionality would give rise. Due to the similarities between the communication and relationship dimensions, they were merged into a single category. Thus, three groups of dimensions were defined, namely information, communication/relationship and transaction.

The analysis of the results of the literature review reveals some disparities and some similarities between the types of functionalities of DMS-specific and DMS-nonspecific platforms (Tables 7.2 to 7.7). Chi-square tests were carried out to identify statistically significant differences between literature on DMS and on common destination platforms regarding the number of references to functionalities concerning information, communication/relationship and transaction, related to each destination component. Chi-square tests reveal statistical differences between studies on DMS-specific and DMS-nonspecific systems (Table 7.2). Results reveal more references to transactional tools regarding CGR ( $X^2=8.665$ ,  $p\text{-value}=0.003$ ) in papers on DMSs. This suggests that these systems are more likely to have these functionalities than DMS-nonspecific systems. It was not possible to test the existence of significant differences on transactional functionalities at the level of some other destination components – access and ancillary services. Interestingly, statistical differences within the communication/relationship dimension related to the ancillary services ( $X^2=5,390$ ,  $p\text{-value}=0,019$ ), suggest that literature on DMS-nonspecific platforms is more focused on functionalities such as User-Generated Content (UGC) than previous studies on DMSs. This may result from the fact that the bulk of research on DMSs was conducted in the early 2000s, when more advanced communication/relationship tools were still in their infancy. No significant differences are found in the other dimensions.

As would be expected, in DMS-nonspecific sources there is a greater prevalence of information functionalities provision over the other functionalities in some destination components – attractions and amenities – while there is a predominance of references to communication/relationship functionalities in the remaining destination components. Transactional functionalities are the least mentioned functionalities regarding all the destination components, except amenities, where they are the second least referred.

Within DMS-specific literature, the information functionalities are the most prevalent in all the destination components, except in CGR. However, the results, once more suggest that transactional functionalities may have a more crucial role in the case of these systems since transactional functionalities are the more often mentioned regarding CGR (transactional tools are identified in 77% of all the literary sources on DMSs), and the second most mentioned concerning attractions and amenities. It is interesting to note that, in the scope of DMS literature, transactional functionalities seem to prevail in the CGR (77% references mention these type of functionalities) and amenities (38%), appearing with lower frequency (barely above a quarter of the studies) associated with attractions (27%), access (12%) and

ancillary services (4%). This suggests a considerable concern with the possibility of purchasing tourism services through DMSs, contrasting with a much lower exploitation of transactions of other destination components in DMS-specific systems with a lower commercial drive and less intensive use by the tourist demand (e.g. attractions, access).

**Table 7.2 - References in DMS-specific and DMS-nonspecific studies to functionalities, by destination component**

Destination Component	Website Dimension	DMS-specific (n=26)		DMS-nonspecific (n=40)		Pearson Chi-square test	
		n	%	n	%	$\chi^2$	p
Attractions	Information	16	62%	27	68%	0.247	0.406
	Communication/Relationship	1	4%	2	5%	a)	
	Transaction	7	27%	7	18%	0.837	0.270
<b>Total references to the Attractions component</b>		<b>16</b>	<b>62%</b>	<b>28</b>	<b>70%</b>	<b>0.508</b>	<b>0.326</b>
Amenities	Information	12	46%	26	65%	2.291	0.104
	Communication/Relationship	4	15%	6	15%	a)	
	Transaction	10	38%	10	25%	1.352	0.187
<b>Total references to the Amenities component</b>		<b>17</b>	<b>65%</b>	<b>28</b>	<b>70%</b>	<b>0.155</b>	<b>0.448</b>
Access	Information	7	27%	12	30%	0.073	0.507
	Communication/Relationship	5	19%	15	38%	2.490	0.095
	Transaction	3	12%	3	8%	a)	
<b>Total references to the Access component</b>		<b>12</b>	<b>46%</b>	<b>27</b>	<b>68%</b>	<b>2.970</b>	<b>0.071</b>
Ancillary Services	Information	10	38%	22	55%	1.726	0.144
	Communication/Relationship	8	31%	23	58%	5.390	0.019
	Transaction	1	4%	1	3%	a)	
<b>Total references to the Ancillary Services component</b>		<b>12</b>	<b>46%</b>	<b>30</b>	<b>75%</b>	<b>5.666</b>	<b>0.017</b>
CGR	Information	13	50%	26	65%	1.467	0.170
	Communication/Relationship	13	50%	29	73%	3.447	0.056
	Transaction	20	77%	16	40%	8.665	0.003
<b>Total references to the CGR component</b>		<b>22</b>	<b>85%</b>	<b>35</b>	<b>88%</b>	<b>a)</b>	

Note: a) Not valid.

Perhaps the least predictable result concerning the dimensions of the functionalities identified in the literature is the relatively higher proportion of references to communication/relationship tools in DMS-nonspecific platforms in some destination components and in CGR.

Overall, the dimensions of the functionalities addressed in the analysed research works, suggest a predominant informational and promotional essence of DMS-nonspecific platforms. On the other hand, in comparison to DMS-nonspecific platforms, the DMS-specific ones seem to have a higher percentage of transaction tools, what reveals their greater trend to go beyond informational and promotional functions, enabling bookings and transactions. However, the results failed to support the idea that DMSs have a higher propensity to dynamically convey communication and relationship tools enabling the customisation and personalisation of contents. Further research involving the content analysis of DMS would be of utmost importance to attest if they are really likely to optimise these functionalities.

A more detailed analysis was undertaken to identify the type of functionalities most often referred in each destination component. Within the attractions' component (Table 7.3), the information dimension's most often identified content or function in the literature on DMS-specific platforms is 'information on attractions' (n=14, i.e. 54%), without specifying a precise kind of attraction. In the literature concerning DMS-nonspecific platforms, the most commonly cited content or function is 'information on activities' (n=17, i.e. 43%). Also, within the attractions component, the communication/relationship has one single reference from DMS-related works - to 'searchable databases for events' -, while they accounted for only two references in DMS-nonspecific sources. The number of information sources mentioning attractions' transactional functionalities is slightly higher in DMS-specific than in DMS-nonspecific studies. 'Purchase/availability of events tickets' has the highest number of references in both of them (DMS-specific: 23%; DMS-nonspecific: 15%). In DMS-specific sources, this type of content received the same number of references as 'purchase/availability of attraction tickets'.

**Table 7.3 - References to attractions identified in the literature review**

Attractions' Types of Functionalities		Functionalities	DMS-specific (n=26)		DMS-nonspecific (n=40)	
			n	%	n	%
Information Dimension	General Information on attractions	Information on attractions	14	54%	16	40%
		Information on natural attractions	0	0%	4	10%
		Information on cultural attractions	3	12%	12	30%
		Information on activities	7	27%	17	43%
		Information on events	6	23%	11	28%
		Photos of natural/cultural heritage	0	0%	1	3%
		Promotional presentation of cultural offers	1	4%	0	0%
	Link to attractions' sites	0	0%	1	3%	
	Information on accessibility of attractions	Attractions' location	2	8%	0	0%
		Attractions' map	1	4%	1	3%
Prices information	Prices of events and festivals	0	0%	1	3%	
	Prices of other attractions	1	4%	1	3%	
<b>Number of sources referring attractions' informational functionalities</b>			<b>16</b>	<b>62%</b>	<b>27</b>	<b>68%</b>
Communication /Relationship Dimension	UGC	Forum on culture / attractions	0	0%	1	3%
	Search functions	Searchable databases for attractions	0	0%	1	3%
		Searchable databases for activities	0	0%	1	3%
		Searchable databases for events	1	4%	1	3%
<b>Number of sources referring attractions' communication/relationship functionalities</b>			<b>1</b>	<b>4%</b>	<b>2</b>	<b>5%</b>
Transaction Dimension	Book & purchase of visits to attractions	Booking and purchase of cultural trips	2	8%	0	0%
		Purchase / Availability of attraction tickets	6	23%	3	8%
		Purchase / Availability of museum tickets	5	19%	1	3%
		Purchase / Availability of events tickets	6	23%	6	15%
<b>Number of sources referring attractions' transactional functionalities</b>			<b>7</b>	<b>27%</b>	<b>7</b>	<b>18%</b>

The most often mentioned functionalities within the amenities' component (Table 7.4) correspond to both the information and transaction dimensions, with only a residual number of references on the communication and relationship dimensions (present in only 15% of the reviewed papers, in both DMS and non-DMS literature). The information functionalities most often mentioned are 'information on accommodation' (35% in DMS-specific and 55% in DMS-nonspecific), 'information on restaurants/cafés/bars' (23% and 28%, respectively), and 'suggested tours information/tips' (15% and 23% respectively). On the other hand, the transactional functionality most mentioned is 'accommodation reservations' (with 35% in DMS sources and 20% in DMS-nonspecific sources).



**Table 7.4 - References to amenities identified in the literature review**

Amenities' Types of Functionalities		Functionalities	DMS-specific (n=26)		DMS-nonspecific (n=40)	
			n	%	n	%
Information Dimension	Accommodation information	Information on accommodation	9	35%	22	55%
		Accommodation list/directory	3	12%	1	3%
		Information on resorts	0	0%	2	5%
		Links to hotel websites & contacts	1	4%	1	3%
	F&B information	Information on restaurants, cafés, bars	6	23%	11	28%
	MICE Tourism information	Information on conference venues / Meeting facilities	2	8%	1	3%
		Information for meeting planners	1	4%	2	5%
	Information on other amenities	Suggested tours information/tips	4	15%	9	23%
		Tour guide information	1	4%	0	0%
		Information on shopping	3	12%	8	20%
		Information on wellness centres	1	4%	0	0%
	Information on intermediaries	Travel agents information (e.g. contact)	0	0%	4	10%
		Links to travel agents' sites	0	0%	1	3%
		Tour operators information	2	8%	1	3%
		Travel packages info	0	0%	2	5%
	Prices information	Accommodation prices	1	4%	0	0%
		Prices of packages	0	0%	1	3%
		Restaurant prices	0	0%	2	5%
	Non-tourist services	Businesses' opening hours	1	4%	0	0%
Local banks information		0	0%	1	3%	
Amenities' Facts & Figures	Statistics showing products attracting greatest response	1	4%	0	0%	
<b>Number of sources referring amenities' informational functionalities</b>			<b>12</b>	<b>46%</b>	<b>26</b>	<b>65%</b>
Communication Dimension / Relationship	Search Functions	Searchable databases for accommodation	0	0%	1	3%
		Searchable databases for dining	0	0%	1	3%
		Searchable databases for shopping	0	0%	1	3%
	UGC	Hotel Reviews / Ratings	0	0%	2	5%
	Dynamic packaging	Dynamic packaging	2	8%	1	3%
		MICE Tourism search tool	Venue search facility	2	8%	0
		Meeting/event planning	1	4%	2	5%
<b>Number of sources referring amenities' communication/relationship functionalities</b>			<b>4</b>	<b>15%</b>	<b>6</b>	<b>15%</b>
Transaction Dimension	Amenities' booking & purchase	Services availability information	2	8%	0	0%
		Services reservation information	0	0%	1	3%
		Accommodation reservations	9	35%	8	20%
		Online booking for tours	2	8%	2	5%
		Online reservations for other services	2	8%	0	0%
		Reservation of last minutes/offers	1	4%	0	0%
		Purchase of holiday packages	1	4%	0	0%
		Purchase/book other holiday-related items(e.g. ski passes; loyalty/suppliers' cards or merchandising)	2	8%	0	0%
Buy travel insurance	1	4%	0	0%		
<b>Number of sources referring amenities' transactional functionalities</b>			<b>10</b>	<b>38%</b>	<b>10</b>	<b>25%</b>

The access component is the least mentioned in the literature (Table 7.5). Being the most frequently referred functionality 'trip/travel planner' – a communication/relationship functionality - both in DMS-specific (19%) and DMS-nonspecific sources (38%). Although scarce, the access functionalities encompassing the information dimension receiving the highest number of references in DMS-related studies is 'accessibility of services for disabled visitors' (12%), while 'information on car rentals', 'airline/boat/train schedules', and 'accessibility of services for disabled visitors' (each referred by 10% of the sources) are the

most commonly identified functionality in DMS-nonspecific studies. With only two references, 'purchase of flight tickets' is the most mentioned transactional functionality within the access component in DMSs specific sources, while 'online booking of travel' is the functionality found in more sources concerning DMS-nonspecific systems.

**Table 7.5 - References to access identified in the literature review**

Access Types of Functionalities		Functionalities	DMS-specific (n=26)		DMS-nonspecific (n=40)	
			n	%	n	%
Information Dimension	Routes and schedules information	Routes to the destination	0	0%	3	8%
		Airline / train / boat schedules	1	4%	4	10%
	Contacts/links to providers	Information on car rentals	1	4%	4	10%
		Links to car rental websites	0	0%	1	3%
	Public Transportation information	Information on subway transportation	1	4%	0	0%
		Information on public transportation	0	0%	1	3%
	Prices information	Prices of public transportation	0	0%	1	3%
		Prices of flights	1	4%	0	0%
		Prices of car rentals	2	8%	0	0%
	Accessible Tourism information	Accessibility of services for disabled visitors	3	12%	4	10%
<b>Number of sources referring access informational functionalities</b>			<b>7</b>	<b>27%</b>	<b>12</b>	<b>30%</b>
Comm. /Relat. Dim.	Travel Arrangements	Flights engine	1	4%	0	0%
		Trip/Travel planner	5	19%	15	38%
<b>Number of sources referring access communication/relationship functionalities</b>			<b>5</b>	<b>19%</b>	<b>15</b>	<b>38%</b>
Transaction Dimension	Transportation booking & purchase	Purchase of flight tickets	2	8%	0	0%
		Purchase of subway tickets	1	4%	0	0%
		Online car rental reservation	1	4%	0	0%
		Online booking of travel	0	0%	3	8%
		Rent means of transportation	1	4%	0	0%
<b>Number of sources referring access transactional functionalities</b>			<b>3</b>	<b>12%</b>	<b>3</b>	<b>8%</b>

Regarding the ancillary services (Table 7.6), the most frequently found information and transaction functions related to ancillary services are the same, both in DMS-specific and nonspecific sources, respectively, 'maps and directions' (DMS-specific: 19%; DMS-nonspecific: 40%) and 'city card purchase' (DMS-specific: 4%; DMS-nonspecific: 3%). The latter is the single transactional functionality identified in the literature, with only two references overall. Within the communication/relationship dimension of DMS-specific platforms, the most often cited ancillary service is 'download brochures, postcards, wallpapers and maps' (19%), while 'email/newsletters/ online subscriptions for news/updates' accounts for the higher number of references in the DMS-nonspecific literature (25%).

Other important information and communication/relationship functionalities, mainly in DMS-nonspecific sources are, respectively, 'local weather information' (27%) and 'Testimonials / past visitors' experiences / reviews' (18%).

**Table 7.6 - References to ancillary services identified in the literature review**

Ancillary Services' Types of Functionalities		Functionalities	DMS-specific (n=26)		DMS-nonspecific (n=40)	
			n	%	n	%
Information Dimension	Geographical Information	Maps and directions	5	19%	16	40%
		Itineraries and guides	1	4%	2	5%
		Distances	0	0%	1	3%
	Destination Facts & Figures	Demographic information	1	4%	0	0%
		Education materials	3	12%	2	5%
		Publications/Reports	3	12%	3	8%
		Travel-related statistics	3	12%	3	8%
	Useful information & contacts for travellers	Embassy/consulate information	0	0%	1	3%
		Local weather information	3	12%	10	25%
		Real-time "weather cameras"	1	4%	1	3%
		Local time information/Time zones	0	0%	1	3%
		Visa/Customs information	0	0%	3	8%
		List of certified businesses	0	0%	1	3%
		Information on holidays and public holidays	1	4%	0	0%
	Trade information	Support to local SMTEs	0	0%	1	3%
		Certification system information	0	0%	1	3%
		Industry news	2	8%	1	3%
	For kids	Kid's corner	1	4%	0	0%
	Information on the DMO	List of tourist offices	1	4%	0	0%
		About the DMO	1	4%	0	0%
DMO contact info		1	4%	4	10%	
Integration w/ other DMOs	Links to regional/city pages	0	0%	3	8%	
<b>Number of sources referring ancillary services' informational functionalities</b>			<b>10</b>	<b>38%</b>	<b>22</b>	<b>55%</b>
Communication /Relationship Dimension	UGC	Testimonials / past visitors' experiences / reviews	2	8%	7	18%
		Online guestbook	0	0%	3	8%
		Service Evaluations / Comments	0	0%	3	8%
		Message Board	0	0%	1	3%
	Interactive tools	Interactive maps	1	4%	2	5%
	Downloadable Materials	Electronic Postcards	0	0%	5	13%
		Download brochures, postcards, wallpapers and maps	5	19%	7	18%
	CRM	Complaints handling	0	0%	1	3%
		Customer loyalty programmes	2	8%	2	5%
		Online survey	1	4%	1	3%
		Incentive programmes	2	8%	2	5%
		E-mail newsletters/online subscription for news / updates	2	8%	10	25%
<b>Number of sources referring ancillary services' communication/relationship functionalities</b>			<b>8</b>	<b>31%</b>	<b>23</b>	<b>58%</b>
Transaction Dimension	Purchase	City card purchase	1	4%	1	3%
<b>Number of sources referring ancillary services' transactional functionalities</b>			<b>1</b>	<b>4%</b>	<b>1</b>	<b>3%</b>

Finally, as seen in Table 7.7, regarding the CGR information dimension, in DMS-specific sources, 'photos' (23%) and the 'online offers /special prices/ deals' (15%) are the most representative ones. On the other hand, in DMS-nonspecific sources the 'multilingual capabilities' (40%) and 'FAQs' (28%) are the most mentioned ones. In the other two remaining dimensions - communication /relationship and transaction - the most recurrently identified functionalities coincide and are, respectively, 'search functions' (DMS-specific: 27%; DMS-nonspecific: 38%) and 'online reservations/transactions' (DMS-specific: 69%; DMS-nonspecific: 33%).

Table 7.7 - References to CGR identified in the literature review

CGR Types of Functionalities		Functionalities	DMS-specific (n=26)		DMS-nonspecific (n=40)	
			n	%	n	%
Information Dimension	Usability and quality requirements	Site map	1	4%	7	18%
		Web seal certification	2	8%	1	3%
		Privacy Policy	2	8%	4	10%
		Date of last update	0	0%	3	8%
		Links to DMO's social media pages	0	0%	1	3%
		"What's new" section	2	8%	2	5%
		Multilingual capabilities	0	0%	16	40%
	FAQs	3	12%	11	28%	
	Visualisation of destination information	Multimedia functions	0	0%	4	10%
		Animated infographs	0	0%	1	3%
		Banner advertisements	0	0%	3	8%
		Photos	6	23%	7	18%
		Photo Gallery	1	4%	3	8%
		Videos	3	12%	7	18%
		Image library; PR material	2	8%	1	3%
		Audio / Sound Files	0	0%	3	8%
		Dynamic information (schedules; availability)	3	12%	0	0%
		Links to 3rd party sources (e.g. weather; transport timetables)	2	8%	7	18%
		Online Offers / Special Prices / deals	4	15%	7	18%
Price info / comparison		3	12%	2	5%	
<b>Number of sources referring CGR's informational functionalities</b>			<b>13</b>	<b>50%</b>	<b>26</b>	<b>65%</b>
Communication/Relationship Dimension	Search	Help function (online and by phone)	1	4%	2	5%
		Product database search	1	4%	0	0%
		Search functions (by type)	7	27%	15	38%
	Download	App for smartphones download	2	8%	1	3%
		Mobile interfaces (WAP)	0	0%	7	18%
		Downloadable materials	1	4%	7	18%
	Interact/personalise	Site Membership	1	4%	7	18%
		Trade/CVB Area	1	4%	1	3%
		Currency converter	1	4%	6	15%
		Interactive tools	3	12%	4	10%
		Translation Service	0	0%	1	3%
		Personalisation / Customisation	4	15%	6	15%
		Brochure processing	2	8%	1	3%
		Virtual tours	2	8%	6	15%
		Forum/chatrooms	1	4%	9	23%
		Online comment/suggestion form	2	8%	2	5%
		Online enquiry form	0	0%	1	3%
		"Call me" option	1	4%	0	0%
		Blog	0	0%	4	10%
	Games	0	0%	3	8%	
	UGC	Social Media (content sharing)	3	12%	7	18%
		Classified ads	2	8%	1	3%
<b>Number of sources referring CGR's communication/relationship functionalities</b>			<b>13</b>	<b>50%</b>	<b>29</b>	<b>73%</b>
Transaction Dimension	Bookings and purchases	Cross-selling opportunities	2	8%	2	5%
		Contests / Auctions functions	1	4%	1	3%
		Online shop	2	8%	0	0%
		Real-time availability of services	1	4%	0	0%
		Secure payment methods	5	19%	2	5%
		Shopping carts	2	8%	4	10%
		Online reservations/transactions	18	69%	13	33%
		Online reservation request form	0	0%	3	8%
<b>Number of sources referring CGR's transaction functionalities</b>			<b>20</b>	<b>77%</b>	<b>16</b>	<b>40%</b>

As expected, more recent studies (Inversini et al., 2014; Stienmetz & Fesenmaier, 2013) tend to focus on sophisticated interactive functionalities, such as social media, mobile phone capabilities or virtual tours, as well as on conveying information on sustainability to prospective tourists (e.g. 'list of certified businesses').

In the next section, the methodology of the empirical study carried out in the present article, analysing the Portuguese regional DMO web platforms, partially supported in the framework resulting from this literature review, will be described.

### **7.3 Methods of the empirical study**

The methodology of the empirical study corresponds to a content analysis of the functionalities of Portuguese regional DMO platforms. Mainland Portugal does not have administrative regions. The archipelagos of Azores and Madeira are the only two autonomous regions in the country. As such, since the 1970s, both insular regional DMOs are integrated in their respective autonomous governments and are designated as Regional Directorates for Tourism (RDTs).

In 2013, the Portuguese Government established the five largest regional DMOs - designated Regional Tourism Entities (RTEs), acronym which will henceforth be used to mention both the RTEs located in Mainland Portugal corresponding to the territory of five NUTS II - namely North, Centre, Lisbon, Alentejo and Algarve - and the insular RDTs.

The RTEs are exclusively public organisations and have a broad range of attributions, ranging from the coordination and qualification of their tourism resources and other supply to the provision of information to tourists or the development of marketing initiatives aimed at the domestic market (Turismo de Portugal, 2016).

The international tourism promotion is coordinated by the Turismo de Portugal, the public national DMO. Nonetheless, even before the 2013 reconfiguration of the Portuguese regional DMOs, the government decided to delegate part of the international marketing efforts of regional destinations to seven tourism associations, which must have a substantial number and diversity of private associates, as well as be located within the region of each of the seven RTEs. These associations - designed as Regional Tourism Promotion Agencies (RTPAs) - are appointed for a three-year period. Acting under the coordination of Turismo de Portugal, each RTPA must propose a regional marketing plan, whose initiatives,

if approved, are financed by the public sphere (by both Turismo de Portugal and the corresponding RTE) and by their own private associates. The development and maintenance of destination web portals is amongst the RTPAs most relevant initiatives.

Hence, the seven Portuguese regional destinations (corresponding to the seven NUTS II) are promoted to the domestic market by their public DMOs (five continental RTEs and two insular RDTs) and internationally by seven public-private RTPAs. This attribution of a domestic versus international promotion to two different organisations, often located in different territories and with varying levels of skills and resources, seems debatable as it may jeopardise coherent and articulate marketing efforts.

Perhaps the most visible outcome of such twofold division is the fact that, in five of the seven Portuguese tourism regions, both the RTEs and the RTPAs have implemented different tourism official destination platforms, supposedly aimed at the domestic and international markets. Therefore, each of these five regions has two distinct official DMO platforms with completely different user interfaces and functionalities. The exceptions to the rule are the regions of Alentejo and Azores. In Azores, there is only one entity - the RTPA - responsible for the official destination platform. In Alentejo, both the RTE and the RTPA share the same promotional platform, each managing the sections aimed at, respectively, the domestic and international markets.

Hence, although the content analysis was applied to twelve platforms, the one promoting the Alentejo region was divided into two, separating the sections written in Portuguese language (aimed at the domestic market and managed by the RTE) from those in foreign languages (serving international markets and managed by the RTPA).

Thus, the present article's content analysis was applied to a total of thirteen regional DMO platforms:

- Six regional DMOs platforms belonging to the RTEs - *Portoenorte.pt*, *Turismodocentro.pt*, *Ertlisboa.pt*, *Visitalentejo.pt*, *Turismoalgarve.pt*, *Visitmadeira.pt*;
- Seven other DMOs platforms managed by the RTPAs, namely *Visitportoandnorth.travel*; *Centerofportugal.com*; *Visitlisboa.com*; *Visitalentejo.pt*; *Visit Algarve.pt*; *Visitazores.com*; *Madeirapromotionbureau.com*.

The aim of the present empirical study is to identify the types of functionalities related to both Wang and Russo's (2007) Internet dimensions and the Cooper et al.'s (2008) tourism destination components that are present in the different Portuguese regional DMO platforms. Another aim is to analyse whether these Portuguese platforms are more similar to DMS-specific or DMS-nonspecific platforms. Only functionalities which are visible in the front-end of each platform are taken into consideration, regardless of the type of destination stakeholder they are aimed at (e.g. service supplier, visitor).

As suggested in the literature (Creswell, 2013), the categories of functionalities emerged both from the literature review presented before, as well as from the subsequent empirical analysis of the specific platforms. Therefore, the content analysis was initially based on the list of 152 functionalities identified in the literature review but was later enlarged to include those detected in the Portuguese regional DMO platforms. The content analysis was conducted during the months of May and June 2016.

## **7.4 Analysis and discussion of results**

This section will confront the functionalities of Portuguese regional DMOs with those identified in the literature review characterising DMS-specific and DMS-nonspecific platforms. As discussed earlier, the second type of platforms tend to have a promotional and informative focus. Contrastingly, being interorganisational information systems (IOIS) connecting several stakeholders - DMOs, destination businesses/attractions and tourists -, DMS have a larger scope of dimensions and are aimed at all types of internal and external destination stakeholders (with the previously exception of intermediaries, which they often intend to overcome).

It seems noteworthy to point that the RTEs, although being public DMOs, seek to provide databases with the most complete array of services, while most RTPAs platforms only include their associated members. Another striking difference between the two types of web platforms lies on the confirmation of the explicitly promotional B2C focus of RTPAs' platforms which heavily contrast with the less commercial and more institutional nature of the RTEs' platforms, also integrating a business-to-business (B2B) approach.

As referred in the methodology, the list of 152 functionalities resulting from the literature review on DMS-specific and DMS-nonspecific platforms served as basis for the content analysis of the Portuguese DMO platforms. However, 55 of these functionalities were not

identified in the content analysis of the Portuguese platforms and 64 new functionalities were identified during the analysis of the platforms. Thus, a total of 161 functionalities were identified in the content analysis - 97 that had already been found in literary sources and 64 that directly emerged from the empirical content analysis.

At this point it seems relevant to clarify that, although RTEs cannot directly engage in commercial activities due to their public nature, the RTPAs are free to do so through one or more of their associates with a proper license to act as tourism intermediaries (Turismo de Portugal, 2016). Only two RTPAs platforms - *Visitlisboa* and *Visitportoandnorth.travel* - provide online transactions. *Visitlisboa* only commercialises diverse merchandising, local craft, destination-related publications (e.g. guides) and city cards, whereas *Visitportoandnorth's* transactional capabilities are limited to the Oporto city card purchase. Hence, none of the Portuguese regional DMO websites engages in transactions related to tourism attractions or products.

It seems pertinent to present and discuss the results considering the functionalities related to the four destination components proposed by Cooper et al. (2008) - attractions, amenities, access and ancillary services - and the CGR.

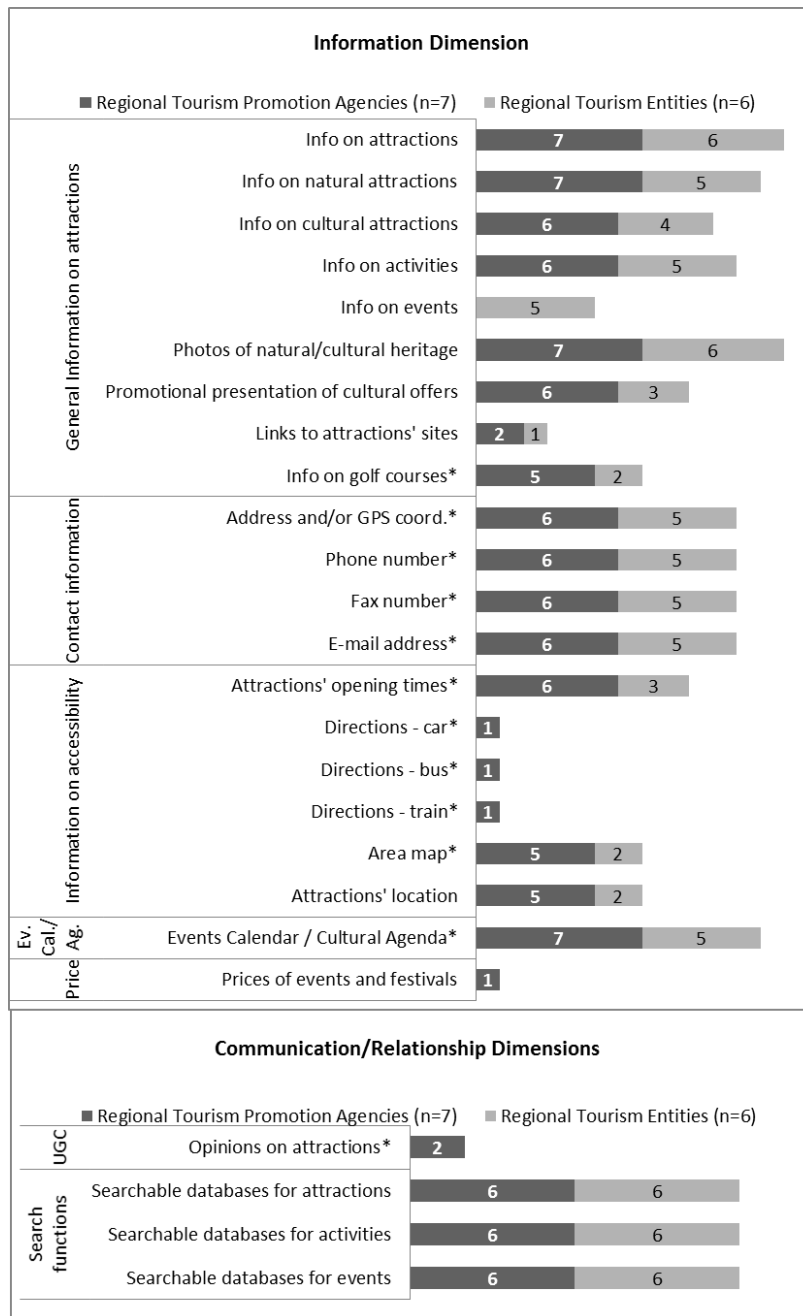
In the attractions' component, the relative weight of the information dimension is overwhelming, accounting for 21 out of the total 25 functionalities of this destination component (Figure 7.1).

The four remaining functionalities appertain to the communication/relationship dimension, since no transactional tools were found. There is a considerable number of platforms with several information on attractions, including contacts, and offering the possibility to search attractions using different criteria. However, only few platforms offer information on transportation accessibility and prices, as well as the possibility of sharing opinions on attractions.

As to eventual discrepancies between RTPAs and RTEs platforms within the information dimension, no great differences were found. The only exception is the surprising absence of functionalities related to 'information on events' in RTPAs' platforms, which were found in five of those appertaining to RTEs (however, this result must be considered with care, since some DMOs may integrate information on events in functionalities related to activities). Concerning the communication/relationship dimension, only two platforms - both



from RTPAs - held one single UGC tool. Transactional functionalities on attractions, although found in some literature, are not identified in any of the regional DMO websites.

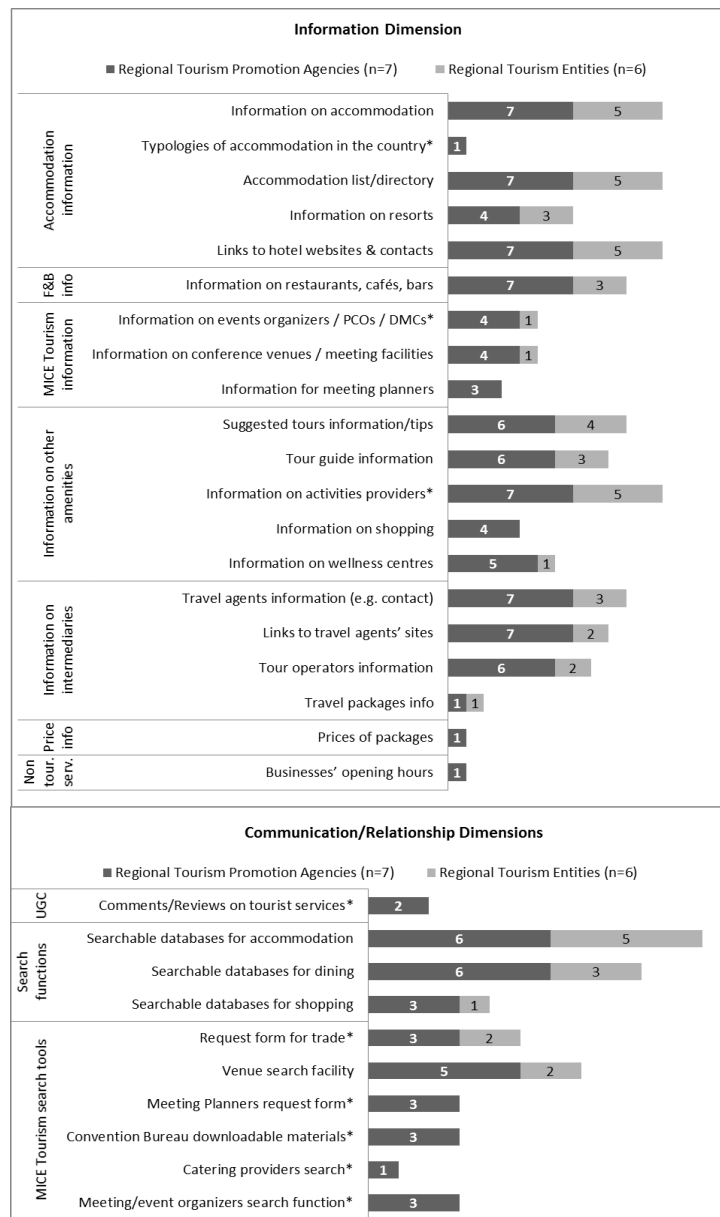


Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

**Figure 7.1 - Number of regional DMO platforms with attractions-related functionalities**

Although amenities are one of the components most likely involving the need of transactions, the platforms also lack transactional functionalities on this component. As

depicted in Figure 7.2, among the total number of 30 functionalities identified in this component, 20 are informational and the remaining 10 communicational/relational.



Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

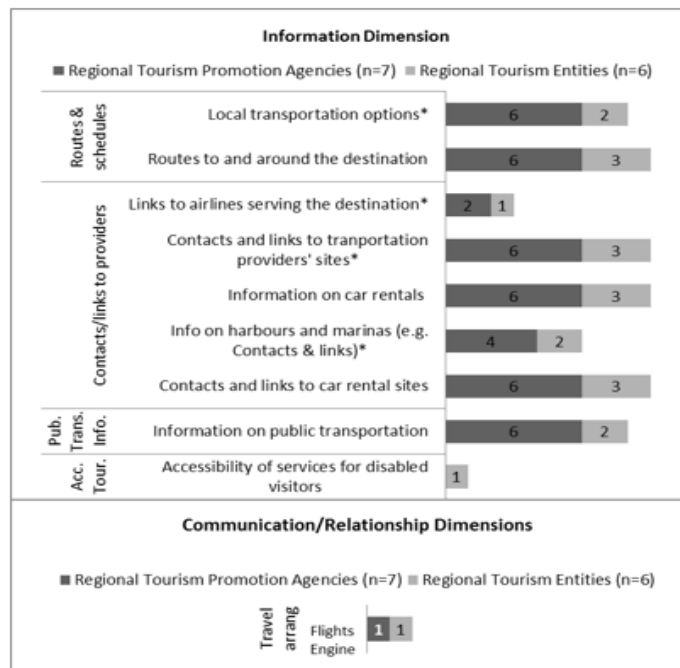
**Figure 7.2 - Number of regional DMO platforms with amenities-related functionalities**

The results highlight a considerable number of platforms delivering information on some amenities – accommodation, Food & Beverage (F&B) facilities, travel agents and activity providers – and opportunities for searching accommodation and F&B facilities. In contrast, few platforms deliver information on Meeting, Incentives, Conventions and Exhibitions (MICE) and, similarly to what happens in attractions, few provide information on prices and

offer UGC opportunities associated with amenities. The main differences between the two types of platforms seem to be a more diversified scope of information contents in RTPAs platforms. The discrepancy in terms of the number and variety of functionalities is even higher within the communication/relationship dimension, being 10 of them identified in RTPAs' platforms and only 5 in those appertaining to RTEs. RTPAs' platforms also provide more sophisticated functionalities, such as those enabling UGC. Although most of the research analysed in literature review refers to a little number of communication/relationship functionalities within amenities, rather focusing on information and transactions (Table 7.2), this is not reflected in the content analysis, where a considerable number and diversity of communication/relationship tools were found. Noteworthy, there is also a contrast between the relatively large number of analysed studies addressing transactions regarding amenities and the total absence of these tools in the Portuguese websites.

Access is the least represented component, accounting for only 10 functionalities (Figure 7.3). The low diversity of such functionalities is also noticeable, since 9 of them are informational and only one is communicational/relational. Also, unsurprisingly, the insular regions' platforms tend to have more information on access to/from and around their territories. Moreover, the only communication/relationship tool identified in this component – 'flight engine' - is only available in both of Madeira's official destination platforms.

The most frequently found access functionalities are related to contacts, routes and schedules. The higher proportion of access-related contents in RTPAs' platforms is probably related to the international scope of their marketing efforts. Even though this is the least represented component both in the literature and in the analysed websites, the variety and frequency within all the three dimensions found in the empirical study was much lower than in the literature.



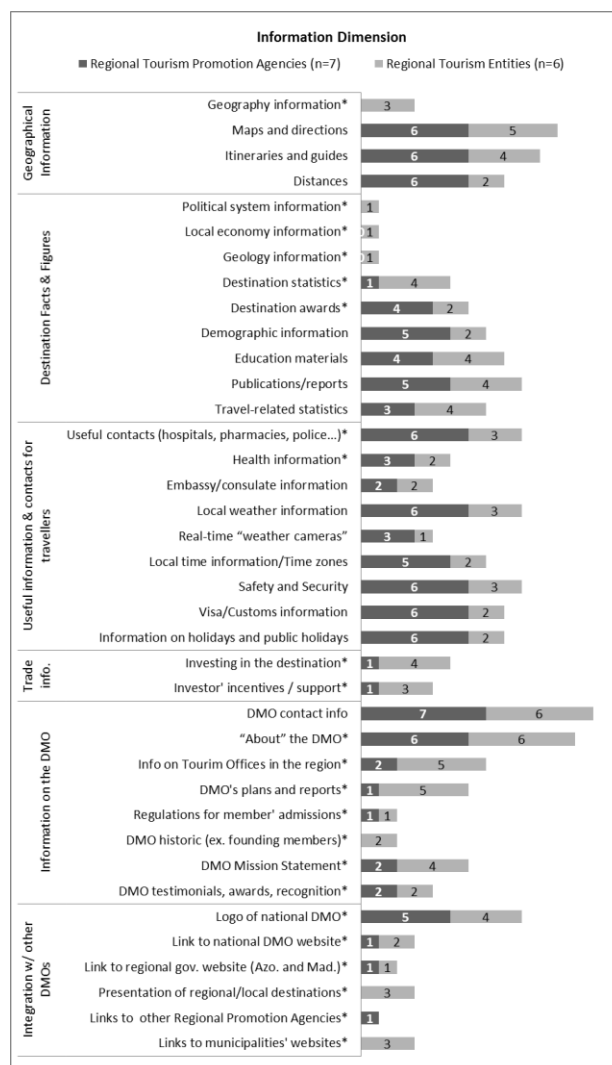
Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

**Figure 7.3 - Number of regional DMO platforms with access-related functionalities**

Ancillary services are the component accounting for the larger number of functionalities available in the Portuguese regional DMO platforms (n=52). This preponderance (Figure 7.4) might be explained by the fact that ancillary services are mostly - if not totally - provided by DMOs, the same entities that develop and manage destination portals. The inherently non-commercial nature of ancillary services has probably contributed to the absence of transactional tools in this component. Certain functionalities are already present in most of RTEs' and RTPAs' platforms, such as some related to geographical information - 'maps and directions' and 'itineraries and guides', some information on the DMO and others that enable to download materials (e.g. brochures, postcards, wallpapers or maps).

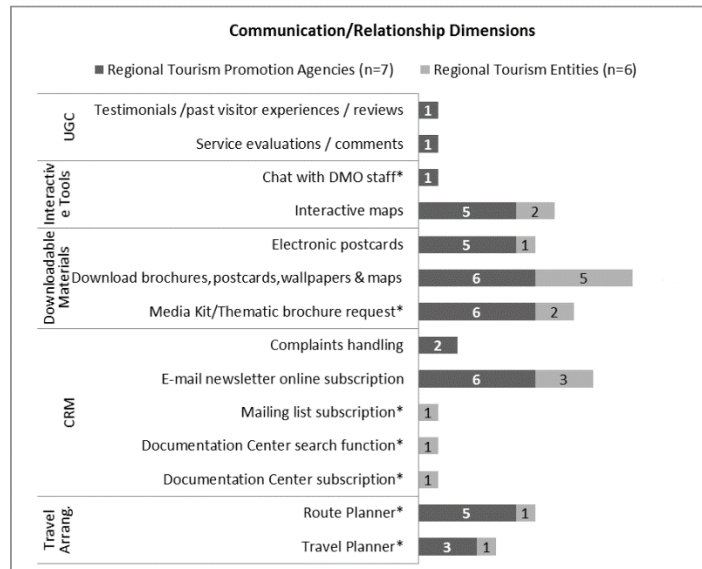
Regarding differences between the two types of analysed platforms, the pattern observed within the information dimension is inverse to that identified in the access component. Indeed, while most of the 38 informational functionalities were found in RTEs' platforms (with the single exception of 'links to other region / promotion agencies'), RTPAs' platforms did not hold seven of them. Among such functionalities are general destination contents, such as 'geography information' and 'political system information' of destination's facts and figures, which are more common in traditional DMOs such as the Portuguese RTEs.

However, there is a higher prevalence of the ancillary services' communication/relationship dimension in RTPAs' platforms. This reinforces the relevant role of RTPAs' platforms in attracting tourists, which encourages their managers to adopt more sophisticated and interactive tools than those conveyed by the more conservative RTEs platforms. Noteworthy is also the scarce overall number of DMO regional platforms that provide tools assisting tourists' travel arrangements. Indeed, only a half of the analysed platforms (n=6) included a route planner and only four of them conveyed any sort of travel planner. The main difference between the literature review and the empirical content analysis in this scope is that, whilst ancillary services is the second least mentioned component in the literature - only surpassing 'access' - it is the most represented one in the analysed websites.



Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

**Figure 7.4 - Number of regional DMO platforms with ancillary services-related functionalities (continues)**

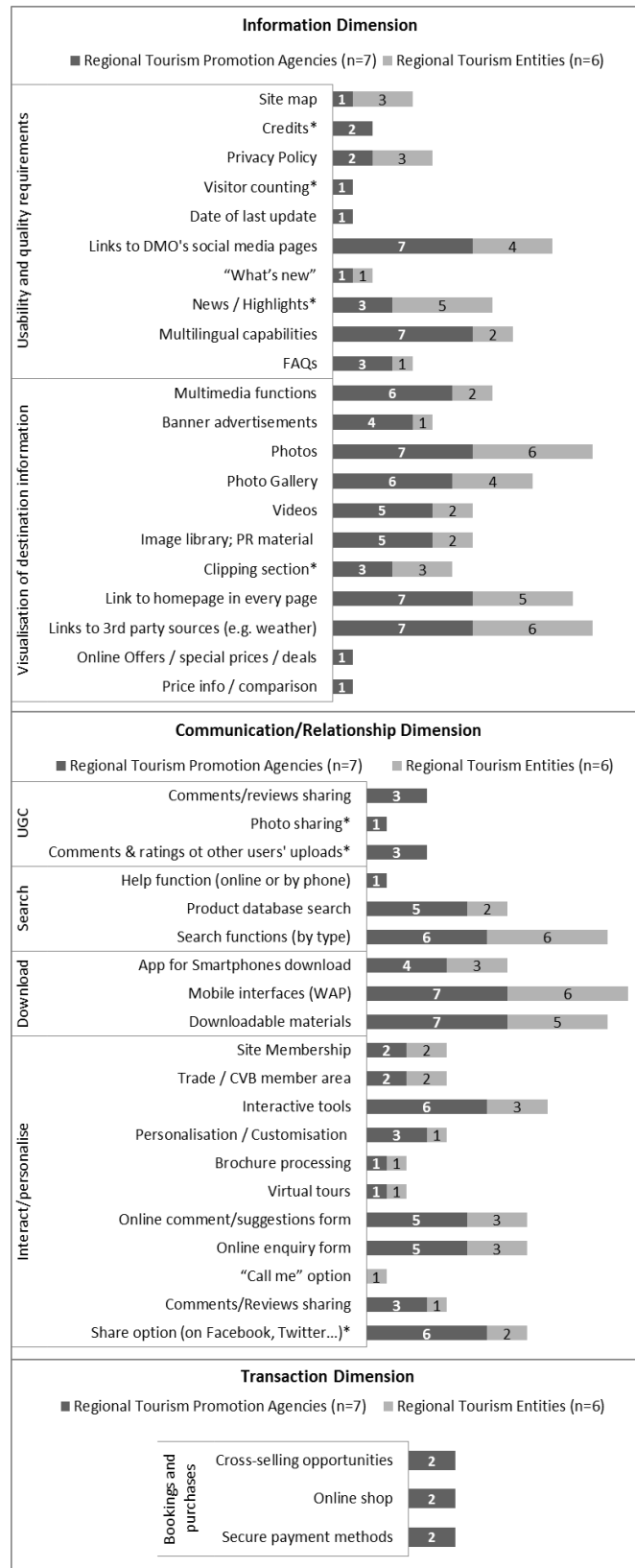


Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

**Figure 7.4 - Number of regional DMO platforms with ancillary services-related functionalities (continuation)**

As previously discussed, CGR functionalities do not relate to any destination component in particular, consisting of technical requisites enabling the visualisation of information and enhancing an information system's usability and quality. As Figure 7.5 illustrates, a total of 44 CGR functionalities were found in the empirical analysis, of which 21 are informational, 20 communicational/relational and only 3 transactional. Some information and communication/relationship functionalities are present in most of both types of platforms, such as 'links to DMOs' social media pages', 'photos', 'photo gallery', 'links to homepage in every page', 'links to third party sources' and, similarly to what happened in some destination components, some search and download functionalities - 'search functions by type', 'mobile interfaces' and 'downloadable materials'.

RTPAs' platforms are more likely to provide a higher and more diverse set of CGR functionalities than RTEs' platforms. Regarding the information dimension, 5 of the 21 functionalities were encountered exclusively in RTPAs' platforms and any was exclusively found in RTEs' platforms. The same pattern was observed within the communication/relationship dimension, in which four functionalities were found exclusively in RTPAs' platforms, while only one – 'call me option' - was exclusively found in RTEs' platforms alone. Finally, the three transactional tools are also conveyed by two RTPAs' platforms.



Note: \* Functionalities that emerged only from the content analysis and were not found in the literature review

**Figure 7.5 - Number of regional DMO platforms with CGR-related functionalities**

Table 7.8 summarises the outcomes of the empirical study, showing that almost no transactional tools are available to users in any of the regional DMO platforms. The transaction dimension was only detected in two RTPAs' platforms in the CGR component. This means that these platforms hold transactional capabilities but not applied to any service or product.

The communication/relationship dimension includes a broad array of functionalities, ranging from more traditional tools (communication) to more complex, dynamic, and sophisticated ones (relationship). Although most of the analysed platforms convey at least one of such functionalities - mostly merely communicational – within each destination component, only two of them have any sort of communication/relationship tools appertaining to the access component.

The information dimension was the most predominant in each of the analysed websites. Informational content is only absent in the access component in two RTE's platforms, probably because their target is the domestic market, which does not require as much information on this component as the foreign market.

**Table 7.8 - Number of Portuguese Regional DMO's platforms with functionalities related to each of the destination component**

Destination Component	Website Dimension	Regional Tourism Promotion Agencies (n=7)		Regional Tourism Entities (n=6)	
		n	%	n	%
		Attractions	Information	7	100%
Communication/Relationship	6		86%	6	100%
Transaction	0		0%	0	0%
<b>Total number of websites referring the Attractions component</b>		<b>7</b>	<b>100%</b>	<b>6</b>	<b>100%</b>
Amenities	Information	7	100%	6	100%
	Communication/Relationship	6	86%	5	83%
	Transaction	0	0%	0	0%
<b>Total number of websites referring the Amenities component</b>		<b>7</b>	<b>100%</b>	<b>6</b>	<b>100%</b>
Access	Information	7	100%	4	67%
	Communication/Relationship	1	14%	1	17%
	Transaction	0	0%	0	0%
<b>Total number of websites referring the Access component</b>		<b>7</b>	<b>100%</b>	<b>4</b>	<b>67%</b>
Ancillary Services	Information	7	100%	6	100%
	Communication/Relationship	7	100%	6	100%
	Transaction	0	0%	0	0%
<b>Total number of websites referring the Ancillary Services component</b>		<b>7</b>	<b>100%</b>	<b>6</b>	<b>100%</b>
CGR	Information	7	100%	6	100%
	Communication/Relationship	7	100%	6	100%
	Transaction	2	29%	0	0%
<b>Total number of websites referring the CGR component</b>		<b>7</b>	<b>100%</b>	<b>6</b>	<b>100%</b>



These results suggest that the Portuguese regional destination platforms are predominantly informative and do not allow users to engage in more dynamic, interactive and personalised tasks, such as transactions or content customisation. Therefore, only considering the consumer-facing functionalities sought in the content analysis, the Portuguese destination platforms still are within the paradigm of the relatively informative and somewhat communicational web and far from the complexity and sophistication inherent to DMSs.

The comparison of functionalities identified in both types of Portuguese DMO regional platforms indicates that those appertaining to the RTPAs are more diversified, sophisticated and interactive. Although this is more evident in the communication/relationship dimensions, it is also noticeable in the information dimension, where it would be expected that RTEs' platforms would prevail.

Therefore, although the RTPAs' platforms cannot be considered DMSs because they are only platforms rather than networks of collaboration within destinations, the RTPAs have more in common with the advanced systems than those appertaining to RTEs, which are mostly informational and communicational platforms.

## **7.5 Conclusions**

The increasing competition among destinations has led DMOs to improve their official destination platforms. DMSs promise countless benefits to DMOs in terms of coordination as well as to destination suppliers regarding disintermediation and global visibility. DMSs also permit tourists to get information on the diverse features of the whole destination, as well as to search and process all their travel arrangements through only one official destination platform (Bédard & Louillet, 2008; Buhalis & Law, 2008; Buhalis & Spada, 2000; Estêvão et al., 2012a; Guthrie, 2008; Miralbell et al., 2008; Pechlaner & Raich, 2002). However, only some destinations have been able to successfully develop such systems because they require strong leadership and vision of DMOs as well as high coordination and cooperation levels between destination suppliers, for example, in updating information (Guthrie, 2008; Ndou & Petti, 2007; Pechlaner & Raich, 2002; Sigala, 2013).

Despite the potential advantages assigned to DMSs one of the main problems is that the boundaries that differentiate them from other destination platforms remain unclear, namely regarding the functionalities that characterise them (Buhalis, 2003; Inversini, 2010; Pechlaner & Raich, 2002; Pollock, 1995; Rita, 2000; Sigala, 2013; Sussman & Baker, 1996;

Wang & Russo, 2007). This article presents relevant conclusions and both theoretical and practical contributions in this scope.

Regarding theoretical contributions, the paper is innovative since it provides a comparison between functionalities of DMSs and other platforms, based on an extensive review of literature encompassing DMS-specific and DMS-nonspecific sources, analysing the references made to each kind of functionalities in these sources. The identification of functionalities made, provides a clarification regarding the differences between both the scope and the specific functionalities of DMSs and those of traditional official destination platforms.

The extensive review of the literature made in the present study, considerably corroborates some attempts to define DMS-nonspecific platforms of other researchers (Buhalis, 2003; Buhalis & Spada, 2000; Inversini, 2014; Morrison, 2013; Pollock, 1995), since it suggests that in the DMS-nonspecific platforms there is a major incidence of information or communication/relationship functionalities. Moreover, it goes even beyond suggesting that this happens in all destination components (attractions, amenities, access and ancillary services) and CGR. It also suggests that in DMS-specific platforms there is a prevalence of information functionalities over other functionalities in most of the destination components and CGR. Furthermore, the present research, through the extensive literature review made, provides empirical evidence to what has been previously argued by other researchers (Buhalis, 2003; Buhalis & Spada, 2000; Inversini, 2014; Pollock, 1995), since it reveals that DMSs tend to have more transactional functionalities than DMS-nonspecific platforms. In the present study this was mainly noticed on CGR.

The paper also provides important practical contributions to managers of DMOs and DMSs since, providing a detailed identification of functionalities of DMSs based on the extensive review of previous research, it provides insights on important functionalities to consider when creating this kind of platforms. A special contribution of the paper is the identification of functionalities to improve the integration of the tourism supply in DMSs.

Moreover, it identifies important guidelines to the Portuguese regional DMO managers. Considering the results of the content analysis performed on Portuguese regional DMO platforms, at the level of each destination component and CGR, some similarities exist between RTEs' and RTPAs' platforms. There is a predominance of functionalities within the information dimension, an almost total absence of transactional tools and a relatively low level of complexity and interactivity of functionalities. Access may be the exception because

it is scarcely represented in both the information and communication dimensions, meaning that both types of platforms may be disregarding this essential destination component in their platforms. Therefore, results of the content analysis suggest that none of the Portuguese regional DMO platforms engage in the transaction of tourism services nor hold dynamic relationship functionalities, which are often attributed to DMSs.

In a more detailed analysis, although neither the RTEs' platforms or the RTPAs' platforms might be considered DMSs, the former have more similarities to DMSs regarding the higher variety of stakeholders (e.g. suppliers, investors) and the diversity of themes they address, while the latter have more resemblances to DMSs concerning the improved sophistication and interactivity of the functionalities they convey to tourists. The empirical analysis suggests that Portuguese regional DMOs should upgrade their platforms by introducing and, in some cases, reinforcing, flexible and interactive functionalities that can best meet the needs of individual tourists. Moreover, due to the absence of transactional tools enabling e-commerce, regional DMOs should consider their implementation if they are to assist visitors to plan their stays.

One of the major limitations of the present study is that the set of categories used in the content analysis of the empirical study emerges only from literature review and did not enable to identify a comprehensive set of functionalities of DMSs, due to the heterogeneity regarding objectives and levels of detail inherent to the research analysed. To avoid such limitation and further advance research on the identification of functionalities of DMSs, it would be of utmost importance that content analysis of DMS platforms were carried out in future studies. Another limitation is the geographical scope of the empirical study, which is restricted to one country. Undertaking content analysis of platforms of regional DMOs of other countries would also permit to identify the similarity level that these platforms, in different countries, have with DMSs.

This paper was one of the first attempts to systematically compare the functionalities of DMS and those of other DMO websites as stated in the literature. Future studies should be undertaken to compare the functionalities of these two types of destination platforms, carrying out empirical studies based on content analysis of platforms at an international level.

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## CHAPTER 8

### **Destination Management Systems: Key distinctive functionalities aimed at visitors and destination suppliers**

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#### **Reference**

Estêvão, J. V., Carneiro, M. J., & Teixeira, L. (--). Destination Management Systems: Key distinctive functionalities aimed at visitors and destination suppliers. *Journal of Global Information Technology Management* (undergoing review).

## 8. Destination Management Systems: key distinctive functionalities aimed at visitors and destination suppliers

### Abstract

Destination Management Organisations (DMOs) have been taking advantage of technologies in order to manage destinations in a more successful way. Previous research on tourism destination online platforms has proclaimed Destination Management Systems (DMSs) as their most advanced version, mostly by giving visitors the ability to accomplish most of their travel arrangements through a reliable official portal integrating several destination components. However, most of the academic research on DMSs is conceptual and/or lacks a holistic perspective of the functionalities that characterise such systems and does not provide an overview of the functionalities that differentiate these systems from more traditional DMOs' platforms. The present paper intends to contribute to fill these gaps, namely to identify the functionalities that differentiate these systems by confronting previous research that focus on potential DMSs' functionalities with the results of an empirical study encompassing a content analysis of 23 DMSs and interviews with both DMSs' developers and DMO officials. The findings suggest a considerable mismatch between the functionalities conveyed by existing DMSs and previous research either theoretical or empirical that rely on the analysis of few DMSs. The paper ends with conclusions and suggestions regarding the development of DMSs.

**Keywords:** Tourism destination, Internet, DMO, Destination Management Systems, functionalities, technology.



## 8.1 Introduction

In most tourism destinations around the world there are entities in charge of the internal coordination of the suppliers of services for visitors and responsible for the promotion of tourism products of the destination (Morrison, 2013; Sheehan, Vargas-Sánchez, Presenza, & Abbate, 2016). These entities, usually designated as Destination Management Organisations (DMOs), can be public, private or public-private organisations, depending on the relevance of the tourism sector in a certain community, as well as on the tradition and patterns of the public sector's involvement in the economy (Hall, 2008; Hristov & Ramkissoon, 2016). Public-private and private sector DMOs are often membership organisations, integrating individual tourism suppliers that are also involved in the decision-making processes (Bornhorst, Ritchie, & Sheehan, 2010). Such entities are usually required to pay a regular membership fee and have a set of benefits and duties towards the DMO (Kilipiris & Dermetzopoulos, 2016). Their most common territorial and administrative scope is local, regional and national, although DMOs can emerge at other levels, such as: sub regional level (e.g. counties, in the case of the US); state level; or even international level (e.g. when a certain attraction - usually natural - is shared by two or more countries, as was the case of the Constance Lake, shared by Germany, Austria and Switzerland) (Holloway, 2004; Volgger & Pechlaner, 2014).

Particularly since the 1990s, the acceleration of the globalisation process brought major changes and challenges to tourism destinations. The dramatic increase in transportation connections at lower prices, the advent of the Internet, which quickly became the major disseminator of information in the tourism industry, as well as the fact that geopolitical barriers constraining international tourism flows were dissolved or attenuated, led to an unparalleled increase in destinations competition to attract visitors (Crouch & Ritchie, 1999). Therefore, local and regional DMOs, which were previously used to focus on the more immediate and ephemeral marketing and information provision dimensions, realised the need, to thrive in the globalised market, to have a more active and leading role regarding the internal coordination of the destination and the definition of tourism development strategies (Hall & Page, 2003). Shortly after its emergence, the Internet quickly became the main vehicle of most DMOs marketing initiatives (Buhalis, 2003). Indeed, official destination portals, owned and managed by DMOs, allowed the marketing efforts of the destinations to reach a much wider audience, at a relatively lower cost, in a more dynamic, attractive and interactive approach, than traditional promotional campaigns (Palmer & McCole, 2000).

Nonetheless, the overwhelming majority of these online platforms reflected the primacy given by DMOs to information provision and promotion (Wang & Fesenmaier, 2006).

In the mid-90s, a short number of DMOs understood the potential of the Internet to assist DMOs in their increasing strategic and coordinating role, as well as in fostering cooperation between destinations' local tourism businesses (Frew, 2000). These led to the emergence of a new generation of online platforms – called Destination Management Systems (DMSs) – whose designation reflected their broader scope of functions, which encompassed the assistance to destinations' internal coordination and management efforts (Ndou & Petti, 2007). Thus, while common destination portals were essentially publishing tools, with databases where information on products and attractions were inserted and updated in the Content Management Systems (CMSs) by the DMO alone, DMSs promote collaborative networks linking key destination players (Stienmetz & Fesenmaier, 2013).

Although DMSs have been extensively addressed in previous studies, the concept itself never gained consensual recognition, partially because the functionalities that characterise and differentiate this kind of platforms were not clearly identified. This may, in turn, have derived from some gaps identified in the existing literature on DMSs, namely: (i) the concept of DMS was coined by the academia several years ago, but no clear nor systematic specification of the functionalities that DMSs convey was attempted, thus blurring its distinctive factors in relation to common destination websites (Estêvão, Carneiro, & Teixeira, 2014; Sourak, 2015); (ii) the bulk of research on DMSs was conducted in the late 90s and early 00s (Law, Qi, & Buhalis, 2010) and, therefore, most of it does not take into account the overwhelming changes that more recent online platforms have brought to tourism in general, to the role of DMOs and to DMSs in particular; (iii) the overwhelming majority of previous research on DMSs lacks a holistic approach to their functionalities, usually addressing isolated features of these systems (e.g. transactions) or exploring a single or small number of DMSs (Buhalis & Spada, 2000); (iv) no previous attempts to empirically analyse and compare a considerable number of DMSs in different parts of the world regarding functionalities were made.

The present work aims at contributing to fill these gaps and provide valuable insights and guidelines to the development and management of successful destination platforms in the future, more specifically to identify the relevant DMSs' functionalities which differentiate these systems from the common DMO websites. Specifically, this article has two main goals. The first is to identify potential functionalities of DMSs based on an extensive literature review on DMSs. The second is to examine which functionalities are integrated in

the main DMSs of DMOs located in Europe and North America, the two world regions with more successful DMSs, through a content analysis of these DMSs, complemented with a set of interviews conducted with people working in many of these DMOs.

The introduction will be followed by a literature review focusing on potential functionalities of DMSs that may characterise and distinguish these systems from other destination online platforms. The methodology section will describe the main steps undertaken in the twofold empirical analysis underlying this article – the content analysis of the DMSs and the interviews with staff. The presentation and discussion of the results of the empirical study will follow, while the last section summarises the main conclusions of this research, identifying its main theoretical and practical implications for destination managers.

## **8.2 Destination Management Systems**

As previously mentioned, the information about existing DMSs is very scarce in several domains, namely on the identification of their key functionalities. A literature review on the role of DMSs and on their potential functionalities will be carried out, in order to have deeper insights concerning the functionalities that characterise this type of systems and differentiate them from other DMO websites.

### **8.2.1 The role of DMSs**

In past research on DMSs, the lack of agreement on what their role and scope should be, as well as the relative vagueness regarding the identification of the functions they are supposed to hold, are perhaps the greatest barriers to the analysis and knowledge of such platforms. Moreover, the concept of DMS was established at the beginning of the Internet era by Pollock (1998), when neither tourism-related user-generated-content (UGC) platforms, such as *TripAdvisor*, nor the global online travel agents (OTAs), had emerged. Therefore, the understanding of what a DMS is, including the key functionalities of these systems, has not properly accompanied the big changes that have transformed the way visitors use the Internet to search for destinations, plan their stays and book their services (Bigi & Bonera, 2016).

Several researchers have been trying to identify potential functionalities of DMSs, but it is still difficult to know those which really characterise and distinguish them from other online platforms (Locatelli, 2016; Sigala, 2009; Wang & Russo, 2007). The term DMS in itself

suggests that these systems are not simply supposed to convey information on the destination aimed at potential visitors, but rather to play a part in the destination management. While most traditional destination websites focus on providing information to users, DMSs are primarily concerned with assisting the respective DMOs and destination-based attractions and business to coordinate amongst themselves (Ndou & Petti, 2007). While traditional destination websites tend to turn their full attention and efforts to visitors, DMSs differ from them by focusing on the optimisation of the internal processes and relations within the destination's actors, alongside the typical functions of DMO online platforms aiming to attract visitors and helping them plan their travel experiences (Inversini, Cantoni, & De Pietro, 2014). Thus, while traditional official destination websites' contents are often inserted and updated only by the respective DMO, DMSs encourage and sometimes demand destination-based businesses and attractions to use the system's extranet to insert information about their own services (Bédard, Louillet, Verner, & Joly, 2008). Likewise, especially in regional or national DMSs, by using its intranet, when the staff of the most peripheral tourist information office inserts information about a small event or attraction, it immediately gains further visibility in a regional or national platform (Guthrie, 2011).

Authors such as Sigala (2009, 2013, 2014) argue that the most important elements distinguishing both types of platforms lie in the tools that DMSs provide to DMOs, enabling them to maximise the business-to-business (B2B) internal coordination between destination-level stakeholders. Additionally, DMSs enhance the business-to-customer (B2C) informational dimension of front-end websites by offering more dynamic and interactive set of functionalities. Hence, regarding B2C efforts, considerable differences between DMSs and traditional destination websites can be identified. Thus, while the latter privilege informing tourists as a means to allure them to the destination (Wang & Russo, 2007), the former are as focused in informing potential visitor as in providing them the full array of travel planning tools, including bookings (Buhalis & Law, 2008).

### **8.2.2 DMSs' functionalities**

Wang and Russo (2007) suggest that DMSs should encompass four dimensions of functionalities in order to be considered as such: informational, communicational, relational and transactional. Such dimensions have been considered in previous research, namely in the evaluation of tourism destination websites and DMSs (Estêvão, Carneiro, & Teixeira,

2012; Estêvão, Carneiro, & Teixeira, 2012a; Wang, 2008; Wang & Russo, 2007). However, previous research provides only a partial perspective on the functionalities of these systems and leads us to further analyse and discuss the functionalities that really characterise DMSs and that differentiate these systems from more traditional DMSs. This analysis and discussion will be presented next.

The information dimension offers a number of functionalities that seems to be common to both DMSs and every other type of destination online platform. Although having varying degrees of detail and sophistication, every destination website aims at informing tourists about its attractions, services, access routes and other relevant aspects. Clearly, this dimension does not distinguish DMSs from non-DMSs platforms. Indeed, most traditional DMO websites are but informational, resembling online brochures conveying one-direction and relatively static data about the destination. DMSs differ from these websites by emphasising the other three dimensions (Wang, 2008).

The communicational dimension comprises a set of functionalities that enable prospective tourists to engage in a dialogue with DMOs. Although communicational functionalities may also exist in common DMO websites, they are often much less sophisticated than those found in DMSs (Egger & Buhalis, 2011; Xia, Zhang, & Zhang, 2018). Thus, while most DMO platforms may have comment boxes generating e-mail messages subsequently responded by DMOs staff, DMSs seem to convey more interactive tools enabling real time communication such as chatrooms offering immediate assistance to users (Ammirato, Felicetti, Della Gala, Raso, & Cozza, 2018). Early literature on DMSs suggests that communication tools should not be exclusively focused on visitors, but also encompass functions seeking to enable interaction between attractions and other destination-based businesses (Buhalis, 2003).

The relationship dimension includes a wide range of functionalities, such as UGC, member areas giving users the possibility to customise and personalise contents, as well as opportunities of co-creation of unique experiences using interactive Travel Planners. The development and management of search tools usually demand applying customer relationship management techniques unknown to local or regional DMOs, creating challenges to the few that have tried to implement them (Pike, Murdy, & Lings, 2011). Literature covering relationship functionalities stresses not only their role enhancing the visitors' experience, but also their relevance as a means to foster collaborative practices between destination-based stakeholders (Sigala & Marinidis, 2010).

Functionalities representing the transactional dimension enable users to book and purchase a wide range of destination products without leaving the destination web platform (Collins & Buhalis, 2003; Sigala, 2010). Although common destination websites may hold a limited number of transactional functionalities in order to facilitate visitors' travel experiences (e.g. destination card), previous studies argue that DMSs actively seek to enable users to book and buy the widest range of destination services as possible (Sigala, 2009; Wang, 2011).

Literature also seems to suggest that, in the DMS context, the transactional functionalities' main goal is not simply to facilitate travel arrangements but, to a larger extent, to offer destination suppliers a more profitable and direct distribution channel (Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2017). It seems evident that the ultimate goal behind DMSs' transactions lies in diminishing the usual dependence of destinations on exogenous intermediaries such as tour operators or online travel agents (Sigala, 2014).

The possibility given to tourists to search for services' availability, and to book and buy them without ever leaving the official destination portal, is perhaps the most distinguishing and revolutionary feature of DMSs. According to Buhalis (2003), DMSs not only allow destinations to provide up-to-date and dynamic information, promoting an interactive relationship with their customers, but also enable them to engage in commercial activities. Therefore, to some destinations, DMSs seemed to be a panacea to their traditionally excessive dependence on international tour operators and other external distribution channels, which charged considerable commissions to tourism businesses, preventing thus the destination to benefit from a relevant portion of the amount paid by visitors (Estêvão, Carneiro, & Teixeira, 2012a). Ireland was one of such cases, having developed one of the most successful national DMSs globally - Gulliver.ie - with a clear focus on disintermediation through its own booking engine. This system was ultimately dismantled in 2013 under the pressure of American tour operators, which considered it a threat to their traditional prevalence concerning travel intermediation to Ireland.

Nevertheless, the concept of DMS also suffers from vagueness regarding the transactional functions. In fact, most DMSs' definitions state that these platforms often hold transactions, without ever suggesting if this is or not a prerequisite for a destination system to be considered a DMS. For instance, while many definitions of DMS refer to their transactional dimension (Frew & Horan, 2007; Pollock, 1995), Brown (2004) suggests that most British DMSs were non-commercial and publicly funded platforms. This author states that only a small number of DMSs were commercial because they required the payment of a fee to members, while an even smaller number of commercial DMSs held transactions.

Besides, most DMSs' definitions lack clarity regarding the boundaries of their transactional dimension by not clarifying if the system must enclose the whole set of e-commerce tools or rather facilitate bookings giving access to suppliers' own booking engines (Brown, 2004; Guhtrie, 2011; Sigala, 2014). The fact that many of the booking engines available in the destinations' platform are, in fact, owned and managed by a third-party entity adds even more complexity regarding the definition of DMS under the transactional perspective.

In any type of tourism destination online platform, most functionalities included in the above discussed dimensions are related to components of tourism destinations, such as those outlined by Cooper, Fletcher, Wanhill and Fyall (2008): (i) attractions, which include natural and man-made, tangible and intangible, as well as permanent or ephemeral elements of a destination capable of alluring visitors (e.g. museum, event, beach); (ii) amenities, comprised by tourist services, such as guided tours, and other services susceptible to be used by visitors and to facilitate their stay at the destination (e.g. hotels, restaurants); (iii) access to and from the destination both in and around it, that includes not only the means of transportation available but also routes and transportation infrastructure; (iv) ancillary services, predominantly non-profitable, provided by DMOs to assist tourists, usually encompassing information provision, either in tourism information centres, through signage or maps. However, there are some functionalities – complementary general requirements (CGR) -, that are not related to any destination component in particular, but that allow users to perform different operations (e.g. search or booking engine) or facilitate navigation (e.g. site map or interactive tools).

The empirical study will provide relevant information on the functionalities that prevail in existing DMSs, as well as the types of destination components they are related to. Such findings intend to shed light into the functionalities that characterise DMSs, distinguishing them from other DMO websites, and that may be considered when developing such systems.

## **8.3 Methods of the empirical study**

### **8.3.1 Data collection**

#### **8.3.1.1 Data collection methods**

Considering the aim of the present research, the empirical study combines two approaches to collect the data. Firstly, a content analysis of a set of selected DMSs was carried out to identify their functionalities. However, since these systems have a wide range of functionalities beyond those aimed at tourists (e.g. those only accessible to suppliers or to the DMOs' staff), that are not visible to the majority of the persons, this analysis was also complemented by data collected in a set of in-depth interviews to DMSs' technology providers and to DMO officials in charge of the DMSs whose functionalities had been previously investigated. This approach was adopted to identify functionalities that would not have been possible to be directly observed by the researcher, given that they are only available to DMO's affiliate members. In-depth interviews also aimed to understand the reasons behind the choice to adopt some functionalities over others. Since most of the successful DMSs are from European and North American destinations, this study focuses on the analysis of regional DMSs of these two world regions.

##### *8.3.1.1.1 Content analysis of DMSs' platforms*

The main purpose of the content analysis of DMSs was to analyse the types of functionalities that DMOs have implemented in their DMSs and whether they had implemented specific functionalities often attributed to these systems, such as the transactional ones. To identify these functionalities the researchers explored the DMSs' platforms assuming two different roles: public user without registration and registered user. The analysis was conducted to identify informational, communicational, relational and transactional functionalities, dimensions already identified in the literature review. Considering that some functionalities can have both communicational and relational objectives, these two dimensions were conjointly analysed. It was also examined the destination components to which the functionalities were related to, considering the components previously identified by Cooper et al. (2008) and CGR. The analysis further aimed to detect eventual differences between the European and American DMSs regarding the functionalities they convey.



#### 8.3.1.1.2 Survey of DMO officials and of DMS developers

As previously addressed, a content analysis is useful to identify the set of functionalities of a certain online platform available to all Internet users. However, such method does not shed light on the B2B functionalities of restricted areas of the platform, such as those provided in its intranet and extranet. In the DMS context, the first is usually accessed solely by the DMOs' staff, while the second is only aimed at destination suppliers which are DMO members associated with the DMS (e.g. hotel managers, managers of tourism attractions such as museums).

Considering what was previously mentioned, the interviews to those responsible for the DMOs and to DMSs' developers was aimed to know the functionalities related to the intranet and extranet that the DMS of a specific DMO supplied, thus those mainly used by the DMOs' staff and by service suppliers. The DMO officials and the DMSs' developers were asked to report the functionalities that cannot be accessed by public or registered users. All the interviewees were asked to mention informational, communicational, relational and transactional functionalities. Particularly in the case of DMSs' developers, the interviewees were asked to identify not only the specific DMSs developed by their companies, but DMS platforms in general.

#### 8.3.1.2 Sampling approach of DMSs' developers, DMSs and DMOs

Due to difficulty of identifying the major DMSs' developers worldwide, first, it was decided to include in the sample the DMSs' developer that created *Visitbath*, one the most analysed DMSs still in operation (Estêvão, Carneiro, & Teixeira, 2012; Kalbaska, Jovic, & Cantoni, 2012; Inversini & Cantoni, 2009; Inversini, Cantoni, & Buhalis, 2009), developed for the tourist destination of Bath, in England. This DMSs' developer is the Anglo-Norwegian *New Mind TellUs*, the largest European company specialised in providing DMS solutions to DMOs (Argyropoulou, Dionyssopoulou, & Miaoulis, 2015; Cribley, 2017; Davies, 2013).

To identify other leading firms offering DMSs' solutions, a snowball sampling approach was used, asking the first DMSs' developer interviewed to identify two other DMSs' developers that are considered a reference in this field. The two companies indicated by the *New Mind TellUs*' CEO were the US-based *Simple View* and the Swedish-based *Visit Group*. The same approach was followed with the two companies indicated. During the second interview, *Simple View*'s Director of Business Development, indicated *New Mind TellUs* and *Visit Group* as reference companies. The third interviewee was the CEO and founder of

*Visit Group*, who identified both *New Mind TellUs* and *Simple View* as the two other major players in the field of DMSs' development. The coincident choices of the interviewees provided a robust indicator that the companies mentioned were the most important DMSs' developers. Although only three DMSs' developers were selected to be interviewed, they represent companies with great experience in the development of these systems.

Regarding DMSs, it was considered important to select relevant DMSs that are still in operation. The first DMSs selected to be analysed were two regional DMSs that, similarly to *Visitbath*, were frequently referred in previous research - *QuébecOriginal* and *Visitjersey*. It was also considered appropriate to examine the DMSs developed by the three major DMSs' developers previously identified. However, differences among these three companies regarding the number of previously developed DMSs required different criteria for selecting the DMSs of each company to be analysed. In both cases of *New Mind TellUs* and of *Visit Group*, all the regional DMSs presented in the company's website as show cases were analysed, corresponding to nine in the first DMS and to two, in the second one. Due to the large number of regional platforms previously created by *Simple View*, in this case, the most recently awarded nine DMSs listed in this website's section of awarded DMSs, were examined. A total of 23 DMSs, all appertaining to local or regional DMOs, were, then, selected to be examined.

The 23 selected DMSs were developed by the following companies: (i) ten by *New Mind TellUs* (the *Visitbath* and the other nine DMSs presented in the website's as showcases), all European, mostly Norwegian and British; (ii) nine by *Simple View*, all North American; (iii) two by the *Visit Group*, both Swedish; (iv) one by a DMO in Canada with the technical assistance of the communications company *Bell Canada (QuébecOriginal)*; and (v) another developed by *Zoocha*, a England-based web solutions' provider not specialised in DMSs or destination websites (*Jersey*).

It seemed appropriate to conduct semi-structured interviews with staff members of the 23 DMOs responsible for the 23 DMSs analysed. Therefore, all the 23 DMOs were contacted.

### **8.3.1.3 Administration of the interviews and content analysis process**

As far as the content analysis of DMSs is concerned, since several systems hold functionalities only available to registered users, one of the authors registered in every DMS providing registration. This allowed the authors to test more advanced functions, such as dynamic packaging.

Regarding the interviews, all the representatives of DMSs' developer companies were surveyed via Skype calls and the length of the interviews varied between 45 minutes to 1 hour and 15 minutes. Although all the 23 DMOs responsible for the analysed DMSs were contacted and asked to concede an interview, only eleven of them accepted to participate in the study. When addressing each of those eleven DMOs, the authors specified that, within its staff members, the interviewee should be the most knowledgeable about the history, management and functionalities of the DMS. Hence, the interviewed staff members were, mainly, CEOs, as well as marketing and online services managers. Such as in the case of DMSs' developers, all the interviews were conducted through Skype and their length varied from 40 minutes to 1 hour. All the interviews were saved and subsequently transcribed. Table 8.1 summarises the sample, namely the DMSs studied through content analysis, the DMO officials interviewed, as well as the DMSs' developers interviewed.

**Table 8.1 - Surveyed DMOs and corresponding DMSs' developers**

DMSs' Provider Companies	Destinations	Interviewees' positions in the corresponding DMO	DMSs' B2C Websites
NewMind   Tell Us	Bath (UK)*		visitbath.co.uk/
	Bergen (NOR)*		www.visitbergen.com/
	Costa del Sol (SPA)*		www.visitcostadelsol.com/
	Fjord Norway (NOR)*		www.fjordnorway.com/
	Gjøvik (NOR)	Tourism Office of Gjøvik Region's Web Services Manager	en.gjovik.com/
	Harstad (NOR)	Visit Harstad's Chief Executive Officer	en.visitharstad.com/
	Lillehammer (Norway)	Visit Lillehammer's Web Services Manager	en.lillehammer.com/
	Liverpool (UK)*		www.visitliverpool.com/
	Telemark (NOR)	Visit Telemark's Web Services Manager	www.visittelemark.com/
	Wilshire (UK)	Visit Wilshire's Digital and Online Executive	visitwilshire.co.uk/
SimpleView	Grand Rapids (USA)	Grand Rapids CVB's Marketing Technology Director	www.experiencegr.com/
	Greater Newark (USA)	Greater Newark CVB's Chief Technology Officer	www.newarkhappening.com/
	Lane County (USA)*		www.eugenecascadescoast.org/
	Manitoba (Canada)*		www.travelmanitoba.com/
	Napa Valley (USA)*		www.visitnapavalley.com/
	Pocono Mountains (USA)*		www.poconomountains.com/
	Roanoke Valley (USA)*		www.visitroanokeva.com/
	Utah Valley (USA)*		www.utahvalley.com/
Visit Group	Wilmington (USA)	Greater Wilmington CVB's Director of Marketing	www.visitwilmingtonde.com/
	Gotland (SWE)*		gotland.com/en/
Québec's Ministry of Tourism and Bell Canada*	Skåne (SWE)	Tourism in Skåne's Editor-in-Chief	visitskane.com/
	Québec (CAN)	Ministry of Tourism's Electronic Services Director	www.quebecoriginal.com/
Zoocha*	Jersey (UK)	Jersey Tourism Information Centre's Head of Marketing	www.jersey.com/

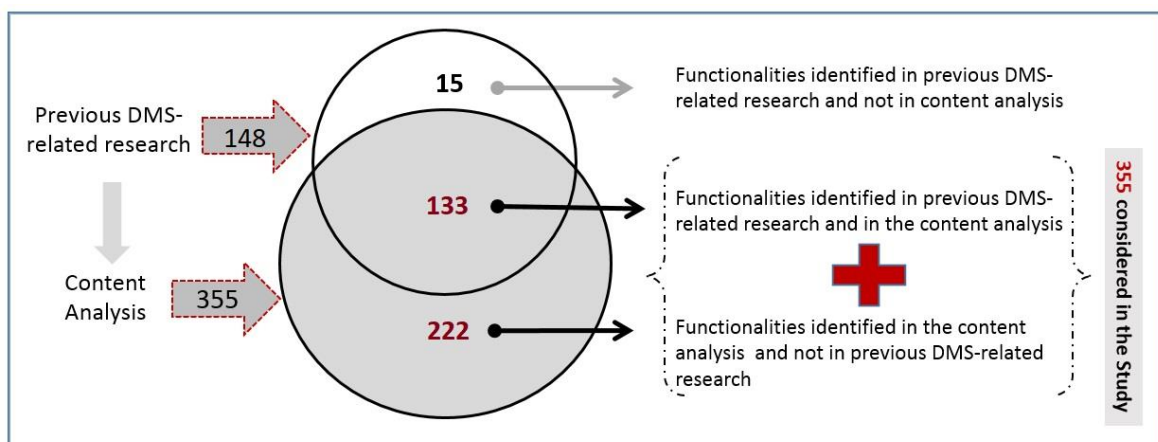
\*Non-interviewed DMSs' developers and DMOs

### 8.3.2 Data analysis

The content analysis was developed considering each functionality as a coding category. A mixed approach, already considered by Creswell (2009) as a useful technique, was adopted, using as bases for analysis, many functionalities already identified in a previous literature review on DMSs (Estêvão, Carneiro, & Teixeira, 2013) but also functionalities that

emerged from the content analysis of the selected DMSs. In order to facilitate the analysis of the functionalities, they were classified according to two criteria. First, the identified functionalities were classified according to the previously discussed framework provided by Wang and Russo (2007), which proposed the following dimensions: (i) informational; (ii) communicational/relational or (iii) transactional. Second, the functionalities belonging to each of those dimensions were grouped according to the above addressed Cooper et al.'s (2008) destination components they related to and to the Complementary General Requirements.

The content analysis was initially based on 148 functionalities previously identified in the literature on DMSs (Estêvão et al., 2014). A total number of 355 functionalities derived from the empirical content analysis of the 23 DMSs (Figure 8.1). However, 15 of those mentioned in the literature were not found in any of the selected platforms. Besides the 133 functionalities identified in the literature and found in the DMSs platforms, a set of 222 new types of functionalities were identified when analysing the DMSs, which constitutes a 167% increment to the ones found in previous literature. Therefore, a total of 355 functionalities will henceforth be considered in this study.



**Figure 8.1 - DMSs' functionalities identified in previous research and in the content analysis**

## 8.4 Analysis and discussion of results

In this section the analysis and discussion are organised around two topics: (i) DMSs' functionalities accessible to all Internet users; (ii) DMSs' functionalities aimed at DMOs' staff (intranet) and affiliated members. While the first topic was exclusively based on the DMSs' content analysis, the second resulted from the in-depth interviews to DMSs' developers and DMO officials.

In order to ensure confidentiality of the interviewees, different codes were attributed to them. Hence, the three DMSs' developers were given the codes D1 to D3, the North American DMO officials' codes range from A1 to A4, while the European DMO representatives were coded from E1 to E7.

#### **8.4.1 DMSs' functionalities accessible to all internet users**

One of the main goals of the present research is the clarification regarding the functionalities that characterise DMSs and that distinguish them from traditional official destination websites. When asked this question, all the three DMSs' developers interviewed agreed that simple brochure websites convey basic listings or tourism businesses, whereas a DMS platform provides a wide variety of tools and features required by tourists when making their travel arrangements. According to all the surveyed DMSs' developers, these complementary functionalities provided by DMSs may include trip planners/itinerary builder tools (allowing the assembling of personalised experiences by users through dynamic packaging), ratings/reviews (either in-house or from third parties, such as *TripAdvisor*), events calendars, interactive mapping, curated social media content, pooling engines that show the prices of different OTAs, as well as access to booking engines. One of the European interviewed DMSs' providers further suggested that the focus of front-end functions is to inspire visitors, helping them plan and book their trips, as well as to share them.

Specifically concerning transaction functionalities, DMSs' either convey their own booking solutions, or provide direct access to the pages of specific suppliers on third party engines such as *Booking* or *Expedia*. All the interviewed DMSs' developers agree that "there is a growing trend to accomplish transactions to visitors via integrations with third-parties, such as hotel booking engines" (online travel agencies or direct-booking engines), attractions ticketing engines and restaurant reservations engines. Searches begin on the DMS, but the transaction takes place on a third-party site. All the surveyed DMSs' developers agree that there has been an increasing move from in-house built booking engines, managed by the DMOs, to services' availability and transactions provided by OTAs, even if displayed in the DMS. When tourists search for accommodation in a specific DMS, several systems present availability and prices in real-time from different online OTAs. They can then compare prices and products from different OTAs and choose the best option.

As referred in the methodology section, the ensuing discussion aims at identifying the functionalities using a content analysis of 23 DMSs. Those same functionalities were grouped and analysed according to both the dimension of the functionality (informational; communication/relationship; transactional) and the destination components (attractions; amenities; access; ancillary services) or the CGR to which the functionality corresponds. A last category was added to the categories of the destination components – CGR – which are not specifically related to any of these components.

The destination component accounting for the highest number of functionalities (33%, n=116) was amenities. Contrastingly, the access component was the least represented in terms of functionalities (12%, n=43). From a total of 355 types of functionalities identified in the content analysis, the majority (68%) are informational, 21% communicational/relational and 11% are transactional. The informational, communicational/relational and transactional functionalities found in DMSs will be discussed in the next sections.

#### **8.4.1.1 Informational dimension**

Being the most traditional and elementary of the four website dimensions proposed by Wang and Russo (2007), it did not come as a surprise that the information functionalities accounted for the highest number of those found through the DMSs' content analysis (68% of all identified functionalities).

The table 8.2 summarises the set of informational functionalities identified in the content analysis. The categories of informational functionalities found in more DMSs are “general information on attractions” (accounting for 9 functionalities conveyed by every analysed DMS), closely followed by “information on accommodation” (with 8 functionalities found in all DMSs). Although other categories may not offer such a variety of functionalities as the two previously addressed, some of them were also conveyed by most DMSs. This is the case of the category other amenities (with its five functionalities represented in more than 85% DMSs), the ancillary services category “geographical information” (including for 3 out of 4 functionalities identified in every DMS) and one CGR category - “visualisation of destination information” – (including four functionalities such as photo galleries and multimedia tools conveyed by every single DMS). These results remark the relevance of these categories of functionalities, suggesting that they should be included in future DMSs.

There are other categories of functionalities, such as “F&B information” that include functionalities represented in most DMSs (e.g. general information on restaurant and bars,

as well as their contacts and addresses), but also others found in very few DMSs – encompassing more specific or varied information on F&B such as listings of catering companies, gastronomic itineraries or wineries. These results suggest that in the F&B information category, there are some functionalities more relevant, corresponding to more general information usually requested by most visitors that should be provided by all DMSs. On the other hand, other functionalities more specifically designed to some market segments should be primarily provided by DMSs that want to appeal to these segments. As expected, the least conveyed categories of informational functionalities appertain to the access component. Next, a more detailed analysis of informational functionalities, related to each of the four destination components and to CGR, is presented.

As far as the information on attractions is concerned, 41 types of functionalities were identified, representing 17% of all those found within the informational dimension. The informational tools conveyed by all DMSs are mostly related to the provision of information on attractions (natural, cultural, events), on accommodation, geography, as well of ideas for activities and tours, news/highlights, maps and directions, photo galleries of attractions and services and cultural/events' agendas.

Regarding the least frequently available individual functionalities, it seems noteworthy that only 9% provide links to attractions' blogs and information on activities that can be performed in very specific attractions (farms), 13% suggest "things to do for free" and that a mere 26% address "related attractions" and "fax number" when displaying information on a specific attraction. This last issue can be justified due to the technological advance, that provoked a decline in the use of fax.

Although attractions might be the most decisive factor underlying the selection of a specific destination, amenities usually represent a considerable portion of tourists' expenditure (Craggs & Schofield, 2009; Lima, Eusébio, & Kastenholz, 2012). If most attractions do not have a commercial nature, often consisting of public and free of charge cultural or natural resources, most amenities have a profit aim. Thus, amenities may be the destination component in which DMSs are more likely to face the competition of private online and offline intermediaries, as well as the pressure of destination-based tourist businesses regarding effective promotion and distribution by the DMO. This may justify that amenities are the destination component accounting for the highest number of functionalities within the informational dimension (n= 82, i.e. 34% of all the informational functionalities). As expected, the majority of the analysed systems focus on accommodation, food and beverage, and MICE (meetings, incentives, conventions, exhibitions). Additionally, each of

the examined DMSs provide accommodation listings, addresses, information on facilities and services, as well as contacts and links to the correspondent websites. Similarly, all platforms convey other information on accommodation, namely events' facilities, location maps and photo galleries.

In contrast, none of the analysed systems provide information about the country's or state's accommodation typologies. This information would be particularly important in the European context, where the considerable disparity between the various national legal frameworks for accommodation businesses may be confusing for potential visitors.

As far as the access component is concerned, an overall 32 (13%) functionalities within the informational dimension derived from the DMSs' content analysis. Only few of them were held in more than a half of the DMSs. They were related to routes and schedule information – namely “local transportation options” (96%) and “routes to and around the destination” (87%) -, terminals' information – namely “airport location” (70%) and information on/links to transportation providers – namely “contacts and links to transportation providers” (87%), “information on car rentals” (83%), “contacts and links to car rental sites” (78%), “information on public transportation” (74%) and “links to airlines serving the destination” (57%).

Previous research on DMSs suggests that one of their main benefits to prospective visitors lies on their travel planning capabilities, including the possibility to search and book airline tickets (Bédard & Louillet, 2011; Guthrie, 2011). However, only 4% the surveyed systems (all of which European) conveyed any information on flights' fares, which are an obvious prerequisite to any booking.

An overall 62 types of functionalities related to ancillary services (26% of all those within the informational dimensions) were identified. The most represented are those related to “geographical information” - for example “maps and directions” and “itineraries and guides”, provided by every DMS - and some information on the DMOs (e.g. “contact”, “about the DMO”, “mission statement”). Despite accounting for a considerable large number of types of functionalities, the vast majority of those related to information on ancillary services are conveyed by a limited number of DMSs. For example, from the 17 functionalities providing useful information and contacts for traveller, only one - “local weather information” - is available in more than a half of the analysed destination platforms.

Previous research on tourism destination online strategies suggests that a high-level integration and intercommunication between platforms from different administrative levels (from national to local) is a requisite to their success (Guthrie, 2011). Thus, it seems



noteworthy that only few more than a half of the analysed DMSs include the logos of the correspondent national/state DMOs as well as links to their webpages.

Surprisingly, only a few DMSs convey materials for the press, such as “press releases on the destination” or “story ideas” (17%), as well as “filming in the destination”. Likewise, most DMSs do not provide any B2B information to potential investors (trade), namely “industry news” (35%), “information on fam trips” (17%), “investors’ incentives/support” (13%) “investing in the destination” (9%) or “previous *fam trips*” (4%).

The analysis of the CGR functionalities identified in the 23 selected DMSs aimed to examine whether they are present in those DMSs, obtaining insights on their levels of interactivity, customisation, as well as on their overall usability. A total of 24 types of CGR functionalities were identified, which can be classified into two categories: “assuring usability and quality requirements” and “enabling or enhancing the visualisation of destination information”. Regarding informational CGR functions aimed at assuring usability and quality requirements, three of them – “links to DMOs social media pages”; “what’s new”; “news/highlights” – are provided by every analysed DMS. Inversely, two functions are totally absent from the surveyed systems, namely “visitor counting” and “date of last update”.

Regarding functionalities enabling or enhancing the visualisation of destination information, “multimedia functions”, “photos”, “photo galleries”, and “links to third party sources” are supported by every DMS. In contrast, the least frequently supported functions are “interactive movies” and reviews/comments supported by the DMS”, conveyed by a mere 4% and 9% of analysed DMSs, respectively.

**Table 8.2 – Informational functionalities identified in the DMSs analysed (continues)**

Attractions				Amenities					
	Eur.	Amer.	Total						
	(%)	(%)	(%)		(%)	(%)			
<b>Information on attractions</b>	Information on attractions	100	100	100	<b>F&amp;B information</b>	Information on restaurants, cafés, bars	92	90	91
	Information on natural attractions +	100	100	100		Restaurant's, cafés, bar's address +	92	90	91
	Information on cultural attractions +	100	100	100		Links to restaurants, cafés, bars websites & contacts+	92	80	87
	Information on activities +	100	100	100		Establishment's services and features (e.g. capacity)+	92	80	87
	Information on events	100	100	100		Facilities for children +	69	0	39
	Things to do for free +	0	30	13		Information on parking and transport +	85	40	65
	Photo galleries of natural/cultural heritage	100	100	100		Road directions +	92	40	70
	Videos of attractions +	77	90	83		Information on catering provided +	92	70	83
	Ideas/suggestions for activities and tours +	100	100	100		Information on payment methods +	92	40	70
	Promotional presentation of cultural offers +	100	100	100		Galleries +	92	80	87
	Related attractions +	46	0	26		Nearby accommodation +	8	50	26
	Link to attractions' sites	100	100	100		Videos +	38	0	22
	Link to attractions' blogs +	0	20	9		Information on wineries +	0	20	9
	Attractions' meeting facilities +	0	60	26		Information on wine tastings +	0	20	9
	Attractions' amenities +	0	90	39		Information on wine bars and/or shops +	0	20	9
	Attractions' tours +	0	80	35		Wineries' map +	0	10	4
	Attractions' events +	0	90	39		Gastronomic itineraries +	0	20	9
	Attractions' special offers +	0	50	22		Cooking/enology classes +	0	20	9
	Information on golf courses +	38	80	57		Information on local agricultural products +	8	10	9
	Information on farm tourism activities +	0	20	9		Catering companies +	0	10	4
Visualization of comments/ratings in UGC websites +	69	40	57	Information on markets and gastronomic events +	31	20	26		
<b>Contact information</b>	Address and/or GPS coord. +	100	100	100	<b>MICE tourism information</b>	Information on the Convention Bureau +*	62	70	65
	Phone number +	100	100	100		Convention Bureau newsletter subscription +*	23	30	26
	Fax number +	8	50	26		Conferences calendar +	38	10	26
	E-mail address +	100	80	91		Information on meeting / events professional organizers / PCOs / DMCs +*	46	30	39
<b>Information on accessibility</b>	Attractions' opening times +	100	90	96		Information on conference/events venues*	62	80	70
	Directions - car +	100	50	78		Venues' equipment and services (e.g. meeting rooms' details) +*	62	90	74
	Directions - bus +	100	20	65		Venues' contacts +*	62	90	74
	Directions - train +	100	20	65		Venues' location map +*	62	90	74
	Area map +	100	90	96		Links to venues' websites +*	62	90	74
	Location map	100	100	100		Venues' galleries +*	62	90	74
	Attractions' location +	85	100	91		Information on special transportation rates for MICE tourists +	46	30	39
	Nearby attractions with distances +	77	70	74		Information on suppliers (catering, incentives, corporate gifts...)*	46	60	52
	Nearby events with distances +	77	70	74		Team-building activities providers +*	0	30	13
	Nearby restaurants and bars with distances +	77	70	74		Links to suppliers' websites and contacts +*	46	70	57
	Nearby accommodation with distances+	85	70	78		Suppliers' location map +*	46	60	52
	Nearby activities with distances +	77	70	74		Suppliers' galleries +*	46	70	57
<b>Calendar/agenda</b>	Events Calendar / Cultural Agenda	100	100	100	Event sponsorship opportunities +*	8	20	13	
<b>Prices information</b>	Destination Card Information & benefits+	46	30	39	Rewards for organizing meetings at the destination +*	0	10	4	
	Prices of events and festivals	77	40	61	Certified tourism ambassadors +*	0	10	4	
	Prices of other attractions	77	40	61	MICE tourism awards and recognitions +*	0	10	4	
					MICE tourism testimonials +*	8	10	9	

Notes: +: Functionalities identified in the content analysis and not in the literature review  
\*: B2B functionalities

**Table 8.2 – Informational functionalities identified in the DMSs analysed (continuation)**

Amenities (cont.)		Eur. (%)	Amer. (%)	Total (%)	Access		Eur. (%)	Amer. (%)	Total (%)	
<b>Accommodation information</b>	Information on accommodation	100	100	100	<b>Routes &amp; schedules information</b>	Local transportation options	92	100	96	
	Typologies of accom. in the country	0	0	0		Routes to and around the destination	85	90	87	
	Accommodation list/directory	100	100	100		Information on tourist signage +	0	10	4	
	Accommodation units' address +	100	100	100		Information on tourist routes+	0	80	35	
	Links to hotel websites & contacts	100	100	100		Roadwork updates +	0	10	4	
	Accommodation facilities for events+	100	100	100		Airline / train / boat schedules	31	10	22	
	Events at the accommodation unit +	0	80	35		<b>Terminal's information</b>	Airport location +	69	70	70
	Accommodation's equipment and services +	100	100	100	Airport contacts and amenities +		0	50	22	
	Accommodation facilities for children+	85	0	48	<b>Information on/links to transportation providers</b>	Links to airlines serving the destination +	54	60	57	
	Accommodation's wellness services+	0	10	4		Major connections offered by each airline serving the destination +	0	20	9	
	Accommodation's special offers +	0	30	13		Link to maritime transportation companies +	23	20	22	
	Accommodations' grading +	100	60	83		Contacts and links to transportation providers sites+	85	90	87	
	Accommodations' awards +	85	30	61		Information on car rentals	85	80	83	
	Location map +	100	100	100		Information on motor home rentals+	0	10	4	
	Opening dates/times +	100	60	83		Information on motorcycle rentals +	8	0	4	
	Check-in & Check-out limit hours +	8	0	4		Information on bicycle rentals+	8	0	4	
	Last year of renovation +	8	0	4		Information on carriage riding services +	0	20	9	
	Accommodation units' galleries +	100	100	100		Information of taxi services +	0	30	13	
	Accommodation units' videos +	85	10	52		Taxi zones' map +	0	10	4	
	Road directions +	100	70	87		Information on cruises and ferries+	31	20	26	
Public transport directions +	85	0	48	Information on harbours and marinas (including contacts and links to sites) +		38	20	30		
Parking information +	92	30	65	Contacts and links to car rental sites		85	70	78		
Information on bookings' terms and conditions +	85	70	78	Contacts and links to motorcycle rental sites +		8	10	9		
Nearby accommodation +	54	60	57	Contacts and links to bicycle rental sites +		8	0	4		
Similar accommodation alternatives+	31	10	22	Information on subway transportation		8	10	9		
Popular accom.(sorted through reviews) +	8	0	4	Information on public transportation	69	80	74			
<b>Information on other amenities</b>	Suggested tours information/tips	92	90	91	<b>Prices information</b>	Prices of public transportation	23	0	13	
	Tour guide information	92	90	91		Prices of flights +	8	0	4	
	Information on activities providers +	92	90	91		Prices of car rentals +	38	0	22	
	Information on shopping	92	100	96		Prices of motorcycle rentals+	8	0	4	
Information on wellness centres	85	90	87	Prices of bicycle rentals +		8	0	4		
<b>Information on intermediaries</b>	Travel agents information (e.g.contact)	46	20	35		<b>Accessible tourism</b>	Accessibility of services for disabled visitors	54	30	43
	Links to travel agents' sites	46	20	35						
	Tour operators information	46	10	30						
	Travel packages info	54	90	70						
<b>Prices information</b>	Accommodation prices +	100	70	87						
	Restaurant prices	77	20	52						
	Prices of packages	69	50	61						
<b>Non-tourist services</b>	Local banks information +	15	0	9						
	Businesses' opening hours	77	10	48						
<b>Amenities' facts &amp; figures</b>	Statistics showing products attracting greatest response	15	0	9						

Note: +: Functionalities identified in the content analysis and not in the literature review

**Table 8.2 – Informational functionalities identified in the DMSs analysed (continuation)**

Ancillary Services		Eur. (%)	Amer. (%)	Total (%)	Ancillary Services (cont.)		Eur. (%)	Amer. (%)	Total (%)
<b>Geographical information</b>	Geography information +	100	100	100	<b>Information on the DMO</b>	DMO contact info	100	100	100
	Maps and directions	100	100	100		"About" the DMO	92	90	91
	Itineraries and guides	100	100	100		DMO staff names, positions and contacts +	0	90	39
	Distances	92	90	91		Information on tourism offices in the region +	92	70	83
<b>Destination facts &amp; figures</b>	Political system information	0	0	0	DMO's plans and reports +*	46	40	43	
	Local economy information +	8	40	22	Regulations for members' admissions+*	54	80	65	
	Geology information	0	0	0	Events for members +*	0	40	17	
	Destination statistics +	15	40	26	Membership benefits +*	0	60	26	
	Destination awards / recognition +	77	50	65	Membership dues +*	0	50	22	
	Demographic information	0	40	17	Partner members' testimonials +*	0	10	4	
	Education materials	15	40	26	List of DMO's members and/or sponsors +*	0	70	30	
	Publications/reports	15	40	26	Branding kit for tourist suppliers +*	0	30	13	
	Travel-related statistics	15	50	30	DMO historic (e.g. founding members)+*	54	60	57	
<b>Useful information &amp; contacts for travellers</b>	Useful contacts (hospitals, pharmacies, police...) +	15	60	35	DMO mission statement*	62	70	65	
	Emergency health services information +	15	60	35	DMO testimonials, awards, recognition	54	50	52	
	Health information +	23	60	39	Careers and training +	8	40	22	
	Embassy/consulate information	15	10	13	<b>Residential tourism</b>				
	Local weather information	92	80	87	Real estate for sale +	8	0	4	
	Real-time "weather cameras"	0	10	4					
	Local time information/time zones	8	10	9					
	Safety and security	23	30	26					
	Visa/Customs information	8	30	17					
	Working at the destination +	8	0	4					
	Wifi requirements +	8	0	4					
	Electricity requirements +	8	10	9					
	Telephone and postal services info +	8	10	9					
	Destination language(s) +	15	0	9					
	Taxes on goods and services and tipping +	8	30	17					
	Currency info +	15	10	13					
	Information on holidays and public holidays +	8	10	9					
<b>Information for trade</b>	Investing in the destination +*	15	0	9					
	Investor incentives / support +*	23	0	13					
	Information on fam trips +*	8	30	17					
	Previous fam trips organized by the DMO +*	0	10	4					
	Industry news*	31	40	35					
<b>For the press and media</b>	Press releases on the destination +*	0	40	17					
	Story ideas +*	0	40	17					
	Filming in the destination +*	0	30	13					
<b>Information for students</b>	Information on universities and colleges +	0	30	13					
	Information on studying in at the destination +	15	10	13					
<b>Information for kids</b>	Kids' section	23	0	13					
<b>Information on the DMS</b>	Advertising options/conditions +	0	30	13					
	Information about the purpose of the DMS +	38	0	22					
<b>Integration with other DMOs</b>	Logo of national/state DMO +	46	60	52					
	Link to national/state DMO Website+*	54	60	57					
	General presentation of regional/ local tourism destinations +	62	70	65					
	Links to municipalities' websites +	8	50	26					
					<b>Complementary General Requirements</b>				
					<b>Usability and quality requirements</b>				
					Site map				
					Visitor counting				
					Credits +				
					Web seal certification				
					Privacy / accessibility policy				
					Date of last update				
					Links to DMO's social media pages+				
					"What's new"				
					News / Highlights +				
					Multilingual capabilities				
					FAQs				
					<b>Visualisation of destination information</b>				
					Multimedia functions				
					Banner advertisements				
					Photos				
					Photo gallery				
					Videos				
					Interactive movies +				
					Image library; PR material				
					Audio / sound files				
					Clipping section +				
					Dynamic information (schedules; availability)				
					Links to 3rd party sources (e.g. weather; transport timetables)				
					Reviews/comments supported by the DMS +				
					Tripadvisor reviews/comments +				
					Online offers / special prices / deals				
					Price information/ comparison				

Notes: +: Functionalities identified in the content analysis and not in the literature review  
\*: B2B functionalities

#### 8.4.1.2 Communication/Relationship dimensions

A total of 76 types of communicational/relationship functionalities were found, representing 21% of all functionalities identified in the analysed DMSs. The table 8.3 presents the communicational/relational functionalities identified in the content analysis. In this dimension, the more widely conveyed type of functionalities are the search functions within attractions, CGR and some amenities (e.g. accommodation, eat & drink). Other functionalities widely found in DMSs are related to downloads in CGR and ancillary services (e.g. downloads of postcards and maps), travel arrangements in amenities (e.g. dynamic packaging) and ancillary services (e.g. travel planer) and interactive tools in ancillary services (e.g. interactive map) and in CGR (e.g. trade / convention and visitors bureau area, site membership, personalisation/customisation).

The predominance of DMSs providing site membership and content personalisation/customisation as well as travel planner capabilities, seems to corroborate previous research on DMSs, which tends to consider such functions as relevant features of these systems (Bédard & Louillet, 2011; Wang, 2008). However, it is observed that the extent to which the interactive CGR functionalities were integrated in DMSs is quite diverse. Thus, while most systems offer the CGR interactive tools mentioned before, some aimed at building B2B relationships, only few provide “extranet login for destination suppliers” (48%), “online enquiry forms” (43%), “virtual tours” (17%) and a discussion forum and a chatroom (4%). These findings seem to contradict the literature on DMSs, which is fertile in claiming that these tools, especially virtual forums and chatrooms, are usual elements in such systems (Baggio, 2011).

The almost complete absence of UGC tools seems also noteworthy, although aligned with previous research on the use of UGC by official destination platforms (Estêvão, Carneiro, & Teixeira, 2013). Indeed, only one functionality – “*TripAdvisor*’s feeds in amenities pages” – out of a total of 15 UGC-enabling tool was identified in over a half of the analysed platforms. Only a residual number of platforms enabled the insertion of comments or reviews on tourism services (17%) and ratings or reviews about the DMSs (4%). However, a higher percentage displays *TripAdvisor* feeds on tourism businesses’ web pages (61%), as well as the latest feeds on individual suppliers’ social media pages (48%). This evidence seems to confirm the tendency of DMOs to replace their own UGC tools by links to/feeds of specialised and easily recognisable UGC platforms, such as *TripAdvisor*.

**Table 8.3 - Communicational/relationship functionalities identified in the DMSs analysed**

Attractions		Eur. (%)	Amer. (%)	Total (%)
UGC	Forum on culture / attractions	0	0	0
	Online form for submission of information on events +	38	40	39
Search functions	Searchable databases for attractions	100	100	100
	Searchable databases for activities	100	100	100
	Searchable databases for events	100	100	100

Amenities		Eur. (%)	Amer. (%)	Total (%)
UGC	Comments/reviews on tourist services +	15	20	17
	Links to amenities' social media pages +	23	60	39
	Latest feeds on suppliers' social media +	62	30	48
	Rating and reviews on the DMS +	8	0	4
	Tripadvisor feeds in amenities' pages +	77	40	61
Search/request functions	Searchable databases for accommodation	100	100	100
	Searchable databases for eat & drink	92	90	91
	Searchable databases for shopping	69	100	83
	Venue search facility +	54	80	65
	Search for meetings' catering providers +*	46	50	48
	Meeting/event organizers search function +*	69	60	65
	Group accom. availability request form +	0	50	22
	Online submission of Requests for Proposal (RFP) for the organization of events +*	0	80	35
	Request form for trade +*	23	60	39
Meeting Planners request form +*	46	40	43	
Download	MICE tourism brochure download +*	0	50	22
	Convention Bureau downloadable materials +*	54	50	52
	Meeting planning guide download +*	0	20	9
Travel arrangements	Dynamic packaging	92	30	65
	Meeting planning +	69	40	57

Access		Eur. (%)	Amer. (%)	Total (%)
Travel arrangements	Flights engine	8	0	4
	Ferry transportation engine +	15	0	9
	Trip/Travel planner	31	20	26

Ancillary Services		Eur. (%)	Amer. (%)	Total (%)
UGC	Testimonials / past visitor experiences / reviews +	23	10	17
	Tourism blog +	23	40	30
	Comments to blog articles +	15	40	26
	Online guestbook	0	10	4
	Service evaluations / comments	54	0	30
	Message Board	0	0	0
Interactive tools	Chat with DMO staff	0	10	4
	Interactive maps	85	90	87
	Extranet training for DMO members +*	0	50	22

Ancillary Services (cont.)		Eur. (%)	Amer. (%)	Total (%)
Download	Electronic postcards	69	40	57
	Audio guides' download +	15	0	9
	Download brochures, postcards wallpapers and maps	100	80	91
	Media Kit/thematic brochure request +*	85	70	78
	Assistance form for bloggers writing about the destination +*	0	10	4
	Assistance form for media covering the destination +*	0	20	9
	Membership form download for future DMO members+*	0	50	22
CRM	Customer loyalty programmes	85	20	57
	E-mail newsletter online subscription	100	100	100
	Mailing list subscription +	69	50	61
	Documentation Center search function	0	0	0
	Documentation Center subscription (investors/researchers)	0	0	0
	Online survey	8	10	9
	Incentive programmes	69	30	52
Travel arrangements	Route Planner +	46	40	43
	Travel Planner	77	50	65

Complementary General Requirements		Eur. (%)	Amer. (%)	Total (%)
Search functions	Help function (online, by phone)	92	90	91
	Product database search	100	100	100
	Search functions (by type)	100	100	100
Download	App for Smartphones download +	69	30	52
	Mobile interfaces (WAP)	100	100	100
	Downloadable materials	100	100	100
Interact/personalise	Site Membership	92	70	83
	Trade / CVB area +*	92	100	96
	Currency converter	0	0	0
	Interactive tools	100	90	96
	Translation Service	0	20	9
	Personalisation / Customisation	92	70	83
	Brochure processing	85	60	74
	Virtual tours	23	10	17
	360° Videos +	15	0	9
	Forum/chatrooms	0	10	4
	Online comment/suggestions form	85	60	74
	Online enquiry form	31	60	43
	"Call me" option	77	50	65
	Recently viewed items +	15	0	9
	"Add to travel planner" option +	85	60	74
Share option (Facebook, Google+, Pinterst,e-mail) +	85	90	87	
E-mail page option +	77	70	74	
Extranet login for destination suppliers +*	31	70	48	
Games	0	0	0	
UGC	Classified ads	8	10	9
	Evaluation of contents/ articles' usefulness +	8	0	4
	Comments to DMS contents +	31	40	35
	Reviews/Ratings sharing +	31	0	17
	UGC - Comments and ratings of other user's uploads	0	0	0
Photo Sharing	0	0	0	

Notes: +: Functionalities identified in the content analysis and not in the literature review  
\*: B2B functionalities

The analysed DMSs only provide three types of functionalities enabling communication/relationships with users regarding access, namely “trip / travel planner” (26%), “ferry transportation engine” (9%) and “flights engine” (4%). Especially the almost complete absence of flights engine among the surveyed platforms seem to contradict previous literature, which considered that one of the key distinctive features of DMSs was the ability to provide functions on the whole array of services and products available in the corresponding destination (Buhalis & Matloka, 2013; Guthrie, 2011; Sigala, 2013). However, it may be partly explained by the fact that flight engines tend to be more predominant in national DMSs (Guthrie, 2011), being the DMSs analysed in this study national or regional. Understandably, a residual number of DMSs provided tools aimed at tourist demand niches, such as assistance forms for media (9%) and bloggers (4%).

#### **8.4.1.3 Transactional dimension**

Table 8.4 provides an overview of the transactional functionalities identified in the content analysis. As expected, this dimension proved to be the least diversified, accounting for a total of only 38 (11%) types of functionalities. Moreover, it is the dimension whose functionalities are provided by less DMSs. The functionalities most frequently found were adopted by 57% of the DMSs analysed. However, it is important to highlight that, according to the literature, this is the dimension that most differentiate DMSs from traditional DMOs’ websites. The highest number of transactional functionalities found in the content analysis correspond to amenities (37%), followed by CGR (24%), access (21%), attractions (13%), and ancillary services (5%).

Regarding attractions, only 30% of the surveyed systems offer bookings and purchase of cultural trips, visits to attractions and museum tickets. Additionally, only 26% of them provide the purchase of events’ tickets. Surprisingly, only 17% of the considered platforms gave access to third party websites that sell attraction tickets. This empirical finding somehow contradicts one of the tendencies highlighted by the interviewed DMSs’ developers, who suggested a trend towards the replacement of DMO-operated transactions by specialised booking engines.

The most predominant transactional functionalities on amenities were the provision of information about the availability and booking of services (57%), as well as accommodation reservations (48%). Unlike the attractions’ component, third party booking platforms seem

to have gained ground, as demonstrated by the fact that 43% of the analysed DMSs provided links to OTAs' selling amenities or to their own individual booking engines.

Only a residual number of the analysed DMSs include access-related transactions. Hence, the booking and purchase of flight tickets, train tickets, motorcycle rental and bicycle rentals were provided by a single system. Additionally, a mere 17% hold any type of online booking of transportation within the destination, while a residual 9% offer online bookings of transportation to the destination.

**Table 8.4 - Transactional functionalities identified in the DMSs analysed**

Attractions				Eur. (%)	Amer. (%)	Total (%)
<b>Book &amp; purchase of visits to attractions</b>	Booking and purchase of cultural trips	46	10	30		
	Purchase / Availability of attraction tickets	46	10	30		
	Purchase / Availability of museum tickets	46	10	30		
	Purchase / Availability of events tickets	38	10	26		
	Access to third party websites to purchase events tickets +	8	30	17		

Amenities				Eur. (%)	Amer. (%)	Total (%)
<b>Amenities' booking &amp; purchase</b>	Services availability information	69	40	57		
	Services reservation information	69	40	57		
	Accommodation reservations	54	40	48		
	Access to 3rd party web.for accom.booking+	38	50	43		
	Online booking for tours	46	0	26		
	Access to 3rd party web.for booking of tours+	23	20	22		
	Online reservations for other services	46	10	30		
	Access to 3rd party web.for other services' book. +	31	30	30		
	Reservation of last minutes/offers	46	40	43		
	Access to 3rd party web.for last minute/offers book. +	23	20	22		
	Purchase of holiday packages	46	10	30		
	Access to 3rd party web.for holiday packages bookings +	23	0	13		
	Purchase/book other holiday-related items (e.g. loyalty/destination cards, merchandising)	46	0	26		
	Access to 3rd party web.for book.other holiday-related items +	23	0	13		
	Buy travel insurance	0	0	0		

Access				Eur. (%)	Amer. (%)	Total (%)
<b>Transportation booking &amp; purchase</b>	Purchase of flight tickets	8	0	4		
	Links to third party websites for the purchase of flight tickets +	0	10	4		
	Purchase of train tickets +	8	0	4		
	Purchase of subway tickets	0	0	0		
	Online car rental reservation	15	0	9		
	Online motorcycle rental reservation +	8	0	4		
	Online bicycle rental reservation +	8	0	4		
	Online booking of transportation	31	0	17		
	Online booking of travel	15	0	9		

Ancillary Services				Eur. (%)	Amer. (%)	Total (%)
<b>Purchase</b>	Destination card/"passport" purchase	31	10	22		
	Gift card purchase +	8	0	4		

Complementary General Requirements				Eur. (%)	Amer. (%)	Total (%)
<b>Bookings and purchases</b>	Cross-selling opportunities	23	30	26		
	Contests / Auctions functions	8	10	9		
	Online shop	62	40	52		
	Real-time availability of services +	54	50	52		
	Secure payment methods	54	40	48		
	Shopping carts	54	40	48		
	Online reservations/transactions	54	40	48		
	Access to third party websites for bookings/transactions +	38	50	43		
	Online reservation request form	15	0	9		

Notes: +: Functionalities identified in the content analysis and not in the literature review.  
\*: B2B functionalities.



When it comes to the transactional dimension within DMSs' ancillary services, only two functionalities were identified, adopted by a very low number of DMOs, namely the purchase of destination cards and gifts (22% and 4%, respectively). The results can be explained due to the non-commercial nature of ancillary services. Finally, it seems noteworthy that the most frequently found CGR transactional tools are online shops and real-time availability of services (52% each), as well as secure payment methods, shopping carts, and online reservations/transactions (48% each).

#### **8.4.1.4 Comparative analysis of North American vs European DMSs**

Relevant discrepancies were identified between the surveyed DMSs from the North American and European continents. Interestingly, within the information dimension, while 30% of American DMSs include suggestions on 'things to do for free', none of the European addresses free of charge attractions or experiences. Contrastingly, 46% of the European DMSs suggest attractions related to those selected by users, whereas none of the American platforms does so. The arguably more market-oriented scope of American DMSs may be observed in the higher degree of detail provided to services associated to each attraction. Hence, when presenting each destination attraction, most American DMSs also include information on its amenities and events (90%), tours (80%), attractions' meeting facilities (60%) and attractions' special offers (50%). In contrast, none of such detailed information is provided in European platforms. However, although, as previously stated, American DMSs seem to be relatively more market-oriented, a higher percentage of European systems provide information on destination cards and corresponding benefits (European: 46%; American: 30%), as well as on prices on events and other attractions (European: 77%; American: 40%).

When it comes to give potential visitors information about accessibility to attractions, the major difference between American and European DMSs is the considerably lower percentage of American ones providing bus or train directions and timetables (20% each), information available on all European DMSs empirically explored. Such disparity may reflect the relatively low use of public transportation within tourist experiences in North America.

As far as information on amenities is concerned, it also seems relevant to stress that, for accommodation units, 85% of European DMSs provide information on facilities for children and on public transportation directions, whereas none of the American platforms does so.

At first sight, the total absence of information on wine tourism in European platforms may seem strange, especially when such information was found in some American ones, since the major wine tourist destinations are located in Europe. However, none of the European destinations whose DMSs were selected for content analysis (Costa Del Sol being the sole arguable exception) is renowned for its wine. In opposition, some of the most reputable wine tourism destinations of North America are amongst the selected platforms (e.g. Napa Valley, Pocono Mountains).

When it comes to MICE (Meetings, Incentives, Conventions & Exhibitions) tourism, the variety of functionalities encompassing information is considerably higher in American DMSs. In fact, 18 out of the 21 types of functionalities conveying information on MICE tourism were more frequently identified in American rather than in European web platforms. This predominance of MICE tourism-related functionalities in American systems might be attributed to the tendency of American DMOs to act, primarily, as Convention Bureaux. Hence, in most American DMSs it was possible to identify sections fully dedicated to meeting and event planners.

As far as information on access is concerned, the major differences between European and American DMSs are that the latter are more likely to provide functionalities concerning “information on tourist routes” (80%) and on “airport contacts and amenities” (50%), while these functionalities are never found in European DMSs. This probably happens because airports represent very important infrastructure among the American market, even for domestic trips and, as previously mentioned, to a higher market-orientation of American DMSs.

Regarding information on ancillary services in European and American systems, the latter are more likely to include more detailed facts and figures on the destination, as well as useful information for travellers. As to the specialised information made available to the tourism trade, a minority of European DMSs offer functionalities regarding investing on the destination, as well as information on incentives and support to investors (15% and 23% respectively). Such information is not available in any of the American DMSs. In contrast, information on familiarisation trips aimed at tour operators and travel agents can be more frequently found in American platforms (30%; European: 8%). Almost a half of American DMSs provide press releases and other material for press and media, being these materials completely absent from all European platforms. Inversely, kids’ sections were found in almost a quarter of European DMSs and in none of the American.

B2B functionalities, such as regulations for admissions of new DMO members (in 65% of all the DMSs), were identified in 80% of American DMSs, and in only 54% of the European. Moreover, some American platforms offer extensive information on events for DMO members (40%), membership benefits (60%) and dues (50%), as well as on current DMO members and sponsors (70%). Additionally, almost a third of the analysed American platforms offer branding kits for tourism suppliers (30%), thus fostering coherent and homogeneous marketing efforts throughout the destination. Previous research finds such efforts from DMOs very important to achieve destination competitiveness (Morgan, Richard, & Pride, 2007). Noteworthy is the fact that none of these functionalities exist in any of the studied European platforms. The type of functionality that best mirrors the differences between European and American DMOs regarding their roles is probably the listing of staff members, respective positions and contacts in the destinations' online platforms. Though completely absent from the European systems, such information is available in 90% of the American. The reference to names and contacts of the persons working in American DMO is arguably the clearest evidence that their market-driven approach fosters more open relations with destination-based stakeholders. Regarding the type of relationships established between DMOs and both attractions and other businesses, Beritelli (2011) argues that the more formal and hierarchical they are, the lower levels of cooperation practices occur and the hardest it becomes for DMOs to lead coordination efforts among destination actors.

When comparing the usability and quality requirements supported by DMSs on both sides of the Atlantic, much fewer American DMSs (30%) offer multilingual capabilities when compared to European platforms (100%). Surprisingly, only 31% of the latter offer FAQs, in contrast with their predominance in the former (90%).

Regarding the communication/relationship dimension, American DMSs hold a considerably larger and more interactive range of tools aimed at catering the needs of meeting and event planners. Hence, while none of the analysed European platforms provides any sort of online submission requests for events, practically every American DMSs does (80%). Similarly, while most American systems enable events' venue searches (80%), while barely a half of its European counterparts possess this functionality.

As far as CGR are concerned, the interactive tools aimed at holiday visitors are more prevalent and varied in European systems (e.g. personalisation, virtual tours, "call me options"), while those made available to DMO partners and MICE tourists were frequently

found in American platforms (e.g. extranet login for destination suppliers, trade/CVB sections).

Within the communication and relationship dimensions of ancillary services, significant differences were also found between American and European DMSs. Hence, while European DMSs offer a considerably wider range of UGC capabilities to potential visitors, such as evaluations or comments on specific services, American DMSs more frequently convey specific services for destination suppliers. Thus, for instance, half of the American systems provide extranets aiming to assist the DMO's staff training and provide membership forms for future DMO members. Such functions cannot be found in any of the European platforms. In contrast, European DMSs convey more Customer Relationship Management (CRM) (e.g. customer loyalty programmes, incentive programmes). Such disparities reinforce the idea that most European systems focus on building B2C relations with potential visitors, whereas most American platforms seem to be more instrumental in fostering internal coordination.

As far as the transactional dimension is concerned, there is a remarkable higher predominance of booking and purchasing functionalities in European platforms. This is for example the case of cultural trips, attractions and museum tickets (European: 46%; American: 10%) and online reservations of holiday packages and tours (totally absent from American systems and provided by 46% of European ones). Interestingly, more American DMSs give access to third-party websites for the purchase of attraction tickets (European: 8%; American: 30%).

No transactional functions were found within the access component in American DMSs other than the link to third-party websites, whereas only a few European systems provide access-transactional functionalities.

#### **8.4.2 DMSs functionalities aimed at DMOs' staff and affiliate members**

The DMSs' functionalities aimed at DMOs' staff and affiliate members were identified through the information provided by DMSs developers and DMO officials during the interviews. Regarding the functionalities available to DMOs, various DMO officials confirmed the relevance of the DMSs in assisting Tourism Information Centres (E2, E3, E6, A1, A4). One of them (E2) considered that the creation of the DMSs contributed to the great increase of both the online visitation of the destinations' website and the number of foreign

tourists visiting the destinations' information offices (70%) in the six years after the DMSs' implementation. Another European DMO official (E6) also stated that, shortly after DMSs' implementation, an increasing number of tourists visiting information centres no longer asked general questions such as "what to visit", but rather more specific ones like: "how to book a specific product promoted in the destination's website". One of the surveyed DMOs (E5) stated that the DMS is useful because when a tourist walks in a tourism information centre and asks information about specific services, the staff of the DMO will use this system to print or show lists with those services.

Two DMSs' developers provided more detailed insights regarding functionalities aimed at DMOs (D1 and D3). Hence, D1 remarked that DMSs should be designed to, first and foremost, help DMOs manage nearly every aspect of their business. These aspects may include, for instance, membership management, business events / sales force automation, event management, inventory management, expense reporting, brochure fulfilment, email marketing, media relations, campaign management, reporting/forecasting, among others.

The other DMSs' developer (D3) also referred to some of the issues before mentioned as well as other issues, arguing that the most relevant functionalities that DMSs should offer to DMOs are integrated in flexible CRM and CMS solutions. Regarding CRM tools, the interviewee highlighted that they should be able to assist DMOs managing relevant aspects of their work, such as: (i) subscribers' accounts and contact relationships; (ii) communications; (iii) member data; (iv) community event calendars; (v) sales efforts (e.g. for MICE, group tour / travel trade); (vi) event management (e.g. familiarisation tours, site inspections, sales missions, member events); and (vii) email marketing; media relations. Concerning the CMS solutions, the same DMSs' developer stressed their role in managing the navigation and content of the destination front-end website, including: (i) articles; (ii) business listings; (iii) event calendars; (iv) special offers/packages (all of them stored in the CRM); (v) blog posts; (vi) image and video galleries; (vii) itinerary ideas; (viii) social media content aggregation and curation; (ix) maps (data provided by CRM), and all other aspects of a destination platform.

As far as functions available to DMOs and affiliate members are concerned, the analysis to the insights provided by the three surveyed DMSs' developers allowed to identify four main DMSs' modules aimed at suppliers, which may include several functionalities: (i) Visitor Information Database (VID); (ii) Business Relationship Management System (BRMS); (iii) Visitor Relationship Management System (VRMS); and (iv) Reporting Module (RM). Although they were occasionally given different designations, their description mostly

coincides in all three cases. The main DMSs' module available to affiliate members is the VID, which is the core database of all tourism resources and products (e.g. hotels, attractions, events, activities, food and drinks, shops), storing rich and detailed information oriented to the visitor, where affiliate members can insert data about their products. The BRMS facilitates the relationships between the businesses that own a tourism product and the DMO. This module may record information about the suppliers' membership status, their level of membership, each hotel and attraction purchased, which marketing options each supplier has subscribed, or notes regarding the interactions between the DMO and those tourism businesses. The VRMS records, among other features, who booked which service (e.g. hotel) and all the contacts held online or through the visitor information centres. It is a database of visitors with their profiles, interests and online activity in the DMS (e.g. when they bought, what they bought) and enables to develop future marketing initiatives more adapted to each visitor. The RM converts all the data generated by the previous three modules into management reports, business intelligence reports that provide both to the DMS managers and to affiliate members, information about its performance and how it can be improved.

Most European DMOs stated that, technically, their DMSs allow them to develop functionalities for suppliers. However, they all seem to agree that the main challenge concerning the participation of suppliers in the DMS is that it is required a mental shift from their part. One interviewed person whose DMO allows affiliate members to manage the content of the DMS in the system's CMS, admitted that more than 90% of the suppliers' webpages are poorly handled, meaning they would also be poorly handled in the DMS. For this DMO representative, the main challenge for suppliers to participate in handling of DMSs' contents and functionalities, does not lie in the system's technology but rather in the need to change the suppliers' mindset. Interestingly, the surveyed DMOs enabling suppliers' participation in managing their platforms' CMSs – those from North America – expressed their satisfaction about this process.

Regarding the provision of transactional tools to destinations suppliers, one European DMO official (E2) argued that a strategic decision was taken not to convey transactions. Before that decision, the DMO consulted the providers and most of them said they would prefer that the DMS would be a referral website rather than a commercial one. Another surveyed DMSs' developer (D3) further referred that, in the American context, real-time transaction capabilities are generally limited to members/suppliers engaged with the DMOs. These may include paying dues or fees for other programmes online, registering/paying for events,

among other options. Thus, according to most interviewed DMO officials, most suppliers do not expect the official destination to convey transactions.

## **8.5 Conclusions and implications**

The main conclusion of the present study seems to be the clear mismatch between the definitions and descriptions of DMSs proposed by most of the previous research on this topic and the current practices. Such mismatch is particularly evident in those dimensions where DMSs supposedly surpassed traditional official destination platforms, namely the communication/relationship and transactional dimensions. Concerning the communication/relationship dimension, most of the analysed systems lacked some key functions such as forums, UGC tools, nor had sections or tools aimed at the media or at increasingly relevant niche publics, such as bloggers. In particular, regarding UGC both the content analysis as well as the survey to DMSs' providers, seem to suggest that they are scarcely present in those systems, in line with previous research (Estêvão, Carneiro, & Teixeira, 2013). In both cases of transactions and UGC, results clearly suggest that DMSs are moving from one-stop-only platforms to referral ones.

A further evidence of the lack of tools enabling a further engagement of DMSs and potential visitors seems to be best demonstrated by the scarce number of systems offering interactive multimedia tools, such as virtual tours or 360° videos. Additionally, it is worth to highlight that, in the "destination app" era, only a half of the analysed DMSs presented this type of functionalities. Such results are in sharp contrast with the literature on DMSs, which often proclaims the more dynamic tools conveyed by these systems (Bédard & Louillet, 2011; Guthrie, 2011).

However, the major mismatch between the characteristics of DMSs as portrayed by previous research and the actual current features may be observed within the transactional dimension. In fact, both the content analysis to the platforms and the surveys to DMOs and DMSs' providers further indicate that transactional functionalities, such as bookings, should not be taken for granted in a self-proclaimed DMS. Although a half of the analysed platforms held any type of transactions, they are pretty much limited to the booking of accommodation (48%) and visits to attractions (30%). This outcome clearly contradicts most of the early research on DMSs, which considered the ability for users to perform transactions of the whole range of destinations products as one of their key distinctive factors (Pollock, 1995). The continuous developments of online platforms discard an eventual lack of access of

DMOs to technologies as a plausible reason for the withdrawal of some advanced functions that previous versions of their DMSs supported and that were taken for granted by researchers. Hence, as highlighted in the interviews, other types of factors, such as organisational, seem to be reshaping the features and functions of DMSs.

The present study also permitted to identify two different patterns concerning the functionalities developed by the European and American DMSs analysed. Hence, the content analysis of DMSs suggests that although the European may convey appealing tools to prospective tourists, they still seem to focus more on the promotional tasks common to traditional destination websites, adding them a higher degree of sophistication. In contrast, despite the fact that American DMSs may have less functionalities available to potential visitors, they seem to encompass a larger scope of functionalities aimed at other players, for example to assist the destinations' small and medium-sized tourism enterprises (SMTEs) and external tourist trade (e.g. meeting planners). Such disparities appear to be associated to some differences between European DMOs, often relying on public funding, and North American DMOs, usually required to generate revenue in order to survive (Hall & Page, 2003).

This study has several relevant practical implications. Among other features, this study highlights the need for DMOs to take full advantage of more recent and trustworthy functionalities, such as UGC (Del Chiappa, 2011), interactive multimedia or communication tools, such as forums. Another implication is the need for DMOs to evaluate the relevance as well as their own ability to develop in-house transactional capabilities due to the growing overwhelming presence and power of the major OTAs. As suggested by some of the interviewed DMO officials and DMSs' developers, perhaps it is time for destinations to negotiate shared commissions with OTAs for bookings on their platforms which have emerged from the destination's B2C websites. The main theoretical implication is the urgent need to review the concept of DMS regarding the functionalities which are expected to be offered by advanced official destination platforms, considering the disparity between definitions and descriptions of DMSs proposed by most of the previous research and the actual current practices considering integration of functionalities in DMSs.

The main limitation of this study is the relatively low number of surveyed DMOs and analysed DMSs. Thus, content analysis of more DMSs and the survey of more DMOs might be required to confirm the results obtained in this study. Thus, further research on the implementation and development of DMSs should encompass the attitudes and expected benefits of destination-based attractions and SMTEs towards these platforms.



The present study sought to analyse the functionalities that DMSs convey to all users. As previously discussed, significant gaps between the types of functionalities inherent to DMSs were found when confronting previous literature with the results of the content analysis of several DMSs, especially regarding functionalities oriented to visitors. Hence, the authors suggest that future research in this field further analyses factors inhibiting or rather fostering the development of specific functionalities. Future research should also analyse to which extent the recent trends regarding online tourism distribution channels may be reshaping the roles of both official destination platforms and DMOs alike.

Regarding the findings concerning DMSs' functionalities aimed at DMOs and destination affiliated members, they do not seem to contradict previous research. In fact, the different modules provided by existing DMSs to these players, which integrate a set of functionalities, seem to corroborate the types of B2B operations identified in the literature on DMSs. However, it is relevant that future research examines their actual use by both DMOs and destination-based members, as well as identifies the main trends in this field.

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## **Part IV**

**Empirical scientific works:**

**Factors influencing DMS**

**adoption**

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## CHAPTER 9

### Destination Management Systems' adoption and management model: Proposal of a framework

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#### Reference

Estêvão, J., Carneiro, M. J., & Teixeira, L. (2020). Destination Management Systems' adoption and management model: Proposal of a framework. *Journal of Organizational Computing and Electronic Commerce*, 1-22.

## **9. Destination Management Systems' adoption and management model: Proposal of a framework**

### **Abstract**

The fast development of the Information and Communication Technologies (ICTs) transformed the tourism sector, raising relevant questions regarding the role of destination management organisations (DMOs) and the most appropriate way to implement and manage online platforms adopted by these organisations - Destination Management Systems (DMSs). Nevertheless, the research concerning DMSs' adoption and management is scarce, mostly conceptual and highly fragmented, usually corresponding to theoretical discussions on a small set of adoption or management issues or to analysis of very specific examples of DMSs. This paper aims to overcome gaps of previous literature by deeply analysing relevant factors for the adoption and management of this kind of systems. In-depth interviews were conducted with relevant organisations in DMSs' development and several American and European DMOs. The content analysis of the discourses resulted in a framework encompassing an adoption and management model – including reasons and challenges regarding DMSs' adoption, management models, benefits resulting from DMSs' adoption –, as well as current challenges and future perspectives for DMSs. The findings provide relevant theoretical and practical contributions. Theoretically, the paper highlights some discrepancies between the literature and the present study regarding the concept of DMSs, as well as reasons and challenges associated with their adoption and management. The need to rethink the role and management of these systems is also remarked. In a practical perspective, the framework proposed can be used by DMOs and other stakeholders engaged in the management of tourism destinations, in order to ensure the successful implementation and management of DMSs.

**Keywords:** destination management systems, DMS, destination management organisations, DMO, technology, tourism, management models, adoption models, framework

## 9.1 Introduction

The process of tourism destinations' planning and development is often led by pivotal entities referred to as Destination Management Organisations (DMOs) (Bornhorst, Ritchie, & Sheehan, 2010; Morrison, 2013). Such entities are usually totally or partly integrated by the public sector or, at least, are legitimised by it (Presenza, Sheehan, & Ritchie, 2005). Regarding their territorial and administrative scope, it is common to find local, regional or national DMOs (Adeyinka-Ojo, Khoo-Lattimore, & Nair, 2014). A local DMO is often integrated in others operating at regional and national levels (Go & Trunfio, 2011; Wang, 2011). Although the roles attributed to DMOs are considerably diverse, they often include the planning of the destination's tourism activity, the internal coordination of the sector's players, the concession of financial incentives to the industry and the development of promotional efforts in order to allure visitors (Bornhorst et al., 2010; Morrison, 2013, Wang, 2011). However, according to previous research on the role of DMOs, most of those operating at local and regional levels tend to focus on the more immediate task of promoting destinations and particular attractions, often disregarding their other expected duties (Gretzel, Fesenmaier, Formica, & O'Leary, 2006; Hall & Page, 2003).

The tendency previously referred is reflected in the types of online platforms that most DMOs have developed over time. Most DMOs have historically developed online platforms with the primary goal of distributing information and promoting the destination to potential visitors, apparently giving little attention to the potential of the Internet in enhancing their coordination and internal leadership role (Fernandez-Cavia & Castro, 2015; Yuan, Gretzel, Fesenmaier, 2006). Nonetheless, since the mid-90s, a small number of North American and Central European DMOs became the exception when they took a more holistic approach regarding the functions that their online platforms should perform (Buhalis & Spada, 2000; Sussmann & Baker, 1996). To these DMOs, the promotional Business-to-Customer (B2C) website seemed to be considered only the tip of the iceberg of a network connecting DMOs' offices and staff members that, in turn, links them to local tourism products' providers and attractions (Pechlaner, Abfalter, & Raich, 2002). Hence, these broader platforms are primarily used by DMOs to improve their internal processes by means of an intranet (Brown, 2004; Sigala, 2013). By using these system's intranet, tourism information centres would be able, for instance, to provide visitors up-to-date information in a coherent fashion across the destination, as demonstrated by Bédard, Louillet, Verner and Joly (2008) after studying the inner-DMO positive effects of these systems in Québec. Furthermore, such platforms also provide an extranet linking the DMO with destination-based suppliers which is

instrumental to reinforce the coordination and collaboration between them. Those suppliers are expected, if not demanded, to adopt the official destination platform and participate on its content management (Buhalis, 2003; Martins, Costa, & Pacheco, 2013).

The richness and diversity of the contents and functionalities of the B2C website of these platforms, available to all users is, then, partially the result of the coordinated activities enabled by its intranet and extranet. However, even the B2C website of these advanced systems is intended to go much beyond the mere promotion of a tourism destination.

In a functional perspective, apart from providing information, these platforms can cater for tourism services' bookings, as well as to provide personalised content and products to users (Fuchs, Höpken, Föger, & Kunz, 2010; Sigala, 2013). In other words, these advanced destination platforms correspond to "one-stop-only" solutions for the visitors' travel arrangements (Bethapudi, 2013). At the particular level of their e-commerce (i.e. transactional) capabilities, they are expected to assist DMOs solving their destination's market failures, such as territorial asymmetries regarding tourism development or diminishing their often excessive dependency on external tourism intermediaries, namely tour operators (Baggio, 2011; Benckendorff, Xiang, & Sheldon, 2019; Fuchs et al., 2010). Additionally, despite in the beginning of the Internet era commercial tourism websites were prone to suspicions regarding fraud or deceitful advertising, this kind of systems benefited from the trustworthiness of being the official platforms of a tourism destination (Cizel, Ajanovic, & Cakar, 2016; Del Chiappa, 2011; Estêvão, Carneiro, & Teixeira, 2013). These platforms providing networks aimed at optimising DMOs' internal coordination, destinations' players collaboration as well as the engagement with the tourism demand, were named Destination Management Systems (DMSs) (Pollock, 1995). Nevertheless, since the DMS concept was first coined, the e-tourism landscape changed dramatically (Del Chiappa, Alarcón-Del-Amo, & Lorenzo-Romero, 2016), for example with the advent of global online travel agencies (OTAs), such as *Booking* and *Expedia*, as well as of meta-booking engines, like *TripAdvisor* or *Trivago* (Abou-Shouk, 2018; Moreno, Hörhager, Schuster, & Werthner, 2015). This evolution created several challenges to DMOs in developing and operating successful DMSs.

From a technological perspective, DMSs represent a key-backbone of tourism destination management (Kanellopoulos & Panagopoulos, 2008), allowing the dissemination and exchange of tourism information, which results from the processing of a distributed data set, some of which are already stored in legacy systems – e.g. Property Management Systems (PMSs) - of different suppliers of tourism services. Considering this scenario, it is important

to integrate these legacy systems in a global DMS solution, taking advantage of the concepts such as semantic services, interoperability, ontologies and semantic annotation. According to Kanellopoulos, Panagopoulos, and Karahanidis (2005), Web Services technology represents a collection of standards that allows server DMSs' applications, including the PMSs, to communicate through the Internet, independently of the technology used. These authors also emphasise that "semantic web technologies will influence the next generation of DMS by providing interoperability, reusability, and shareability among modular and service-oriented DMS" (p. 24). According to Ferraro and Lo Re (2014), the use of semantic technologies, in addition to promote interoperability between different systems, can also provide "innovative services to users", by automatically processing information by intelligent software agents, which also represents a solution for integrating technologies that are crucial to create a digital tourism ecosystem and promote the development of SDs.

Considering the diversity of functions of DMSs and the potential challenges generated by technological evolution, it is very relevant to deeply analyse the management of DMSs, namely the reasons for DMSs' adoption, expected benefits regarding this adoption, difficulties experienced during the adoption and implementation stages, DMSs' management models, as well as the current trends and future perspectives regarding these systems. A deeper knowledge on the adoption and operation of existing DMSs can provide valuable insights and guidelines to the development and management of successful destination platforms in the future. However, the major portion of studies on DMSs focus on its B2C approach, giving little attention to issues related to their management models (Horan, 2010; Sigala & Marinidis, 2010). In addition, the bulk of previous research has not focused the reasons for DMSs' adoption, the main challenges inherent to their implementation neither on current challenges and future development of these platforms. Moreover, with a few exceptions (Bédard & Louillet, 2011; Brown, 2004; Guthrie, 2011), managerial aspects of DMSs, such as their management models, sources of income and financing as well as the types of transactional agreements with private stakeholders and OTAs yet seem to be relatively uncovered by research.

This paper aims to fill the previously mentioned gaps. Thus, this article's first main goal is to propose a framework encompassing a DMSs' adoption and management model, including reasons and challenges related to DMSs' implementation, management models that may be adopted, and perceived benefits of adopting DMSs, as well as current challenges and future perspectives for DMSs.

The present paper is structured in five main sections. First, in an introduction, the relevance and objectives of the paper are highlighted. Next, a literature review on relevant topics related to DMSs' adoption and management models is presented. Then, the methodology of the empirical study is described, and the results of the empirical study are analysed and discussed considering the topics of the literature review. Finally, the paper ends with some conclusions and provides guidelines for the successful adoption and management of DMSs.

## **9.2 Literature review**

Considering the main objectives of this paper, the present section includes a literature review on relevant topics related to DMSs' management.

### **9.2.1 DMSs' potential benefits**

As previously referred, one of the goals of the present article is to grasp the expected benefits that DMOs were expecting to reap from DMSs' adoption, that may determine the reasons for adopting this kind of systems, as well as the benefits actually obtained. Understanding these benefits is crucial since the reasons for implementing DMSs may influence the way these systems are managed. DMSs are believed to offer several kinds of benefits to DMOs that will be described next.

#### **9.2.1.1 Coordinated promotion and distribution of the destination's products**

According to Del Chiappa and Baggio (2015), ICTs provide platforms that facilitate the dissemination of information and knowledge among stakeholders, thus improving coordination amongst them and enhancing destination competitiveness. In the tourism industry context, Inter-Organisational Information Systems (IOISs) assist whole destinations to become meta-organisations, as argued by Gulati, Puranam, and Tushman (2012), who define them as networks of firms or individuals not bound by authority based on employment relationships but characterised by a system-level goal. Being IOISs applied to tourism destinations (Sigala, 2013), DMSs assist DMOs internal operations and link them to private suppliers, thus enhancing their leadership capabilities and coordinating roles (Bédard & Louillet, 2011). The tourism industry also benefits from improved coordination and integration because it counters fragmentation between tourism agents while favouring coherent and aligned promotions and distribution practices centralised in the DMS (Miralbell, Martell, & Viu, 2011; Ndou & Petti, 2007). Potential visitors also benefit from the improved

coordination levels made possible by DMSs, since the destinations are presented to them in a cohesive and coherent fashion. Additionally, DMSs usually give tourists the possibility to search and book the whole range of tourism products in the destination by using a one-stop-only official platform (Teichmann & Zins, 2008).

#### **9.2.1.2 Disintermediation and optimisation of revenues**

According to Kracht and Wang (2010), the advent of the information and communication technologies (ICT) and, especially, of the Internet, originated disintermediation processes in tourism's distribution channels, allowing individual suppliers to bypass traditional intermediaries, such as offline travel agencies. However, the same authors posit that the subsequent emergence of global OTAs generalised reintermediation scenarios in which small and medium-sized tourism enterprises (SMTEs) and destinations as a whole often became too dependent on this new breed of intermediaries. By giving potential tourists the possibility to plan tourism experiences and purchase individual services requiring very low commissions (or, in some cases, none), DMSs foster disintermediation, while alleviating the power of external intermediaries over local suppliers (Egger & Buhalis, 2011; Wei & Jiu-Wei, 2009). This disintermediation also benefits potential tourists, who become able to plan and book their entire stays directly from destinations through trustworthy DMSs' trip planners and booking engines (Guthrie, 2011).

#### **9.2.1.3 Coherent and effective development, promotion, visibility and presence in the global market**

According to Ndou and Petti (2007), most tourism entrepreneurs still develop individual services and attractions disregarding any complementarity with other products, contributing to the fragmentation of tourism destinations. The same authors state that destination competitiveness lies in its stakeholders' capacity to collectively develop coherent and complementary products (Ndou & Petti, 2007). However, the coherent development of tourism products and destinations tends to be rather complex due to diversity of actors comprising them (Smith, 1994) and to the cooperation required among them.

One of most highlighted advantages of DMSs to tourism destinations is their potential role in fostering the collaboration between tourism stakeholders and, subsequently, the development of coherent tourism products arising from their collective action (Petti &

Solazzo, 2007; Sigala, 2014) which enable destinations to attract more sophisticated and demanding visitors (Baggio, 2011).

Concerning destinations' distribution channels, Hazra, Fletcher and Wilkes (2017) argue that travel intermediaries, such as travel agents and tour operators, try hard to get the best deal out of each individual tourism business. DMSs can represent alliances enabling individual suppliers to protect themselves from powerful intermediaries, and to promote and sell their products directly to their customers.

#### **9.2.1.4 Contributions for smart tourism destinations**

Smart tourism primarily aims to: (i) foster connectivity through web-based applications; (ii) enable the digitalisation of core business processes within destinations; (iii) empower tourists by enabling them to create destination content; (iv) connect host communities and tourists; and (v) enhance visitors' experiences through new technologies (e.g. augmented reality) (Buhalis & Amaranggana, 2014). In the new context of smart tourism destinations (SDs), the suppliers of tourism services can take advantage of online data (e.g. User Generated Content (UGC)) provided by DMSs, to improve visitors' experiences (Xiang, Tussyadiah, & Buhalis, 2015) and "better design and deliver their products and services to tourists" (Marchiori & Cantoni, 2015, p. 194).

Yu (2016) suggests that SDs require open data applications (ODA) able to process and reuse DMOs' open data, combining it with data made available by the private sector, to generate and distribute meaningful information to visitors. The author argues that through an ODA integrated platform "visitors are able to check real-time traffic, transportation, acquire recommendations for better route plans according to their current locations and specific destinations", thus providing "location-based and personalised services" (Yu, 2016, p. 102). Given the role of DMSs in coordinating destinations' value chains, the emergence of SDs opens a new horizon to them, in which open data favours cooperation, the exchange of information between destination players, as well as the coordination of the variety of functions inherent to SDs (Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2019). The DMSs are platforms that, considering their characteristics, correspond to ICTs very useful for management and cocreation of tourism experiences that, according to Gajdošík (2019), are crucial to dynamically manage destinations based on ICT that connect different organisations permitting them to "create, collect and exchange real-time information in order to meet customer needs" (p. 67). Since DMSs' intranets contribute to the digitalisation of data facilitating DMOs' internal communication and DMSs' extranets digitalise processes



between DMOs and destination players (Bédard & Louillet, 2011), these systems could play a pivotal role in the development of SDs integrating and coordination stakeholders across the destination.

### **9.2.2 Challenges underlying DMSs' adoption and success**

Although DMSs can provide important benefits, there are usually several challenges associated with their adoption and management. Though relatively scarce, some of the previous research on DMSs has identified factors affecting DMSs' adoption and success, some of which can represent challenges to their implementation and management.

Several factors affecting DMSs' adoption and success emerge from literature, which can be grouped into three categories, namely: (i) DMSs' technology and management models; (ii) organisational factors; and (iii) external environment.

Some difficulties related to the DMSs' technology and management models, are associated with the geographical scope of these systems. If too broad (e.g. at the national level), the DMS may tend to promote the general features of the destination instead of engaging with potential customers by providing one-stop-only solutions for travel arrangements (Buhalis, 2003). If too narrow (e.g. local-level destinations), a DMS may lack critical mass to become viable (Buhalis & Spada, 2000). A second factor within this category is the often-observed digital gap between destinations' suppliers that may limit the DMS's capacity to convey more advanced and diverse functionalities, such as transactions or dynamic packaging (Li & Wang, 2010; Minghetti & Buhalis, 2010). According to Buhalis (2003), another major constraint to DMSs' success can be a predominantly product rather than market orientation, inhibiting quick responses to market changes as well as to build effective relationships with visitors (Mistilis & Daniele, 2005).

The second category of factors – organisational – seems to be the one that includes more challenges to DMSs' adoption and success. Hence, Sigala (2009) and Collins and Buhalis (2003) have analysed the high levels of failure of DMSs' adoption initiatives and concluded that its causes are more organisational rather than technological. This organisational category encompasses: (i) the strategic orientation of the DMO, which depends on its intrinsic capacity to become a leader of the destinations' development process (Ndou & Petti, 2007); (ii) conflicting ideas on the role of the DMO, which can be reduced to promotional efforts with no interference on the tourism development process and competitiveness of the destination (Mistilis & Daniele, 2004); (iii) perceived costs and

benefits of the DMS (Sigala, 2013; Wang, 2008); (iv) organisational readiness of DMSs' adopters, given the fact that these systems, being IOISs, often require, to be successful, the adoption of the system by several stakeholders (Nandy & Seetharaman, 2019) and a participative management of their contents by each individual destination-based supplier (Sigala, 2013); (v) relationships between organisations at the destination level, which are often scarce or conflicting, thus compromising the success of collaborative tools such as DMSs, that demand high levels of coordination and cohesion (Ndou & Petti, 2007; Petti and Solazzo, 2007); and (vi) SMTEs trust in the DMO, namely in its leading and strategic capabilities, which are often considered scarce by destination-based players (Bédard et al., 2008; Sigala, 2013).

The third and last category of factors – external environment – may include the competitive pressure for the adoption of DMSs by DMOs from the destination's demand, from private destination-based players, from trading partners (Buhalis, 2003; Horan & Frew, 2007) or from the government (Guthrie, 2011; Sigala, 2013). Another factor related to the external environment is the destinations' customer profile and expertise, which may mismatch the capabilities offered by DMSs (Brown, 2004), since the customer may not want or be able to use the functionalities included in DMSs.

### **9.2.3 DMSs' management models**

There are several options when developing and managing DMSs, including options regarding management models. Although DMSs can be owned and/or managed by a private entity, several researchers (e.g. Brown, 2004, Mistilis & Danielle, 2005, Sigala, 2014) state that the majority of them appertain to the public sector. As far as their regional and administrative scopes are concerned, DMSs are usually implemented by either national, regional or local DMOs (Palmer, 2007). According to Collins and Buhalis (2003), national platforms tend to be too generic to be able to focus on the promotion and distribution of specific products, rather being a gateway to regional destinations, while local DMOs tend to develop simpler information systems due to their lack of critical mass and resources to develop an advanced platform. According to Buhalis and Spada (2000), due to including more specific products and services when compared to national platforms, the implementation of DMSs in the regional scope is likely to have a greater success rate.

Additionally, DMSs can be either non-commercial/funded platforms, not required to generate their own revenues because they are subsidised, or rather commercial platforms,

required to obtain revenues in order to exist (O'Connor & Rafferty, 1997). The former usually depend heavily or totally on public funding, which, according to Pikkemaat and Pfeil (2005), put them at a higher risk of being discontinued, mostly due to political changes. Thus, a larger number of DMSs sought to secure their own revenue, either through membership fees, or enhanced visibility options sold to members or, even, transactions (Collins & Buhalis, 2003; Daniele & Frew, 2008).

One of the main benefits often attributed to DMSs is the optimisation of collaborative practices between DMOs and other destination-based stakeholders, such as services and attractions (Bédard & Louillet, 2011; Buhalis & Law, 2008). Such enhanced collaboration fosters more coherent, shared and aligned promotional messages across destinations (Buhalis, 2003; Çetinkaya, 2009; Wei, & Jiu-Wei, 2009). Indeed, since DMSs often include extranets allowing regular communication flows between relevant tourism destination-based actors, DMOs gain an additional capability when it comes to spreading promotional messages and materials throughout the destination and encouraging all tourism providers to use them in a coherent fashion (Miralbell et al., 2011; Ndou & Petti, 2007). Additionally, the collaboration and presence of destination-based SMTEs within DMSs is likely to result in enhanced visibility of their offerings globally (Collins & Buhalis, 2003; Wei & Jiu-Wei, 2009).

The optimisation of collaborative practices among DMOs and private stakeholders usually attributed to DMSs also transformed the process of insertion and updating of the contents aimed at visitors. Hence, DMSs allow that these daily tasks, usually undertaken by DMOs alone, are shared with each service provider, which becomes responsible for its contents in the DMS. However, in this scope there are major differences on the DMOs' strategy identified in the literature. Indeed, while some DMOs empower suppliers allowing and, in some cases, even requiring them to insert and update the information on their own products (Guthrie, 2011), others centralise this task in the DMO staff (Bédard & Louillet, 2011). However, once more, previous literature does not provide many details concerning these options, such as whether, although encouraging private stakeholders to participate in the contents' insertion in the DMS, DMOs filter the information before making it available on the platform, to ensure content quality.

The distinct types of management models of DMSs clearly derive from the different characteristics of the DMOs that own and manage them (Collins & Buhalis, 2003). Thus, a DMO's governance and funding scheme may determine its overall approach to online marketing initiatives and, among other features, the range of functionalities conveyed by

their official online platforms (Feng, Morrison, & Ismail, 2004). There are, for instance, considerable differences between North American and European DMOs regarding their funding models. In Europe, where most DMOs are totally or partially public, over 50% of their funding typically derive from local, regional, or national authorities (Kilipiris & Dermetzopoulos, 2016). In addition, in European Union member states, most DMOs are also financed by European funds under the form of projects, such as those supported within the INTERREG programmes (Lebe, 2006). However, in various European countries, public administrations have been reducing their financial support to DMOs (Coles, Dinan, & Hutchison, 2014). In contrast, North American DMOs are not traditionally tied to the public sector, although they are often legitimised by local, regional or state administrations (Morrison, 2013). Most of them are rather membership associations, fully funded by affiliate members through “bed taxes” (Kilipiris & Dermetzopoulos, 2016). According to Mintel (2005), although DMOs which are totally or partially funded by the public sector may receive larger resources to develop their marketing initiatives, it also seems evident that fully private-funded DMOs tend to more efficiently respond to the changing needs within the tourism industry.

### **9.3 Methods of the empirical study**

The empirical analysis underlying this article sought to analyse the reasons for DMSs’ adoption by DMOs, to identify challenges encountered in their adoption and management, to understand management models of DMSs, as well as to explore current challenges associated to future development perspectives for these systems. The methodology adopted to accomplish these objectives was composed by interviews with two groups of different stakeholders: (i) Chief Executive Officers (CEOs) of leading companies specialised in developing DMSs; (ii) staff of the DMO responsible for DMSs.

The main objective of this study is to better understand the process of adoption and management models of DMSs in the perspective of the two previously identified stakeholders – DMOs and DMSs’ developers – in order to provide guidelines for the successful development and management of DMSs. In order to reach this goal, the script of the interviews conducted with these two groups of stakeholders included questions about the reasons underlying the adoption of DMSs by DMOs, the challenges inherent to their implementation processes, the management models of these systems, as well as the future perspectives for the development of such platforms. In the interviews conducted with DMOs, some questions regarding the characteristics of the DMOs (e.g. belonging to the public or

private sector, number of staff members) were also added since these characteristics can influence the adoption and management of DMSs. The DMSs' developers were asked to address the DMS platforms in general and not only those that they had developed.

Regarding the selection of the DMSs' development companies to interview, it seemed appropriate to begin by choose the Anglo-Norwegian *New Mind TellUs*, since it is the largest European specialised in supplying DMSs' solutions to DMOs (Argyropoulou, Dionyssopoulou, & Miaoulis, 2011). Additionally, it developed the *Visitbath* DMS, one of the most studied DMSs in previous research which is still operating (Estêvão, Carneiro, & Teixeira, 2012; Kalbaska, Jovic, & Cantoni, 2012; Inversini & Cantoni, 2009; Inversini, Cantoni, & Buhalis, 2009).

A snowball sampling technique was subsequently used in order to identify other leading companies in the field of DMSs' solutions. Hence, during the interview to *New Mind TellUs*, its CEO indicated as relevant DMSs' providers the US-based *Simple View* which, according to him, is the undisputed leader in the North American market, as well as the Sweden-based *Visit Group*. Interestingly, when asked the same question, the representatives from these two companies appointed the other two. The coincident choices of reference DMSs' developer companies provided a robust indicator that they were, indeed, the most relevant in this area. Thus, the representatives of the three companies mentioned before were interviewed.

Regarding the DMO officials' interviews, the authors asked several DMOs to participate in this survey, namely nineteen local and regional ones using DMSs created by the companies of the three DMSs' developers interviewed, as well as DMOs that manage two DMSs that have been remarkably addressed in previous research - *QuébecOriginal* (previously identified as *BonjourQuébec*) and *Jersey*. Only the eleven DMO official of the DMOs represented in Table 9.1 agreed to participate in the research. Table 9.1 summarises some characteristics of the DMOs' sample. It is important to note that the positions of the interviewees of DMOs ranged from CEOs to marketing or web/digital services managers.

All the interviews to DMSs' developer companies and DMO officials were held via Skype calls and their length varied between 45 minutes to 1 hour and 15 minutes. The interviews were saved as sound files and subsequently transcribed. The interviews performed to the DMSs' developers and selected DMOs were subsequently the object of a content analysis carried out based on the main factors identified in the literature review related both to DMSs' adoption and management of these systems and reported in sections 9.2.1 to 9.2.2.

**Table 9.1 – Surveyed DMOs and corresponding DMSs’ providers**

<b>DMO</b>	<b>Interviewee’s Position</b>	<b>DMS’s B2C Website</b>	<b>DMSs’ Provider</b>
<b>Grand Rapids CVB (USA)</b>	Marketing Technology Director	<i>www.experincegr.com</i>	<i>Simple View</i>
<b>Greater Newark CVB (USA)</b>	Chief Technology Officer	<i>www.newarkhappening.com</i>	
<b>Greater Wilmington CVB (USA)</b>	Director of Marketing	<i>www.visitwilmingtonde.com</i>	
<b>Tourism Office of the Gjøvik-Region (NOR)</b>	Web Services Manager	<i>en.gjovik.com</i>	<i>New Mind   TellUs</i>
<b>Visit Harstad (NOR)</b>	Chief Executive Officer	<i>en.visitharstad.com</i>	
<b>Visit Lillehammer (NOR)</b>	Web Services Manager	<i>en.lillehammer.com</i>	
<b>Visit Telemark (NOR)</b>	Web Services Manager	<i>www.visittelemark.com</i>	
<b>Visit Wilshire (UK)</b>	Digital and Online Executive	<i>www.visitwilshire.co.uk</i>	
<b>Tourism in Skåne (SWE)</b>	Editor-in-Chief	<i>www.visitskane.com</i>	<i>Visit Group</i>
<b>Jersey Tourism Information Centre (UK)</b>	Head of Marketing	<i>www.jersey.com</i>	<i>Zoocha</i>
<b>Québec’s Ministry of Tourism (CAN)</b>	Electronic Services Director	<i>www.quebecoriginal.com</i>	<i>Québec’s Ministry of Tourism and Bell Canada</i>

## 9.4 Analysis and discussion of results

The discussion of results presented in this section concerning the adoption and management of DMSs is organised around five topics: (i) reasons for DMSs adoption by DMOs; (ii) challenges inherent to DMSs implementation processes; (iii) DMSs business models and management; (iv) perceived benefits of creating DMSs; (v) current challenges and development perspectives for DMSs. The results of the survey to DMSs' developers and DMO officials are summarised in Figure 9.1.

In order to guarantee confidentiality of the interviewees, codes were attributed to them. Thus, the three DMSs' developers were coded from D1 to D3. The North American DMO representatives' codes range from A1 to A4, whereas those from European DMOs were coded from E1 to E7.

### 9.4.1 Reasons for DMSs' adoption by DMOs

DMOs can be either governmental entities (e.g. city councils, public tourism boards or organisations specifically created to perform the role of a DMO), public-private partnerships or purely private entities. According to D2, all the three types of DMOs implement DMSs, since the decision to adopt them is not determined by the business model of the DMO. Some factors were identified as drivers of DMSs' adoption such as the **importance of tourism in local economies** (D2), the degree of development of the destination (D1), the **strategic vision of key stakeholders** (recognised by the generality of the DMSs' developers), as well as the **frustration with the fragmented and disparate information systems** that are not designed for the tourism marketing industry and, as a result, do not fulfil their needs. However, D1 admits having encountered DMOs from popular regional destinations relying on the most basic technology (e.g. Outlook, Excel and a simple brochure website), not taking advantage of the possibilities and benefits of technology investment. Although recognising that, in some cases, DMSs' adoption may be partly explained by the strategic vision of DMOs, D3 argues that such processes are often bottom-up, usually led by private businesses with a deeper knowledge on advantageous distribution channels.

Both D1 and D3 suggest that DMOs can have several reasons spurring them to implement DMSs, ranging from **strengthening ties with local businesses** to **optimise relations with the tourist demand**. In this scope D2 also argued that DMOs deciding to take marketing

seriously, feel compelled to establish relations with their potential visitors, what requires some kind of Customer Relationship Management tools.

From the interviews to the eleven DMO officials, five main reasons to adopt DMSs arose. The two most common reasons identified by seven DMOs, which are relatively novel within the DMS-related research, were: the need to **develop platforms with mobile technology capabilities**, as well as more user-friendly functionalities for smartphones (identified by the DMO officials A1, A3, A4, E1, E4, E5, E7); and the need to **improve the destination platform's responsiveness to search engines**, namely to meet *Google's* latest algorithms (A1, A3, A4, E2, E5, E6, E7). Interestingly, these two reasons for DMSs' adoption are absent from previous research, perhaps due to the fact that when the bulk of studies on DMSs were conducted – the late 90s and early 00s – smartphones had just been released in the market and today's major search engines, such as *Google*, were in its earlier stages of development. Only a handful of studies, recently published, discuss the relevance of DMSs' responsiveness to mobile phones and search engines (Ammirato, Felicetti, Della Gala, Raso & Cozza, 2018).

As stated by Liang, Schuckert, Law and Masiero (2017), mobile tourism, in general, is still an emerging research field which will gather more attention from the academia as the number and diversity of mobile application increases. Thus, only a limited number of research works have previously addressed the use of mobile technology by DMO websites (Garcia, Linaza, Gutierrez, Garcia & Hornes, 2016; Stienmetz, Levy, & Boo, 2013; Xu, Tian, Buhalis, Weber, & Zhang, 2016). Some research clearly suggests that the responsiveness of DMO websites to mobile technology is particularly relevant in the on-site travel stages (Stienmetz et al., 2013). According to Stienmetz et al. (2013), it enables the flexibility to change travel plans or make last-minute decisions demanded by today's tourist demand. Dorcic, Komsic and Markovic (2019) have established a causal relationship between the level of destination smartness and the ability of DMOs to develop mobile platforms providing real-time data which enables intelligent and up-to-date decision making for all stakeholders.

Five of the eleven interviewees highlighted that **growing competition between destinations** required a move from static, brochure-like websites to more dynamic, sophisticated and integrated platforms linking the DMO to the destinations' players (A2, E1, E2, E3, E6). This reason for adoption is usually identified in previous research on DMSs (Alford & Clarke, 2009; Buhalis, 2003; Sigala, 2013).



Four DMO officials stated that an important factor for DMSs' implementation was the ability of such systems to **provide a 'one-stop-only' platform to future visitors**, enabling them to search, plan, book and purchase the entire range of the destination's tourism-related services. This is one of the most common advantages of DMSs found in previous research, usually addressed in the definitions of the DMS concept (Ivars-Baidal et al., 2019; Teichmann & Zins, 2008). In this scope, A2 highlighted the 'one-stop-only' quality of DMSs as an advantageous distribution channel for local businesses and an alternative to OTAs, which is in line with previous research (Dwyer, Mistilis, Roman, & Scott, 2009; Wei & Jiu-Wei, 2009). Additionally, E2 and E3 focused DMSs' role in facilitating travel arrangements for visitors and A4, representing a destination privileging cultural and entertainment events, remarked the DMSs' relevance for providing information, planning and transactional tools specifically intended to optimise its events. Although rarely addressed as reasons for DMSs' adoption, these benefits of DMSs to visitors are profusely discussed in previous studies (Frew & Horan, 2007; Sourak, 2015; Teichmann & Zins, 2008).

The fifth and last reason for DMSs' adoption, referred by four officials, was their higher capacity to **provide networks linking destination stakeholders**, as suggested by previous research (Bédard & Louillet, 2011; Buhalis & Law, 2008; Egger & Buhalis, 2011; Guthrie, 2011). According to A1, these links "seem to encourage the establishment of partnerships among private stakeholders, while facilitating the CVB's (DMO) role" of leadership and coordination. Such evidence corroborates previous research (Buhalis, 2003; Ndou & Petti, 2007). Unsurprisingly, almost every North American DMO official indicated this reason (A1, A2, A3), whereas only one European did it (E3). Indeed, the often heavy, and sometimes complete, dependence of American DMOs on fees and contributions of private affiliate members, may compel them to adopt online platforms strengthening ties with local businesses.

#### **9.4.2 Challenges inherent to DMS implementation processes**

DMSs' implementation processes are particularly challenging for both DMOs and its affiliate members. Based on their past experiences, DMSs' developers indicated different periods for these systems' implementation: three months in average (D2); six months (D3); from six to ten months (D1). Among the reasons explaining such disparities, the interviewees mentioned the motivation and resources available at the destination.

All the three consulted DMSs' developers agreed that, before implementation stages, they often met factors inhibiting DMSs' adoption. According to them, some factors are political.

In the European case, they are usually related to the **approval of the DMSs by governing bodies** which are expected to fund the platforms (Palmer, 2007). In the American context, often more open to community participation in the destination management, adoption challenges mostly derive, as stated by A3, from **“lack of agreement on which stakeholders to promote in the system, (...) which different visibility options should be given to businesses as well as the fees to be charged to adherent members”**. Such challenge seems to be neglected in previous literature.

During DMSs' implementation stages, D1 believes that most of the challenges “are related to **time constraints and training**”. According to the same source, “DMOs' staff are very busy, it is often difficult for them to allocate enough time for various important aspects of implementation, such as training”. This challenge also appears to have been almost ignored by previous studies on DMSs with few exceptions (e.g. Zehrer, Pechlaner & Hölzl, 2005). Both D2 and D3 believe that the main challenge when implementing a DMS is to ensure that **DMOs and affiliate members have enough human and technical resources** to create content or to **convince partners** to do so. D2 argues that “DMSs' developer companies provide DMOs and suppliers the tools, but the main challenge is to make them actually use them”. D2 further confessed that his company spends considerable time producing videos and other materials to help suppliers to create content to feature in the DMS. To D3, the main challenge inherent to DMSs' implementation is the **management of the transactional tools**. This DMSs' developer admitted that “the difficulty that smaller DMOs often face regarding the management of bookings of tourist services, combined with the growing power of the main OTAs, has forced some of them to suspend their transactional functions”. Although the DMSs' transactional capabilities are usually addressed by previous research as a challenge to be tackled by DMOs (Wang, 2008), the trend of suspending transactions suggested by the survey to DMSs' developers seems to be absent from the literature.

Four relevant DMSs' implementation challenges were revealed in the survey to DMO officials. The one receiving larger consensus was the **lack of e-readiness from the part of many adherent tourism suppliers** (the only DMOs that did not mention this factor were A2, A3, E6), which is also one of the most frequently identified challenges in previous research (Alford & Clarke, 2009; Buhalis, 2003; Egger & Buhalis, 2011; Sigala, 2013). This mainly derives from the fact that DMSs usually require these suppliers to manage their own content on the system's CMS. Some DMO officials stressed that even companies that had become able to insert and update their own Content Management Systems' (CMS) areas,

did that with low-quality content, such as poorly written texts or low-quality photos (E2, E5, A4).

A second challenge was perceived by three of the surveyed DMOs – all of which European – which admitted that staff receiving training during implementation stages, realised that the newly adopted **DMS would not be able to perform all the expected tasks**, namely those related to dynamic packaging (E2, E5, E7). Moreover, E2 stated “that the previous platform conveyed more flexible and user-friendly CMS solutions in comparison to the new one”, thus requiring more laborious and lengthier updates, prone to undermine the platform’s flexibility and interactivity. The challenge related to the realisation, by DMOs, that the newly adopted DMS will not be able to perform as expected, seems to be absent from previous research.

The considerably **larger diversity of devices in which the DMS should operate** was considered as challenging for three DMOs (A1, A3, E4). E4 highlighted the “need to test all newly created pages on all types of devices before releasing them in the system”. Although previous research refers to the multiplicity of devices in which DMSs are expected to operate, it has not addressed them as a challenge, but rather as an advantage (Ivars-Baidal et al., 2017). Another challenge felt by some European DMOs (E1, E2, E6) when implementing a DMS was the **inability of their own staff to effectively use its full range of available functionalities**. This happened even after staff received intensive training from the DMSs’ providers. This challenge is scarcely mentioned by studies on DMSs’ implementation processes, with a few exceptions (Collins & Buhalis, 2003).

The largest surveyed DMOs also reported difficulty to effectively train all of its staff members who would be required to use the newly adopted DMS on a regular basis. Only one surveyed DMO declared not to have found relevant challenges during DMSs’ implementation stages (E3).

#### **9.4.3 DMS management models**

As far as DMSs’ management models are concerned, several issues were examined, such as: (i) the systems’ ownership; (ii) the criteria and conditions regarding the presence of individual tourism suppliers in DMSs; (iii) the daily management of the platforms’ contents and operations, including the levels and requirements concerning the participation of private suppliers in this process; and (iv) DMSs’ funding schemes.

When it comes to ownership, ten out of the eleven interviewed officials indicated the **DMO as being the sole owner of the DMS**. In only one case, the DMS is an initiative of the regional Ministry of Tourism and of a private company. All three DMSs' developers confirmed that the owners of the majority of DMSs are DMOs.

Concerning the criteria and conditions determining the presence of destination businesses and attractions in the DMS, most DMO officials stated that all the **permanent products in their end-user platforms were required to be from affiliate members** (A1, A3, A4, E1, E2, E3, E4, E5, E6, E7). Two DMO officials added that **non-commercial or temporary attractions**, such as events, were promoted on the DMS, even though they were not members of the DMO. Despite the fact that most DMOs allow their affiliate members to be present in the DMS, they can benefit from different degrees of exposure, which is aligned with the few studies describing the criteria underlying the selection of products promoted by the platform (Baggio, 2011; Guthrie, 2011; Schröcksnadel, 2011). Hence, most platforms **ensure higher levels of visibility to the attractions and other suppliers that are willing to pay additional fees**.

Most surveyed DMO officials did not reveal specific data concerning the conditions required to suppliers wanting to perform transactions through the DMS. However, an official from an American DMO (A3) revealed that two business models for accommodations suppliers were offered. The first one encompasses an **annual subscription based on accommodation capacity without transaction fees** (commissions). The second business model **does not require an annual subscription, but rather fees per transaction**.

**Concerning the content management**, all the interviewed DMSs' developers **enable both DMOs, as well as attractions and other individual businesses, to do this management**. All of them have developed a platform allowing geographically dispersed users to update content (including availability and pricing), as well as to decide which channels they want to use to distribute their products. These platforms also enable suppliers to see reports about how their information is being shared and presented to users, or how many bookings were made through the DMS. Regarding the current use of such capabilities by their customers (DMOs), the surveyed American DMSs' developer believes that most of them encourage a shared insertion and updating. In such cases, the **DMO is usually responsible for curating the supplier's content** and for creating the general destination content. As his two both European counterparts are concerned, they admitted that although most of their customers were given the tools to enable individual businesses to participate in maintaining content, most of them have chosen not to allow it. A handful of studies have

analysed the success of DMSs under the perspective of the internal coordination required to ensure that all affiliate companies engage in updating and managing their own content, suggesting that these systems are not able to thrive in fragmented destinations (Ndou & Petti, 2007; Petti & Solazzo, 2007).

The above addressed disparities between American and European practices concerning DMSs' content management were confirmed by the survey to DMOs representatives. Hence, all the American DMOs stated that they encourage affiliate members to update their own data on the CMS. Besides admitting challenges regarding quality control, every American DMO expressed the will to maintain shared content management. In contrast, most European DMOs that had previously tried to encourage suppliers to update their information in the DMS soon abandoned this practice, the exception being two of them (E3, E4). When asked why, most confessed they were disappointed with the suppliers' lack of engagement, their technical inability in using the CMS, or their poor soft skills, that compromised content quality (e.g. originating poorly written texts).

Unsurprisingly, the funding schemes of the surveyed DMSs tend to mirror the ones from the corresponding DMOs. Hence, three surveyed **American DMSs totally rely on private partners to finance the system**, whereas one American and all the **European platforms are funded by both public administrations** (national, regional or local) and DMO affiliate members. Those responsible by American and European DMO officials indicated roughly the same specific sources of funding from their members that typically are: DMO membership charges, and fees related to the visibility of products. Regarding the membership charges, two American and three European DMOs were compelled to raise membership fees to be able to support the additional costs inherent to DMSs' adoption when compared to their previous official websites. Two European DMOs (E2, E5) have further referred to the inclusion of specific products and suppliers in the DMS and in other digital platforms (e.g. DMOs' social media) in web marketing campaigns in specific periods, as a recurrent funding source. Unlike previous research on DMSs (Kärcher & Alford, 2008), none of the examined DMOs said that it retained a commission on the sales of products from destination suppliers.

#### 9.4.4 DMSs' perceived benefits by DMOs

The benefits that DMOs may obtain from having a DMS are somewhat related to some kinds of reasons for DMSs' adoption. Most DMOs expressed mixed feelings about the benefits brought by DMSs' adoption. Although almost every DMO representative agreed that the DMS fostered **communication with private stakeholders**, as well as the integration of these stakeholders in the official destination platforms, some of them argue that the adoption process revealed the stakeholders' lack of engagement in sharing the task of updating and managing their contents.

The benefit most frequently mentioned by surveyed DMOs is the remarkable **increase in visits to the front-end website of the DMS** when compared to the previous destination platforms **and, consequently, to the destination itself**. As addressed earlier, two European DMO officials realised that after DMSs' adoption **visitors approaching the staff in tourism information centres revealed to be more knowledgeable about the destinations' features** than before DMSs' implementation. Another relevant benefit, mentioned by three American and four European DMOs, was the **enhanced visibility of smaller businesses and communities**, such as villages. This benefit has been extensively mentioned by previous research on DMSs (Bethapudi, 2013; Buhalis, 2003; Çetinkaya, 2009).

Two European DMO officials and two others from North America admitted that the DMSs' adoption did not meet the expected goal of becoming a viable alternative to OTAs, due to the current domination of major OTAs. One European official argued that the suspension of transactions through the DMS soon after implementation was due to the DMO's own lack of resources – especially human - rather than to any platform's technological deficiencies or to the OTAs' dominance. The remaining six DMO officials sustained that they never intended to replace OTAs by adopting a DMS. Both the apparent trend of some DMOs to abandon transactions held by the DMSs as well as to replace OTAs or at least diminish their preponderance when it comes to sell destination's products, is in sharp contrast with previous research (Buhalis, 2003; Wang, 2008). Nevertheless, this is in line with the failure of some DMSs to constitute an alternative to OTAs suggested by Werthner et al.'s (2015) manifesto on the future of ICTs' research. Although lacking optimism concerning the future of transactions through DMSs, one American DMO official reported that, since its adoption, the regional DMS has become a reliable alternative to many destination-based SMTEs when it comes to commercialising their offerings.

Two other Americans and two European DMO officials believe that the DMS's front-end website **channeled a considerably higher number of reservations to third party booking engines** than the previous platform. Interestingly, two American and one European DMOs consider the easiness in launching subsites subordinated to the main website, which have proven to optimise the promotion of special interest events or ephemeral promotional campaigns.

As addressed earlier, one of the main reasons cited by most surveyed DMO officials for DMSs' adoption was their need to provide **better responsiveness to mobile technology**. All surveyed DMO officials who pointed this reason demonstrated their contentment with the DMS. The interviewed web services manager of E3 stated that "the number of people using the DMS in their mobile devices is just phenomenal. The fact that many accommodation providers still do not have their websites adapted to the mobile web, also helped the amount of traffic in the DMS". Lastly, British and American DMO officials consider that one of the main benefits of their new systems is their ability **to maintain high visibility levels within major search engines**, mostly due to their responsiveness to *Google* algorithms.

The last two benefits seem to illustrate a clear mismatch between those identified in the literature and those actually stressed by DMOs. Thus, while researchers tend to highlight more strategic, holistic and long-term benefits such as the ability to develop a coherent image and promotion of the destination (Çetinkaya, 2009), enhance a destination's internal coordination (Wei & Jiu-Wei, 2009) or attract a more sophisticated demand (Baggio, 2011), the empirical approach to DMSs underlying this study demonstrates that DMOs tend to favour more immediate and practical benefits, including technological advantages.

#### **9.4.5 Current challenges and future perspectives for DMSs**

The challenges inherent to further DMSs' development and the future perspective on DMSs were explored in the surveys to both DMSs' providers and DMO officials. The survey to DMSs' developers offered distinct but complementary insights on the current challenges and future perspectives for DMSs. According to one of them (D1), the main challenge that DMSs are facing "is a commercial one, because the funding for destinations is decreasing". This alarming scenario poses one challenge to DMOs, which is how to generate receipts through DMSs or find other funding sources to these systems' management; and (ii) how to generate money to pay qualified teams for managing the system. The DMSs' developer D1 believes that DMOs must look at different funding models and try to motivate destinations

to generate money without relying in state-aid and compete with the private sector. The **difficulty to support DMS-related costs** is also considered by all the surveyed DMOs as one of their major challenges.

The DMSs' developer D2 believes that DMSs will continue to evolve in areas such as UGC aggregation and curation, marketing automation, as well as further integration with other technology providers. This interviewee further argued that there are so many emerging technology solutions for DMOs, that it is almost virtually impossible for a single provider or system to address every need of a DMO. Therefore, instead of attempting to build everything into a single platform, it would be wiser to **identify best-of-breed technology providers and integrate their solutions where appropriate**. This view is shared by most of the surveyed DMOs.

The DMSs' developer D3 focused the organisational challenges inhibiting DMSs' development, especially those related to the need to integrate destination platforms operating at different territorial and administrative levels. The interviewee argued that the lack of integration of the multiple platforms created for destinations (provincial/regional/local level) leads to: (i) redundancy on systems' maintenance and information collection costs; (ii) uneven information reliability and incoherent promotional efforts; and (iii) destination brand awareness dilution. These issues are major barriers to DMSs' success, which requires **cooperation between regional or local DMOs in the process of collecting and sharing customer information** about visitors and conveying coherent and aligned promotional messages on the destination.

When asked about the future developments of the scope of DMSs' functionalities, all three interviewed developers were unanimous to consider that DMOs will increasingly move away from being booking engines themselves to become pooling engines enabling price comparisons and showing the different choices available in the market. One American DMO official still providing bookings believes that, every day, it becomes harder for the DMO to keep up with website referencing and reputation due to the current hegemony of major commercial players, such as *TripAdvisor*, *Expedia* or *Booking* (A1). Hence, less traffic will originate less bookings, what will ultimately lead to less appeal for suppliers to use DMO's online booking service, even with almost no booking fees.

For six DMOs (four European and two North American), one of the main current challenges regarding their DMSs is the constant need to **quickly adapt to the drastic and rapid technological changes**. One American DMO pointed out that many suppliers promoted in the DMS complain about the difficulty of finding their own products among all those



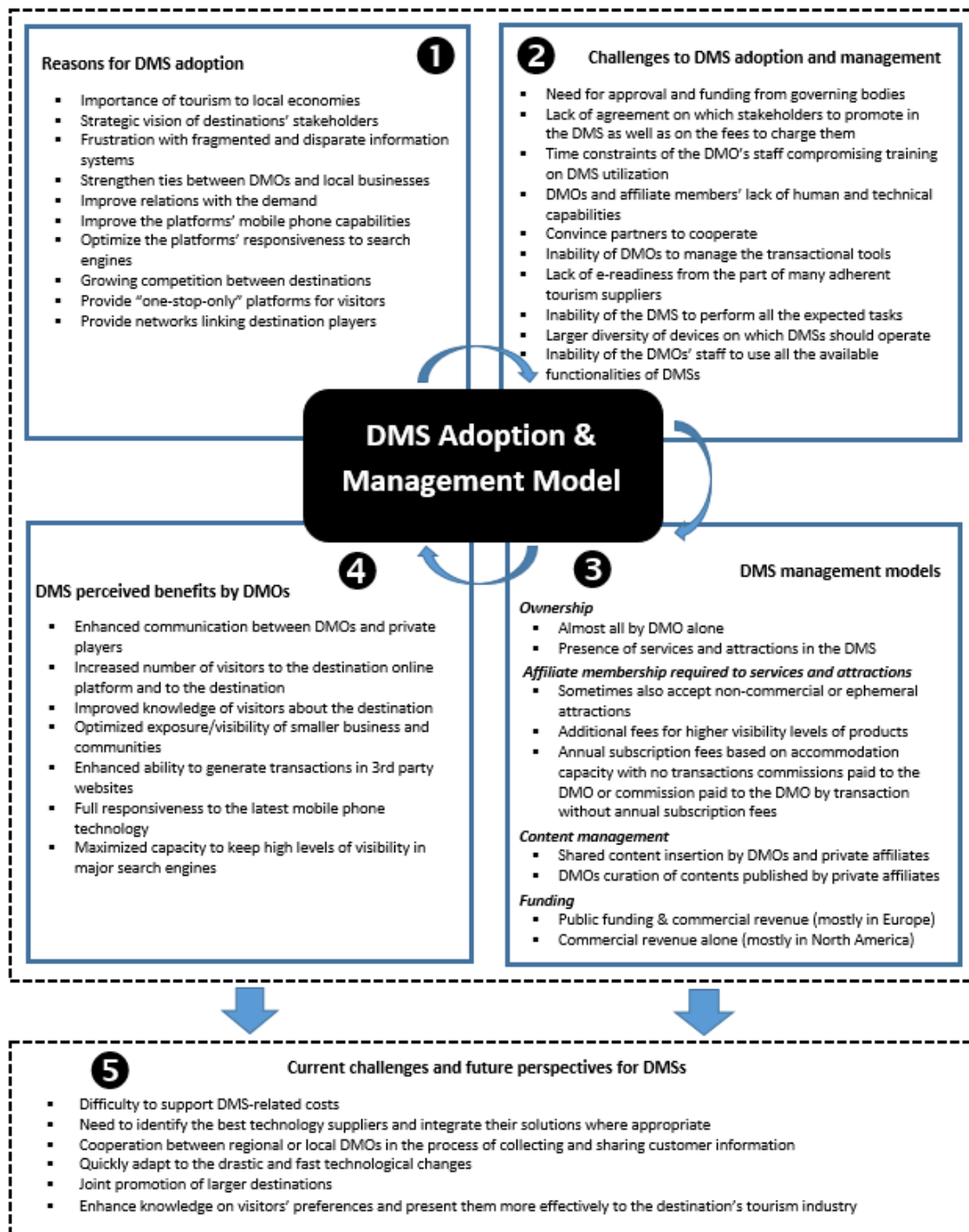
presented in the consumer-facing website. For this DMO, it is getting harder to conveniently tag all the items since visitors can use different strategies to search them.

As to the perspectives of future development for DMSs, two of the surveyed DMO representatives (both European) consider that different regions will tend to opt for a **joint promotion of larger destinations**. They believe that destination promotion - and their ensuing online platforms – have been excessively determined by local or sub-regional administrative boundaries that often fragment territories that should be promoted as broader single destinations. One DMO representative added a further dimension to the future expansion of DMSs' contents, stating that they will tend to include key stakeholders not directly related to the tourism industry.

In line with the DMSs' developers, most surveyed DMOs believe that the few platforms that still maintain their own booking engines of tourism services and social media functionalities, will continue to abandon them (even at the national level). As expressed by DMSs' developers, they will gradually become a sort of official destination referral platforms further integrating third party social media and booking engines. However, one DMO, representing a small European destination with a relatively small number of service providers, stated that its main current priority is to have the main attractions and services booked in the DMS as soon as possible. One American DMO official also argues that, although the regular bookings of tourist services will tend to disappear from DMSs, they should increase the offer of package deals and special offers.

The growing need to **enhance knowledge on visitors' preferences and present them more effectively to the destination's tourism industry** is considered by two American DMOs as both a major challenge as well as paramount task for DMSs' managers. The same DMOs agree that they will be increasingly required to become as reliable to tourists using mobile technologies during their stays as they currently are to on-site visitors who approach the destination's tourist information centres.

Figure 9.1 presents a framework that summarises relevant factors related to adoption and management models of DMSs identified in the empirical study and organised around five topics before described in section 9.4.



**Figure 9.1 - Framework on DMSs' adoption and management**

## 9.5 Conclusions and implications

This article sheds light on the adoption and management of DMSs. Based on a literature review and on an empirical study involving interviews to the main DMSs' developer companies and to DMOs adopting these systems, this paper provides a framework with relevant information regarding DMSs' adoption and management model - namely (i) reasons for DMSs' implementation, (ii) challenges inherent to DMSs' successful implementation, (iii) management models of existing DMSs, (iv) perceived benefits of DMSs' adoption -, as well as current challenges and future perspectives for DMSs.

When it comes to the reasons explaining DMSs' adoption, both DMSs' developers and DMOs recognised the need of strengthening ties with local partners (and between them), as well as with tourists. However, differences may be noted regarding other reasons of adoption, since DMSs' developers focused the importance of tourism and the strategic vision of DMOs, while DMOs stressed the will to move from relatively static informative official websites to dynamic "one-stop-only" ones and to respond to technological advances using different devices.

Concerning the challenges DMOs and destinations as a whole must face in order to successfully implement a DMS, whether in Europe the main problem seems to be ensuring the funding of DMSs, in America the major difficulties are related to the choice of consensual and transparent criteria concerning the stakeholders to promote and the fees to charge to them. In addition, DMOs' lack of human and technical resources to effectively manage DMSs' tools, as well as the lack of *e-readiness* of many destination-based private businesses were also mentioned as other important challenges.

Several important issues related to DMSs' management models seem to be relevant, concerning: (i) DMSs' ownership; (ii) access / presence of individual tourism businesses to / in the DMS; (iii) contents' updating and management; and (iv) DMS funding schemes. There is a predominance of DMSs owned only by the DMO. Regarding the presence of specific products in the DMSs, the majority of surveyed DMOs demands membership and a corresponding fee to all companies that want to promote their products in the DMS, with the exception of information on non-commercial or temporary attractions such as events. It seems also to be usual to offer higher levels of exposure in B2C pages to private members, in exchange for additional fees. Although DMSs' developers stress that all the DMSs they developed include extranets enabling shared processes of content insertion and management by DMOs and private tourism suppliers, some differences are noted among DMOs in this scope. While American DMOs tend to encourage private members to manage

their own contents in the CMSs, European DMOs admitted that they do not allow private partners to introduce any contents which may be visible in the consumer-facing destination webpages mainly due to mistrust in the suppliers' ability to provide quality contents. As far as DMSs funding is concerned, all DMSs require paid membership to all private stakeholders. However, all the European DMOs have systems that are partly funded by the public sector, whereas most of the American platforms totally rely on the revenue they are able to generate.

Despite the variety of potential benefits from adopting a DMS, two are considered the most important ones in the case of existing DMSs in the empirical study - (i) the remarkable increase of traffic in DMSs in comparison to the DMOs' previous official websites and in destinations and (ii) the enhanced visibility of SMTEs and smaller communities -, what is consistent with previous research on these systems' benefits (Dwyer et al., 2009; Wei & Jiu-Wei, 2009).

A considerable variety of insights on the current challenges and future perspectives regarding DMSs were also obtained. Firstly, the technological evolution led to some challenges regarding the main roles of DMSs, with their transactional capabilities being replaced by agreements with OTAs and meta-booking engines. Therefore, in the future DMSs are more likely to provide links to these applications and to become pooling engines enabling comparison of different products. Another challenge is the need to quickly adapt to new technologies. However, these issues are still relatively unexplored in the literature on destination online platforms and absent from that encompassing DMSs. It was also found important to foster the promotion of larger destinations, to prevent fragmentation, what requires the integration of DMSs' operations at distinct territorial and administrative levels. Devising new funding schemes for these platforms, allowing them to become independent of public subsidies is also very relevant. One future perspective regarding DMSs' development lies in the aggregation of UGC of the platforms conveying the DMSs and another important challenge is to be able to derive knowledge on tourists' preferences.

The findings of this article's empirical analysis provide theoretical and practical implications. Regarding the first, the present paper remarks that there seems to be a mismatch between the concept of DMS suggested by previous research and the current practices concerning the adoption of functionalities in DMSs. For instance, the tendency for DMSs to discontinue in-house built transactions ask for a revision of the DMS concept itself. The paper also provides important new findings that complement previous research concerning the five topics explored in the empirical research: (i) reasons for DMSs' adoption by DMOs; (ii)

challenges inherent to DMSs implementation processes; (iii) DMSs business models and management; (iv) perceived benefits of creating DMSs; (v) current challenges and development perspectives for DMSs. In this context, relevant reasons for DMSs' adoption by DMOs were highlighted, such as these systems' improved responsiveness to mobile technology or to the major search engines, that still remained absent from previous research and should be taken into consideration. In addition, some challenges to DMSs' adoption and management were identified in the empirical study, which seem to have been neglected in previous research, such as: (i) the lack of agreement concerning the criteria determining the different levels of visibility given to individual tourism products in the consumer-facing websites; and (ii) the large diversity of devices in which DMOs' staff is expected to update the DMSs' contents, which is commonly addressed as an advantage of such systems.

Although previous literature already provides some perspectives regarding the potential management models of DMSs and potential benefits of these systems, the present paper offers interesting insights concerning the DMSs' management models most adopted and the benefits most perceived by DMOs. As far as management models are concerned, there is a prevalence of DMSs only managed by the DMO alone and of DMSs that charge fees for ensuring both presence and higher visibility of products in their website. Nevertheless, the paper evidences a contrast between the models adopted by American DMOs and European DMOs. While the first are more likely to rely on the revenue they are able to generate and to encourage private members to manage their own contents, the latter are more likely to be partly funded by the public sector and to not allow private partners to introduce contents visible in the destination webpages mainly due to mistrust. As far as benefits are concerned, this paper complements previous research by revealing that the benefits of DMSs most perceived by DMOs are the increasing number of visitors in the destinations' website and the increased visibility that small business and communities obtain with DMSs. Although the DMOs surveyed did not explicitly refer that DMSs were a help to create SDs, they reported that DMSs were very relevant to create higher responsiveness to new technologies and to improve communications among several stakeholders - DMOs, other organisations of the destinations and visitors -, features that are crucial to develop SDs.

Due to the scarce empirical research on DMSs in the last years, the present paper also offers new findings on DMSs by highlighting major current challenges and future perspectives on these systems. These challenges seem to be mainly: (i) financial, due to the increasing difficulty of DMSs on funding this kind of platforms; (ii) technological, with DMOs needing to acquire or develop solutions both able to adapt to new ICTs and to

integrate PMS of several stakeholders in the DMS; and (iii) of cooperation, with DMOs having to ensure cooperation among organisations of the destination in collecting and sharing information. In addition, in a context in which the relevance of DMSs is being disputed by some academic research, mostly due to the growing dominance of OTAs, this article sought to demonstrate the adequacy and necessity of recuperating this concept by placing it at the core of the SD, through the creation of a digital tourism ecosystem.

The findings of this study presents several practical implications regarding the adoption and management of DMSs, namely the relevance of ensuring the following: (i) the existence of platforms that jointly promote relatively small regions; (ii) devise innovative funding solutions, which turn DMSs independent from public subsidies; (iii) replace part of the UGC and transactional tools of DMOs' platforms by third party portals; (iv) developing DMSs to have a better understanding on users' preferences; and (v) further training aimed at raising their levels of *e-readiness*.

The main limitation of this study is the relatively low number of surveyed DMOs. Thus, the survey of more DMOs might be required to confirm the results obtained in this study. Additionally, future research on the adoption and management of DMSs should encompass the attitudes and expected benefits of managers of tourism attractions and other SMTEs towards these platforms, as well as the specific roles and functions which these systems should convey in order to become the pivotal element of smart tourism destinations.

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## CHAPTER 10

### Factors affecting the adoption of Destination Management Systems by stakeholders: Proposal of an explanatory model

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#### Reference

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## 10. Factors affecting the adoption of Destination Management Systems by stakeholders: Proposal of an explanatory model

### Abstract

Destination Management Systems (DMSs) have an important role in management, coordination and promotion of destinations. However, research on DMSs rarely empirically examined the factors that inhibit the adoption of these platforms, and the scarce research in this scope excludes important factors. The aims of this paper are empirically analysing the influence of a comprehensive range of factors on DMS adoption and propose a model showing the impact of these factors. For this, a questionnaire survey was carried out with managers of tourism attractions, managers of tourism accommodation and representatives of city councils (N=326) in a regional Portuguese tourism destination with no DMS. The study corroborates the findings of previous research regarding the important impact of some factors on DMS adoption, such as the organisational readiness of destinations including the willingness to cooperate, the availability of resources to adopt DMSs, and Destination Management Organisations' role and perceived expertise. However, it also provides new insights in this field. First, although the available resources and strategic vision of individual stakeholders do not influence their opinions concerning the relevance of implementing DMSs in their own destinations, they had an important impact on the stakeholders' willingness to adopt this kind of systems. Second, alternative web platforms (e.g. *Booking*, *Expedia*) and the inexistence of other complementary DMSs have a negative impact on adoption intentions. Finally, a model of DMS adoption by destination-based stakeholders—DMSs' Adoption Model (DeMSAM)—is proposed, providing contributions to the literature on collaborative technological platforms in tourism and to their implementation by destinations.

**Keywords:** Destination Management Systems, Adoption, Destination stakeholders, Information systems, Portugal

## 10.1 Introduction

The advent of the Internet dramatically changed the relationships between firms and customers (Hjalager & Nordin, 2011). Perhaps due to the intangible nature of tourism, the planning and purchase of products was revolutionised by the Internet, offering to both the demand and supply a vast array of alternatives to traditional distribution channels (Kotoua & Ilkan, 2017; Neuhofer, Buhalis, & Ladkin, 2014). While favouring disintermediation practices in some contexts, the Internet simultaneously spurred reintermediation scenarios favouring the emergence of meta-search engines, such as *TripAdvisor* (Barrio, Domecq, & Ballester, 2017).

Previous research indicates that, as far as the planning and acquisition of online composite products by individual consumers is concerned, the progressively sophisticated demand markets (Zehrer & Pechlaner 2006) tend to prefer using websites that promote and sell different kinds of products from various suppliers (Gamper, 2012). This is also true in the case of tourism products, whose complexity and multifaceted nature spurs consumers to search, plan and buy such products on aggregator websites, such as online travel agents (OTAs) (Inversini & Masiero, 2014). In fact, some of the fastest growing web-based companies operating in the tourism industry are OTAs, such as *Expedia* or *Booking* (Carroll & Sileo, 2014).

OTAs are external intermediaries demanding that their suppliers give them commissions in exchange for distribution through their portals. The OTAs' current global dominance seems to contradict one of the proclaimed major advantages of the Internet towards tourism destinations: the empowerment of small and medium-sized tourism enterprises (SMTEs) to relate directly with potential clients without the need for intermediation (Kracht & Wang, 2010).

In recent years, destinations have been progressively recognising the importance of Information and Communication Technologies (ICTs), which represent vital instruments in creating and maintaining networks between DMOs and destination stakeholders in order to promote a participated and coordinated attraction of new market segments and the satisfaction of potential visitors' demands (Buhalis & Law 2008).

Shortly after the advent of the Internet, British and Alpine DMOs began their attempts to create online collaborative networks joining destination-based SMTEs and providing tourists access to a bundle of tourism destination products and several travel arrangement tools (Bethapudi, 2013; Pechlaner, Abfalter, & Raich, 2002). Although, in this infancy, there

were considerably more failed implementations attempts (Alford & Clarke, 2009; Sussman & Baker, 1996) than those rewarded by success (Bédard & Louillet, 2011; Guthrie, 2011), the DMS era had begun.

Although, according to Sigala (2014), we still do not have a universally accepted definition of a DMS, the author defines it as a collection of computerised facts about a destination, accessible in an interactive way, which usually includes information about the attractions and services of a destination, incorporating the possibility to make reservations and purchases. According to Buhalis (2003, p. 282), “DMSs are usually managed by Destination Management Organisations (DMOs), which can be public, private or public-private organisations”. While some earlier definitions suggested that “a DMS is essentially a marketing tool, promoting tourism products in a particular destination, which might be a nation, region, town” (Sussman & Baker, 1996, p. 102), the most differentiating features of DMSs are the opportunities these systems offer to make transactions, bookings and other commercial activities (Pollock, 1995). However, evidence shows that only a handful of DMOs have ever attempted to create a DMS (Horan & Frew, 2007; Wang, 2008).

Since the distinctive functionalities of DMSs require great cooperation among stakeholders at a virtual level, namely concerning sharing and coordination of information, DMSs may provide important contributions to the creation of digital ecosystems that, as argued by Baggio and Del Chiappa (2014), demand strong virtual relationships among stakeholders of the destination. Recent research also suggests a link between DMSs and Smart Destinations (SDs). According to Gretzel, Reino, Koper, and Koo (2015), SDs provide visitors with technologies and connectivity in ways that were not possible before, giving them real-time awareness of destination offerings and helping them to make intelligent decisions. In addition, Gretzel et al. (2015) suggest that the key distinctive aspect of SDs is the integration of ICTs into the physical structure of destinations, such as those applied to hotel buildings and transportation in order to make them “smart”. Since DMSs are technological platforms that promote the diffusion of information and knowledge, issues that are considered by Del Chiappa and Baggio (2015) as crucial for the development of digital ecosystems, DMSs may have a critical role in fostering the creation of SDs. Femenia-Serra, Perles-Ribes, and Ivars-Baidal (2019) suggest that the opportunities offered by SDs give tourists a central place in their relationship with the destination. Also taking a destination management perspective, Ivars-Baidal, Celdrán-Bernabeu, Mazón, and Perles-Ivars (2019) argue that SDs open new horizons with DMSs, where tourists can have access to social

media regarding the destination, as well as obtaining real-time information using mobile applications.

Gretzel et al. (2015) argue that SDs are an evolution from e-tourism. However, it would be inappropriate to consider that SDs, although being a newer and distinct step in the evolution of ICTs in tourism, should dismiss any research carried out on previous e-tourism tools, such as DMSs. Although not referring specifically to DMSs, in the research work that seems to have coined the expression, “Smart Tourism Destination”, Buhalis and Amaranggana (2013) suggest that “bringing smartness to tourism destinations requires dynamically interconnecting stakeholders through a technological platform on which information to tourism activities could be changed instantly” (p. 557), which is consistent with the types of roles often attributed to DMSs and highlights the relevance of these systems.

Most studies on DMSs are conceptual or analyse the post-adoption benefits of these systems to destinations (Baggio, 2011; Bédard & Louillet, 2011; Buhalis & Spada, 2000; Pollock, 1995). Only a residual number of researchers have analysed the factors that may foster or rather inhibit the adoption of DMSs (e.g. Estêvão, Carneiro, & Teixeira, 2014; Sigala, 2013) and even fewer (Sigala, 2013) attempt to explain DMS adoption through an empirical approach. Despite the relevance of Sigala’s (2013) study undertaken in Greece, this research does not specifically analyse the willingness of DMSs’ stakeholders to adopt these systems, a fact that needs to be addressed considering the efforts needed to implement and successfully use them. Moreover, it also does not consider some factors that may influence the adoption of DMSs, namely, the existence of complementary web platforms and competing technological solutions, such as the OTAs. As suggested by Werthner et al. (2015) in their manifesto on research issues on Information Technologies (IT) and tourism, it is necessary to further study the competition between electronic players.

The present paper aims to fill these gaps in the literature by analysing the willingness of DMSs’ stakeholders to adopt these technological solutions, as well as the factors that may influence this adoption, using an empirical approach. Moreover, this study also encompasses a wide range of factors that may affect the adoption of DMSs, including the technological perspective regarding the existence of complementary and alternative solutions to such systems.

## 10.2 Literature review

### 10.2.1 Models explaining IT adoption

Given the relative lack of research on the adoption of technologies by tourism destinations, particularly of DMSs, it seems pertinent to discuss, in the first instance, models aimed at explaining IT adoption by organisations in general.

Among the models that have been more frequently used to explain IT adoption, it is possible to identify the Technology Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989), the Diffusion of Innovations (DOI) model (Rogers, 1995), the task-technology fit (TTF) model (Goodhue & Thompson, 1995), as well as the technology, organisation and environment (TOE) framework (Tornatzky & Fleischer, 1990). These models have been extended or adapted, giving rise to new models that meet the specific needs of some technology contexts (Oliveira & Martins, 2011).

Proposed by Davis in 1986, the TAM tests the influence of two specific beliefs in the adoption of a given technology: the perceived usefulness (PU) and the perceived ease of use (PEOU) of a technology. The PU refers to the subjective likelihood that the use of a certain technology would improve one's action, while the PEOU consists of the users' expectations regarding the effort necessary to adopt and use a certain technology. According to the TAM, both the PU and the PEOU will subsequently shape one's attitudes towards use, which will determine the intention of use and, ultimately, the actual use of that same technology (Davis, 1989).

The DOI model describes the reasons, the way and the rate of the spread of innovations, particularly technologies, in a given socio-cultural context (Rogers, 1995). According to the DOI theory, in organisational contexts the degree of innovativeness depends on three main factors, namely: (i) the individual's (leader) characteristics, such as his/her attitude towards technology; (ii) the internal characteristics of the organisational structure, such as its levels of centralisation, complexity, formalisation, interconnectedness and organisational slack and size; and (iii) the external characteristics of the organisation (Davis, 1995).

The TTF model was proposed by Goodhue and Thompson (1995) and suggests that an individual organisation will only use a technology as long it perceives it as useful for its daily tasks. This model is composed of two independent variables—task characteristics and

technology characteristics—which will determine the task-technology fit (Goodhue & Thompson, 1995).

The TOE framework was developed by Tornatzky and Fleischer (1990). It suggests that the degree to which an organisation may or may not be willing/able to adopt a technological innovation depends on: (i) technological context, such as the internal practices and expertise inside a specific organisation; (ii) organisational context, including the organisation's size, scope and management; and (iii) environmental context, encompassing the sector in which an organisation operates, its competitors and governance (Tornatzky & Fleischer, 1990).

Adaptations of these models have been made to meet the specific needs of different types of organisations or types of technologies. Iacovou, Bensabat and Dexter's (1995) model, adapted to Inter-Organisational Information Systems (IOISs), combines factors of different previous models and might be relevant to the study of DMS adoption, since these platforms are a type of IOIS (Sigala, 2014). This model postulates that IOIS adoption is determined by: (i) the perceived benefits of an innovation; (ii) organisational readiness in terms of financial and IT resources; and (iii) external pressure, which includes the competitive pressure to adopt a technology, as well as the power of trading partners (Iacovou et al., 1995; Ramamurthy, Premkumar, & Crum, 1999).

### **10.2.2 Factors influencing DMS adoption**

The literature review on both DMSs and IOISs enables the identification of several factors influencing DMS implementation and adoption, namely: (i) organisational factors (Hornby, 2004; Mistilis & Daniele, 2005; Ndou & Petti, 2007; Petti & Solazzo, 2007; Sigala, 2013, 2014; Wang, 2008); (ii) tourism relevance of the destination (Buhalis & Law, 2008; Zehrer, Pechlaner, & Hölzl, 2005); (iii) pressure from the external environment (Alford & Clarke, 2009; Brown, 2004; Horan & Frew, 2007; Sigala, 2013); (iv) perceived benefits and costs concerning DMS adoption (Mistilis & Daniele, 2005; Wang, 2008); and (v) constraints related to technology and respective business models (Guthrie, 2011; Kärcher & Alford, 2011).

### **10.2.2.1 Organisational factors**

In order to be viable and successful, DMSs depend on the capacity of DMOs to implement and manage this type of system. Previous research indicates that the management practices of a DMO is one of the most decisive determinants of DMS adoption by destination players (Sigala, 2013).

Given the fact that DMOs are often the initiators of the DMS adoption process, their levels of strategic vision, as well as their expertise and leadership skills, are likely to determine their willingness and capacity to adopt such systems (Bédard, Louillet, Verner, & Joly, 2008). According to Sautter and Leisen (1999), destination competitiveness heavily relies on the ability of DMOs to coordinate stakeholders and to encourage cooperation amongst them, which is crucial in the implementation of DMSs. In order to effectively foster cooperation, the DMO must inspire internal credibility, trust and reputation (Boksberger, Anderegg, & Schuckert, 2011). Spyriadis, Buhalis and Fyall (2011) identified the potential benefits of DMSs in facilitating the internal management of DMOs, as well as the coordination of local suppliers, which highlights that DMSs must be beneficial to DMOs. However, as suggested by Ndou and Petti (2007), a pre-existent high level of DMO leadership and internal coordination are prerequisites for successful DMS adoption processes.

Moreover, the public nature of most DMOs alone often instils in destination-based stakeholders the perception that they are too bureaucratic, inefficient and, as a result, untrustworthy, even when this is not the case (Sigala & Marinidis, 2010). The fact that tourism businesses hold such a view often discredits any initiatives made by the DMO in the eyes of the stakeholders, including the adoption of a DMS (Frew & O'Connor, 1999).

DMOs may have different models of ownership and management, which vary according to the tradition of public participation of individuals and organisations, as well as with the socio-economic importance of the tourism sector (Hall, 2008). Hence, in some cases DMOs may be totally integrated in the public sector, in others they are a completely private affair with no state participation, while still others assume the form of a consortium between public and private entities that jointly own and manage the DMO (Presenza, Sheehan, & Ritchie 2005). Such a variety of DMO models is reflected in the role they are expected to play and the technologies they adopt. In addition, the perceived role of DMOs is changing alongside the evolution of the destination concept itself, which evolved from being the mere destination of a journey to become a territorial and conceptual “umbrella” beneath which coherent and



complementary products are offered to carefully targeted visitors (Volgger & Pechlaner, 2014). Hence, the focus regarding the role of the DMOs has moved from the promotion of existing attractions to network managing aimed at coordinating the whole value chain of a given territory (Sheehan, Vargas-Sánchez, Presenza, & Abbate, 2016).

Some authors suggest that DMOs should implement destination management techniques and models similar to those used in private corporations (Beritelli, Bieger, & Laesser, 2007; Fischer, 2007). Such enlargement of DMO roles led some of them to believe they would be able to assist SMTEs, not only in promoting their offerings but also in marketing them without depending so heavily on external intermediaries (Buhalis, 2003). However, this commercial role that some DMOs have assumed is far from consensual, often being criticised as protectionist and an illegitimate interference in the public sector market (Lexhagen, Eriksson, Olausson, & Fuchs, 2014). Moreover, DMOs are often considered inappropriate in terms of managing transactions due to their complexity and the human and technical resources they require (Werthner & Ricci, 2004), as well as due to the growing dominance of OTAs (Werthner et al., 2015).

DMSs are primarily aimed at assisting smaller tourism firms to improve their competitiveness, either by providing greater visibility or by giving them advantageous distribution channels (Horan & Frew, 2007). However, the scarce technological assets and managerial skills often inherent to smaller firms in general (Chwelos, Benbasat, & Dexter, 2001), and in the tourism sector in particular (Egger & Buhalis, 2011), may explain the lack of adhesion of destination-based stakeholders to DMS adoption and, ultimately, the high rates of unsuccessful DMS implementation (Alford & Clarke, 2009). Thus, one of the most frequently referenced barriers to DMS implementation is the poor organisational ability of SMTEs to adopt them, due to a lack of funds, of skilled human resources to operate the platform (Buhalis, 2003; Hornby, 2004), or of a culture and strategic vision compatible with DMS adoption (Ndou & Petti, 2007). Moreover, an organisation may not adopt a DMS due to not having enough resources, or due to the perception that other organisations of the same destination do not have the required resources.

As previously mentioned, DMSs differ from traditional destination online platforms because they provide stakeholders with a network linking them to a DMO and to each other, thus fostering their communication and collaboration. However, as suggested by Ndou and Petti (2007), it is not plausible to think that a DMS would thrive in fragmented destinations in which there is no leadership from a DMO, along with a low degree of collaboration amongst stakeholders. Hence, in order to be viable, DMSs require a pre-existent culture of

collaboration amongst tourism players, which the DMS would help to improve (Petti & Solazzo, 2007). Trunfio and Campana (2019) further suggest that the adoption of technological innovations by destination stakeholders often requires major social innovations, which can open up new scenarios in which unusual relationships amongst destination actors may question the typical top-down process, thus creating new patterns of relations. Previous research indicates that the implementation of a DMS on its own does not automatically promote knowledge creation and collaboration amongst organisations (Gretzel & Fesenmaier, 2003). It is, rather, the social capital gained from a collaborative culture that is enhanced by a DMS (Gretzel & Fesenmaier, 2003; Ndou & Petti, 2007).

### **10.2.2.2 Tourism relevance of the destination**

Tourism boards, particularly at local and regional levels, still tend to prioritise activities aiming to promote the destination in source markets, as well as provide information to current visitors (Van der Zee, Gerrets, & Vanneste, 2017). In destinations where tourism plays a vital role to their communities' welfare, tourism boards tend to coordinate the management of all elements making up the destination (attractions, access, marketing and pricing), thus becoming DMOs (WTO, 2007). For only a minority of DMOs, the relevance of the tourism sector justified the adoption of a DMS aiming to optimise internal coordination and to attract more sophisticated demand segments (Zehrer et al., 2005). The greater the number of tourism suppliers, the greater is the need to coordinate them (Buhalis & Law, 2008). Thus, it seems reasonable to assume that the relevance of tourism to a certain community is likely to influence the adoption of a DMS by its DMO.

### **10.2.2.3 Pressure from the external environment**

Only a handful of studies (e.g. Bédard et al., 2008; Sigala, 2013, 2014) have discussed or empirically tested the influence of factors related to pressure from the external environment on DMS adoption. However, in literature addressing IOISs, this type of factor was often found to have a significant influence on adoption (Chwelos et al., 2001; Iacovou et al., 1995; Ramamurthy et al., 1999).

Sometimes organisations are likely to adopt a DMS due to the social influence of competing organisations. Recognising the benefits that competitors obtain from the adoption of a specific technology, some organisations become more open to also adopting that technology (Alford & Clarke, 2009; Buhalis, 2003; Sigala, 2013). In spite of being one of the

major sectors in the global economy (Edgell, 2016), the players of the tourism sector are predominantly SMTEs, with relatively low levels of managerial skills (Alford & Clarke, 2009). Previous research suggests that although competition can be intense in the context of regional or national destinations and major players (e.g. airlines, hotel chains, OTAs), the relatively low levels of competition amongst the stakeholders for which DMSs primarily cater (SMTEs) may sometimes be a constraining factor in their adoption (Alford & Clarke, 2009; Sigala, 2013).

The literature reveals that some stakeholders are likely to adopt a DMS in order to decrease their dependence on intermediaries and the costs associated with this dependence (Bédard & Louillet, 2011; Buhalis, 2003). Hence, the adoption of Gulliver, the Irish national DMS, was seen as competition by the tour operators, who threatened to boycott sales of package tours to Ireland (Keany, 2011). However, as suggested by Werthner et al. (2015), the latest developments regarding ICT in tourism indicate a scenario where platforms of online intermediaries (e.g. OTAs) may consist of alternative technological solutions to DMSs, which discourage stakeholders from adopting them.

In order to become successful, the Business-to-Consumer (B2C) portal of a DMS must be widely used by potential visitors, namely, to plan their travels and book tourism services (Buhalis, 2003). The tendency of prospective visitors to use integrated online platforms enabling them to search for information, plan tourism experiences and purchase specific products seems likely to influence organisations to adopt such solutions as DMSs (Brown, 2004). However, in some destinations, the traditional predominance of demand segments, which tend to plan and book their travels through traditional intermediaries such as tour operators, has been pointed out as an obstacle to DMS adoption by stakeholders (Buhalis, 2003).

#### **10.2.2.4 Perceived benefits and costs of DMSs**

Most DMSs demand that stakeholders who adopt these systems participate in the funding of the system in various ways, such as through commissions on visitor bookings done in the DMS or by asking for higher fees in exchange for additional exposure on the front-end website (Bédard & Louillet, 2011; Guthrie, 2011). Iacovou et al.'s (1995) model suggests that the perceptions of potential users about its adoption costs and benefits have an influence on IOIS adoption. Some acceptance models (e.g. TAM) reveal that perceived usefulness has a strong impact on the adoption of technologies (Davis, 1989). The main

benefits of DMSs are strategic and encompass, for instance, gradually achieving autonomy from external intermediaries, fostering collaboration amongst stakeholders, improving the portfolio of destination offerings or attracting a more sophisticated demand (Ivars-Baidal et al., 2019). Sometimes a lack of strategic orientation by SMTEs, often too absorbed in their daily tasks and by the need for immediate profit, may represent a barrier to DMS adoption (Egger & Buhalis, 2011). In addition, the growing relevance of major OTAs to small tourism businesses (e.g. *Booking*) may move them away from adopting other types of systems, such as DMSs, due to recognising less benefits from such systems (Hwang & Lockwood, 2006).

#### **10.2.2.5 Constraints related to technology and respective business models**

According to Guthrie (2011), the success of the *Visitbritain* DMS is heavily determined by its integration at national, regional, sub-regional and local levels. The author suggests that the British official national front-end website gives visibility to smaller local and regional destination platforms, which are integrated in the *Visitbritain* system, and, at the same time, fosters coherent contents and functionalities. Hence, it seems plausible to consider that the absence of a DMS at the national level or in other neighbouring regions might jeopardise attempts to adopt regional and non-integrated DMSs.

Another constraint to DMS development, suggested by Werthner et al. (2015), is the advent of other types of platforms, which enjoy higher global visibility and economic strength, including search, planning and booking functionalities. These authors suggest that, especially when it comes to transactional functionalities, DMSs must reinvent themselves in order to avoid redundancy.

Given the fact that most DMSs are totally or partly funded by the public sector, criticism regarding their unfair competition with private initiatives, aiming to assist tourists in planning and purchasing tourism products online, has often arisen since the early days of these systems (Sussmann & Baker, 1996).

## **10.3 Context of the study and methods of the empirical study**

### **10.3.1 Context of the study**

The empirical study was carried out in a region of Portugal—the NUTS II Centre Region—due to its great diversity regarding tourism destinations. With a total area of 28,199 km<sup>2</sup> (31% of the Portuguese territory), this region is the second largest of the seven Portuguese NUTS II (Instituto Nacional de Estatística, 2018). Extending from the western seacoast to its mountain ranges with isolated rural communities in the east, this region offers a considerable diversity of communities and landscapes, which is reflected in the variety of tourism destinations and tourism products.

As all Portuguese NUTS II, the Centre has a public regional DMO—the Regional Tourism Entity of Centre (RTEC)—as well as a public-private consortium specifically mandated by the central government to promote the region abroad, designated as Regional Tourism Promotion Agency of Centre (RTPAC). The latter entity takes the form of an association composed of both public administrations and affiliated private members, which are mostly tourism businesses. Both entities have developed their own official destination portals, which are a long way from being considered similar to a DMS, due to their predominantly informative nature.

### **10.3.2 Data collection methods**

The present study aimed to identify the factors that influence the willingness of stakeholders of tourism destinations, namely tourism service providers, to adopt DMSs. In order to ensure some variety amongst the service providers included in the sample, it seemed adequate to carry out a questionnaire survey amongst stakeholders who represent three destination supply components proposed by Cooper, Fletcher, Wanhill, Gilbert, and Fyall (2008), namely, attractions, amenities and ancillary services. Therefore, questionnaires were given to representatives of tourism attractions, tourism accommodation and city councils, who had the authority to decide on the adoption of ICT platforms aimed at the promotion of the destination.

The questionnaire encompasses questions regarding the following features: (i) factors that may influence the adoption of a DMS; (ii) the hypothetical implementation of a future DMS in the region and intentions to adopt it, as well as preferred DMS funding and management

models; and (iii) characteristics of the surveyed entity, including its current use of Internet for marketing purposes.

Before asking questions about DMSs to respondents, the concept of DMS was briefly explained. Respondents were then asked to indicate their level of agreement with a set of twenty-five statements regarding factors that the literature suggests may influence DMS adoption, and which had already been identified in the literature review: organisational factors, the tourism relevance of the destination, pressure from the external environment, and constraints related to technology and respective business models. Respondents were also requested to state whether they agreed with nine statements concerning their perceptions on the costs and benefits of DMSs, other factors that may affect DMS adoption. This last question was designed to help understand how useful the respondents perceived the DMSs to be. All the factors that may influence DMS adoption included in the questionnaire were identified in the literature review of the present paper. In all the questions, the respondents had to report their level of agreement using a Likert-type scale from 1 “completely disagree” to 7 “completely agree”.

The questionnaire also includes questions on the hypothetical implementation of a future DMS in the region and, specifically, on any intentions to adopt this kind of system, as well as on preferred types of DMS funding and management models. One question, for example, asked whether the destination “Centre of Portugal” should implement an official DMS and, also, whether the respondent’s own organisation would adopt the official DMS of such a destination. Again, agreement had to be expressed in terms of the scale mentioned above.

It was necessary to slightly adapt the questionnaires, namely, the questions concerning the characterisation of the respondents, to each of the three types of organisations interviewed. Thus, while the accommodation businesses were asked to mention the number of rooms and categories, attraction managers, for example, had to indicate the kind of tourist features they managed.

Different methods were adopted to identify potential respondents in the three kinds of destination organisations. As far as ancillary services were concerned, the one-hundred city councils managing the one-hundred municipalities of the region were contacted. These are the region’s main players providing ancillary services such as tourism information offices, tourism-related signage and destination promotion, amongst others. Respondents were asked to answer the questionnaire considering the city council’s role as a planning and coordinating entity.

Regarding attractions, organisations managing features of interest in the region were asked to participate in the study. It was considered appropriate to interview players belonging to the categories of attractions proposed in the International Recommendations for Tourism Statistics (WTO, 2008) - “cultural activities” and “sports and recreation activities”—and to another category added by the authors - “natural resources”. Due to the difficulty in identifying the managers of all tourism attractions in the Centre Region, a snowball sampling technique was adopted, and respondents contacted by the researchers were asked to indicate other managers of tourism attractions. If a city council was identified as one entity managing tourism attractions, it received another questionnaire and was asked to respond considering its role as the manager of such attractions.

Tourism accommodation was selected to represent the amenity component. Two specific types of accommodation were considered in this study, namely, hotels and rural tourism businesses located in the Centre Region. They were identified based on the online National Tourism Registry of the Portuguese national DMO (*Turismo de Portugal*) (Turismo de Portugal, 2018). All the 607 hotels and rural tourism businesses located in the Centre Region were asked to participate in the study.

The questionnaire was administered online during four months, from April to August 2018. After identifying potential respondents, the authors contacted them via telephone, briefly explaining the scope of the study and asking for their participation. Afterwards, the authors sent an e-mail with the link to the questionnaire to all contacted stakeholders who had shown some interest in participating in the survey.

### **10.3.3. Data analysis methods**

Two exploratory factor analyses, specifically two Principal Component Analyses (PCA), were carried out. The first was specifically designed to identify factors that may influence the adoption of a DMS in the following areas: organisational factors, the tourism relevance of the destination, pressure from the external environment, and constraints related to technology and respective business models. The aim of the other PCA was to confirm that the scale of the perceived usefulness of DMSs was unidimensional, given that this construct has been considered in several researches on the technological platforms’ field as a unidimensional construct. Next, two multiple regression analyses were done in order to understand how the factors that emerged from the two PCAs influenced the willingness to adopt DMSs.

## **10.4 Analysis and discussion of results**

### **10.4.1 Characteristics of the sample and intentions to adopt DMSs**

A total of 326 completed questionnaires were obtained. From this, 93 were from representatives of tourism accommodation, 100 from representatives of city councils, and 133 from managers of tourism attractions. In the case of tourism accommodation, 63 respondents were hotel managers (3 from 5-star hotels, 28 from 4-star hotels, and 32 from 3-star hotels; 20 from integrated hotel groups or chains and the remaining 43 from independent SMTEs), while 30 were owners of rural tourism units. With respect to tourism attraction managers, 19 of the respondents were from the private sector, 112 from the public sector and the remaining 2 were from associations. Regarding the types of attractions managed by the above respondents, 103 were in charge of cultural heritage assets, 80 were responsible for sites of natural interest, and 60 were responsible for other types of attractions, such as recreational or sports facilities, which suggests that some respondents managed different types of attractions.

Respondents, on the whole, agreed that the Centre Region should implement a DMS (5.39 on a Likert-type scale from 1 “completely disagree” to 7 “completely agree”) and that their own organisation should adopt a DMS, although the level of agreement in this latter case was slightly lower (5.06 on the same scale).

Regarding opinion about the ownership and management of a possible DMS in the Centre Region, a consortium between the RTEC and the RTPAC had the broadest consensus (66.3%). Scenarios in which the only owners and managers were the RTEC (26.3%) or the RTPAC (7.4%) were clearly less desirable.

The question concerning the best financing model for a hypothetical DMS of the Centre Region allowed respondents to choose more than one option. The respondents' preferred funding modality as an additional monthly fee/annuity to be paid by organisations wishing to be included in the system (54.9%), followed by the option of the commissioning of DMS sales of tourism products (52.5%). Financing options based on tuition/annuities paid by all members of the system promoter (32.5%) and tuition/annuities paid by RTPAC members (15.3%) were clearly the options less preferred by respondents. It seems clear that they preferred funding models that were limited to stakeholders who benefitted directly from



DMS functionalities, rather than to a widespread funding of a DMS across the entire destination.

The question referring to the responsibility of updating and managing the contents of a DMS also allowed respondents to choose more than one option. The results suggest that the preferred modality would be a combination of two response options, namely, content updating by the company supplying a particular product in the DMS (73.9%) and by the Centre Region DMO (70.6%). Only 8 respondents (2%) considered that local public administrations should also be included in the process of managing and updating the contents of a regional DMS.

#### **10.4.2 Factors that may influence the willingness to adopt DMSs**

In order to determine the factors that may influence the intention to adopt a DMS, first a PCA with a Varimax rotation was undertaken on a set of items concerning organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models. Several variables were excluded from the factor analysis due to having a low communality. A total of five factors emerged from the PCA, namely (Table 10.1):

- Factor 1: Destination readiness and favourable conditions for DMS adoption. This factor encompasses the perception of several aspects of the destination that may act as facilitators of DMS adoption. They include the counterparts' willingness to integrate DMSs (including their likelihood to cooperate), the suitability of adopting DMSs based on the importance of the destination and its tourism sector, and the DMOs' ability to adopt such systems.
- Factor 2: Pressure from the external environment. This factor comprises items representing the willingness to adopt DMSs in order to decrease certain kinds of pressure, such as from traditional intermediaries, from competing destinations and from demand.
- Factor 3: Resources and strategic vision of the respondents' own organisations. This factor includes the respondents' perceptions about their own organisations concerning culture and strategic vision, as well as the resources needed to integrate a DMS.

- Factor 4: Constraints related to technology and respective business models, as well as the DMO's unfavourable role. This factor encompasses features that may have a negative influence on the adoption of DMSs, related to either complementary (e.g. a national DMS) or alternative web platforms (e.g. *Booking, Expedia*), and to a perceived unfavourable role of the DMO, often due to the bureaucratic nature of public DMOs.
- Factor 5: Lack of resources and cooperation of other organisations of the destination. This factor is related to constraints posed by other organisations in the destination, such as an unwillingness to share data and the lack of enough resources to successfully integrate a DMS.

The factor analysis proved to be of good quality since it had a KMO = 0.846 (higher than the 0.7 required), the  $p$ -value of the Bartlett's test was  $<0.05$ , while all the communalities were higher than 0.5, and all the items had a factor loading higher than 0.5 in one of the factors identified. In addition, the cumulative variance explained was 66.833%, which was higher than the 60% required (Hair, Black, Babin, & Anderson, 2010). Furthermore, all the factors identified had a Cronbach's alpha higher than the 0.7 required, except factor 4, which had a Cronbach's alpha of 0.676. However, as stated by Hair et al. (2010), this value is acceptable since this is an exploratory study.

Another PCA was done to confirm the unidimensional character of a set of nine items adopted to measure the usefulness of a DMS. The unidimensional character of this scale was confirmed, since only one factor emerged, the set of items had a Cronbach's alpha of 0.948, the communalities and factor loadings of all the items were  $> 0.5$ , the cumulative variance explained was 71.654%, the KMO was 0.898 and the  $p$ -value of the Bartlett's test of sphericity was  $< 0.05$  (Table 10.2).

**Table 10.1 - Factors regarding organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models - Results of a PCA (with Varimax rotation) (continues)**

	Com.	Factor 1: Destination readiness and favourable conditions for DMSs' adoption (DREFC)	Factor 2: Pressure from the external environment (PEE)	Factor 3: Resources and strategic vision of the respondents' own organisation (RSVOO)	Factor 4: Constraints related to technology and respective business models, as well as the DMO's unfavourable role (CTBMDUR)	Factor 5: Lack of resources and cooperation of other organisations of the destination (LRCOO)
Collaboration levels between destination-based stakeholders favour DMS adoption	0.652	<b>0.790</b>				
Players of the destination would adopt a DMS	0.663	<b>0.757</b>				
Other destination players' willingness to pay commissions for sales made through the DMS	0.535	<b>0.718</b>				
DMO's ability to lead and coordinate the implementation of a DMS	0.670	<b>0.691</b>		0.308		
Adequacy of adopting a DMS given the territorial size of the destination	0.775	<b>0.665</b>	0.314		-0.423	
Adequacy of adopting a DMS given the relevance of the tourism sector	0.769	<b>0.641</b>	0.333		-0.425	
Appropriateness of enlarging the DMO's functions to include the implementation of a DMS	0.616	<b>0.631</b>	0.340			
Enough human resources and knowledge to manage a DMS in regional tourism organisations	0.610	<b>0.578</b>		0.371		
Ability of the DMS to decrease the power of tour operators and of other intermediaries	0.748		<b>0.788</b>			
Competitive pressure of other destinations	0.799		<b>0.787</b>	0.323		
Willingness to adopt a DMS if other destination-based players would	0.592		<b>0.719</b>			
Pressure exerted by tourism demand to adopt a DMS	0.523	0.300	<b>0.599</b>			
Own organisation has financial resources required to adopt a DMS	0.860			<b>0.890</b>		
Own organisation has adequate technological resources required to adopt a DMS	0.763			<b>0.839</b>		

**Table 10.1 - Factors regarding organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models - Results of a PCA (with Varimax rotation) (continuation)**

	Com.	Factor 1: Destination readiness and favourable conditions for DMSs' adoption (DREFC)	Factor 2: Pressure from the external environment (PEE)	Factor 3: Resources and strategic vision of the respondents' own organisation (RSVOO)	Factor 4: Constraints related to technology and respective business models, as well as the DMO's unfavourable role (CTBMDUR)	Factor 5: Lack of resources and cooperation of other organisations of the destination (LRCOO)
Own organisation has adequate human resources required to adopt a DMS	0.688			<b>0.775</b>		
Own organisation has culture and strategic vision compatible to DMS adoption	0.628		0.424	<b>0.590</b>		
The absence of a national or regional DMS would jeopardise any attempt to adopt a regional DMS	0.605				<b>0.722</b>	
Existence of online tourism platforms that make DMSs unnecessary	0.694		-0.407		<b>0.705</b>	
A publicly funded DMS would be unacceptable	0.581		-0.449		<b>0.605</b>	
The bureaucratic and inefficient nature of the public sector would jeopardise DMS adoption	0.520			-0.361	<b>0.549</b>	
Unwillingness of other destination players to share data related to their operations (e.g. availability)	0.785					<b>0.854</b>
Fear of other players of the destination to adhere to a DMS due to intermediaries' penalties	0.743				0.322	<b>0.790</b>
Insufficient resources to manage a DMS by other players of the destination	0.552					<b>0.724</b>
<b>Eigenvalues</b>		4.229	3.391	3.239	2.393	2.120
<b>Variance explained (%)</b>		18.386	14.742	14.081	10.406	9.218
<b>Cumulative variance explained (%)</b>		18.386	33.128	47.209	57.615	66.833
<b>Cronbach's alpha</b>		0.891	0.855	0.873	0.676	0.752

Note: Only factors loadings with absolute values  $\geq 0.3$  are presented in the matrix. Values in bold represent factor loadings  $\geq 0.5$ . Com - Communalities.

KMO = 0.846; Bartlett's Test of Sphericity = 4743.228 ( $p = 0.000$ ). N=326.

**Table 10.2 - Perceived usefulness of a DMS - Results of a PCA**

	Com.	Factor loadings
Improve the quality of the services	0.607	0.897
Diversify rendered services	0.679	0.893
Enhance the attractiveness of the promotion of services	0.700	0.892
Improve the organization's performance	0.773	0.879
Facilitate customers' feedback on rendered services	0.797	0.843
Maximize visibility / presence in source markets	0.710	0.837
Reduce costs	0.583	0.824
Develop a closer and more regular communication/relationship with the DMO	0.796	0.779
Develop a closer and more regular communication/relationship with other destination stakeholders	0.804	0.764
	<b>Eigenvalues</b>	6.449
	<b>Variance explained (%)</b>	71.654
	<b>Cumulative variance explained (%)</b>	71.654
	<b>Cronbach's alpha</b>	0.948

Note: Only factors loadings with absolute values  $\geq 0.3$  are presented in the matrix.  
 Values in bold represent factor loadings  $\geq 0.5$ . Com - Communalities.  
 KMO = 0.898; Bartlett's test of sphericity = 3032.107 ( $p = 0.000$ ). N=326.

Following this, two stepwise multivariate regression analyses were carried out to analyse the influence of the factors emerging from the two previous PCAs on the adoption of DMSs. The first was designed to examine the impact of the factors on the perceived importance of the Centre of Portugal destination adopting a DMS. The second aimed to analyse the impact of the same factors on the willingness of the respondents' own organisations to adopt a DMS (see equation 1). Each factor that emerged from a PCA was included in the regression analysis as an independent variable that corresponded to the average of the set of items represented by that factor.

$$(Eq. 1) \quad AD_{ij} = \alpha + \beta_1 DREFC_i + \beta_2 PEE_i + \beta_3 RSV00_i + \beta_4 CTBMDUR_i + \beta_5 LR000_i + \beta_6 PU_i + \varepsilon_i$$

Note:

Dependent variables

AD – Adoption of a DMS

i = 1... n – Number of organisations that answered the questionnaire

j = 1... 2 – Adoption of a DMS by different organisations (1 = Perceived importance of the Centre of Portugal destination adopting a DMS, 2 = Willingness of the respondent's own organisation to adopt a DMS).

#### Independent variables

Factors concerning the respondent's own organisation, the destination and the external environment that may affect the adoption of a DMS

DREFC – Destination readiness and favourable conditions for DMSs' adoption (mean);

PEE – Pressure from the external environment (mean);

RSVOO – Resources and strategic vision of the respondent's own organisation (mean);

CTBMDUR – Constraints related to technology and respective business models, as well as the DMO's unfavourable role (mean);

LRCOO – Lack of resources and cooperation of other organisations of the destination (mean);

PU – Perceived usefulness of a DMS (mean).

All the assumptions of the regression analyses, including those related to normality, homoscedasticity and independence of errors, as well as multicollinearity, were tested and all of them were met. The results of the first regression analysis reveal that four factors considered in the regression analysis as independent variables have a high power in explaining the perceived importance of the Centre of Portugal destination adopting a DMS ( $R^2 = 0.603$ ) (Table 10.3). The factor with the highest impact on the perceived importance of the destination adopting a DMS is the perceived usefulness of DMSs (PU), followed by the readiness and favourable conditions that the destination presents for DMS adoption (DREFC), and by pressure from the external environment (PEE). All these features have a positive impact on the adoption of DMSs. Thus, the findings highlight that the more usefulness respondents recognise in a DMS, the more favourable are the conditions existing in the destination—such as DMO ability to adopt a DMS, the willingness of other organisations to integrate a DMS, the high tourism relevance of the destination—and the higher the pressure from the external environment (from intermediaries, competing destinations and demand), the more the respondents consider that the destination where they are located should adopt a DMS.

Respondents also perceive some constraints with regards to adopting a DMS related to the DMO of the destination and, specifically, to the bureaucracy and inefficiency of the public sector, and constraints related to technology and respective business models (CTBMDUR). The technology-relevant aspects are the inexistence of a national or regional DMS with which the DMS could interconnect, and the existence of alternative platforms that would probably render the DMS less useful (e.g. OTAs such as *Booking* or *Expedia*). The features concerning the business models of technology are such that the creation of a publicly funded DMS would be unacceptable. However, the constraints previously mentioned, although having significant influence on the recognition that the destination should adopt a DMS, have a negative and lower impact on this construct than the other three factors.

Neither the resources and strategic vision of the respondent's own organisation (RSVOO) nor the potential constraints related to other organisations of the destination—lack of resources and cooperation of other organisations of the destination (LRCOO)—have a significant effect on the perceived importance of the destination adopting a DMS.

**Table 10.3 - Factors influencing the perceived importance of the Centre of Portugal destination adopting a DMS - Results of a regression analysis**

	Unstandardized coefficients		Standardised coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.343	0.067	0.246	5.079	0.000	0.514	1.947
Pressure from the external environment (PEE)	0.227	0.052	0.202	4.379	0.000	0.570	1.754
Constraints related to technology and respective business models, as well as the DMO's unfavourable role (CTBMDUR)	-0.163	0.048	-0.129	-3.420	0.001	0.853	1.173
Perceived usefulness of DMSs (PU)	0.424	0.055	0.386	7.725	0.000	0.485	2.063
(Constant)	1.366	0.360		3.793	0.000		

N=324; R=0.784; R<sup>2</sup>=0.614; F=127.077 (p=0.000).

The second regression shows that five factors have a significant impact on the willingness of the respondents' own organisations to adopt a DMS, explaining almost 70% (69.3%) of

the variance of this construct. Once more, similarly to what happened in the other regression, the factor with the highest impact is the perceived usefulness of a DMS (PU), followed by the favourable conditions of the destination (DREFC) and by pressure from the external environment (PEE) (Table 10.4). However, in this case, the resources and strategic vision of the respondent's own organisation (RSVOO) also have a significant positive impact on the dependent variable of the regression, which corresponds to the willingness of the respondent's own organisation to adopt a DMS. Similarly to what happened in the first regression, the constraints to DMS adoption related to technology and respective business models, as well as to a DMO's unfavourable role (CTBMDUR), also reveal a negative effect on the adoption of this kind of technological system, although lower than that of the other variables.

**Table 10.4 - Factors influencing the willingness of the respondent's own organisation to adopt a DMS - Results of a regression analysis**

	Unstandardized coefficients		Standardized coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.270	0.068	0.183	3.955	0.000	0.453	2.206
Pressure from the external environment (PEE)	0.165	0.053	0.140	3.098	0.002	0.474	2.108
Resources and strategic vision of the respondents' own organisation (RSVOO)	0.129	0.043	0.122	3.001	0.003	0.588	1.702
Constraints related to technology and respective business models, as well as the DMO's unfavourable role (CTBMDUR)	-0.146	0.046	-0.110	-3.207	0.001	0.821	1.218
Perceived usefulness of DMSs (PU)	0.546	0.051	0.477	10.614	0.000	0.483	2.069
(Constant)	0.432	0.353		1.223	0.222		

N=321; R=0.832; R<sup>2</sup>=0.693; F=142.226 (p=0.000).

The findings of the two regressions corroborate that four factors have a significant impact on the adoption of DMSs, specifically revealing a positive significant impact of the perceived usefulness of a DMS (PU), of favourable conditions of the destination (DREFC), and of pressure from the external environment (PEE), as well as a negative significant effect of the

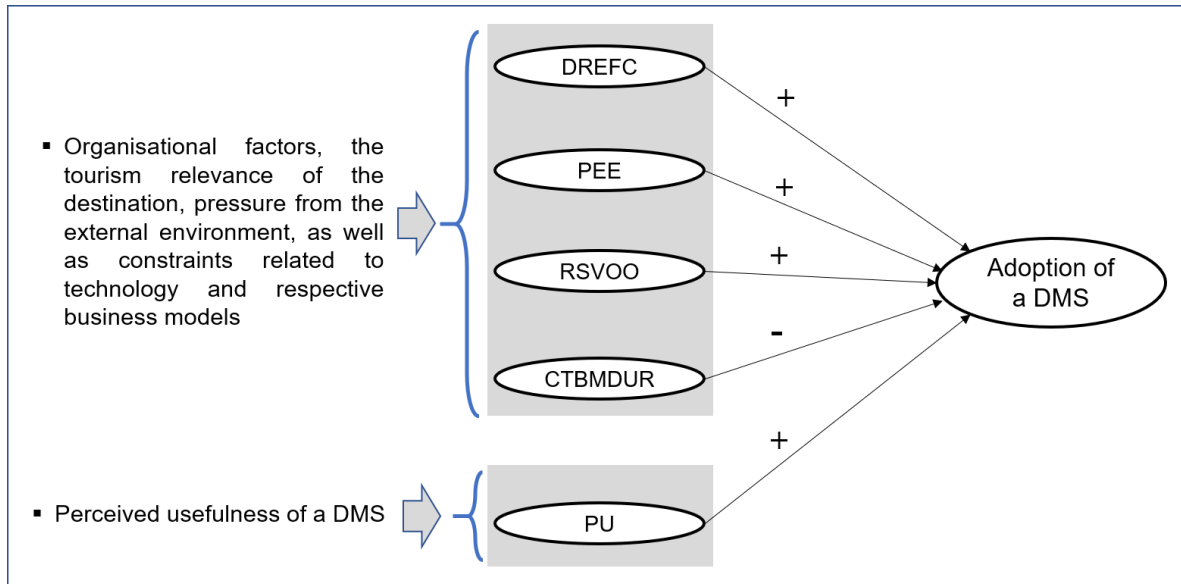


constraints relating to technology and respective business models, and to a DMO's unfavourable role (CTBMDUR). Interestingly, the perceived usefulness of a DMS is absent from studies encompassing DMS adoption factors, although it has some similarities to the perceived cost-benefits analysis, which is suggested by previous research as relevant (Mistilis & Daniele, 2005; Sigala, 2013; Wang, 2008). The positive impact of pressure from the external environment (PEE) is in line with previous research on IOIS adoption (Chwelos et al., 2001; Iacovou et al., 1995; Ramamurthy et al., 1999) and with some of the scarce works on DMS adoption (Alford & Clarke, 2009; Sigala, 2013). The organisational readiness and the existence of favourable conditions for DMS adoption (DREFC) at the destination also corroborates most DMS adoption-related research as a factor influencing adoption, especially in what is referred to as the levels of relationship and collaboration between destination-based stakeholders (Gretzel & Fesenmaier, 2003; Hornby, 2004; Ndou & Petti, 2017; Petti & Solazzo, 2007; Sigala, 2013) and, to a minor extent, the trust of the stakeholders in the DMO's ability to manage the system (Bédard et al., 2008).

The regressions also complement each other since the resources and strategic vision of the respondent's own organisation (RSVOO), despite not influencing the opinion of the organisation regarding the adoption of a DMS by the destination, have a significant impact on the willingness and, probably, also on the decision of the organisation to adopt a DMS itself. The influence of the availability of resources from destination-based stakeholders has also been identified as influencing adoption in previous research (Sigala, 2013). However, no empirical studies on DMS adoption have yet indicated the strategic vision of the potential adopters as a factor influencing adoption. Regarding this factor, the disparities identified in both regressions highlight that resources and vision do not affect the opinion of whether others should adopt a DMS but are clearly relevant to organisations deciding whether or not they are going to adopt or integrate a DMS themselves.

When it comes to the factor indicated by the empirical analysis as negatively affecting the adoption of DMSs - constraints relating to technology and respective business models, and, specifically, to a DMO's unfavourable role (CTBMDUR), usually attributed to its bureaucratic public nature - previous empirical research has also demonstrated its negative influence on adoption (Bédard et al., 2008; Mistilis & Daniele, 2005; Sigala, 2004). However, the influence of the absence of a national or regional DMS, and the existence of alternative tourism platforms that make DMSs unnecessary, has never been tested in any study on DMS adoption. Similarly, the effect of constraints created by the unacceptance of some business models of DMS has never been tested.

Considering the results obtained, the Destination Management Systems' Adoption Model, named DeMSAM and presented in figure 10.1, has been proposed. This model includes factors that influence the adoption of a DMS that must, therefore, be considered to foster the adoption of DMSs.



Note: DREFC - Destination readiness and favourable conditions for DMSs' adoption; PEE - Pressure from the external environment; RSVOO - Resources and strategic vision of the respondents' own organisation; CTBMDUR - Constraints related to technology and respective business models, as well as the DMO's unfavourable role; PU - perceived usefulness of a DMS.

**Figure 10.1 - Destination Management Systems' Adoption Model (DeMSAM)**

## 10.5 Conclusions and implications

This paper provides an in-depth analysis of factors influencing DMS adoption, including an empirical study, and presents a proposal for an adoption model. The present paper offers important contributions since it corroborates the proposals of some previous researchers, provides significant information by empirically testing impacts only previously analysed within a very limited geographical context, and also tests the influence of some factors on DMS adoption that have never been examined before.

The empirical study underlying this article provides novel and relevant theoretical implications to the still scarce body of research on DMS adoption by destination stakeholders. First, this study does not simply empirically examine the factors that influence DMS adoption by asking stakeholders about their importance, but it also analyses the

willingness of stakeholders to adopt these systems, thus requiring them to consider the efforts needed to implement and successfully use DMSs. This approach revealed to be both pertinent and relevant, since it has demonstrated that factors influencing the opinions of the stakeholders regarding the importance of implementing a DMS in a destination differ from those factors affecting the stakeholders' willingness to adopt, themselves, a DMS. In fact, while the empirical analysis indicated that the resources and strategic vision of the stakeholders' own organisations are influencing factors in the second case, they were irrelevant in the first. Second, the impact of major electronic intermediaries on stakeholder willingness to adopt a DMS, not previously analysed, was also examined in this paper. The results seem to be relevant since they indicate that OTAs, which already assume an important role in travel planning and booking, negatively influence stakeholder intention to adopt a DMS. Moreover, the empirical study provides a further original perspective on the factors explaining DMS adoption, by testing and confirming the negative influence that the lack of other DMSs in neighbouring regions or at the national level may have on the willingness of stakeholders to adopt.

Other factors, which had been previously tested by research, were confirmed as influencing DMS adoption, namely, stakeholders' resources, the DMO's role and its strategic vision, the destination's organisational readiness including the willingness of other entities of the destination to cooperate, as well as pressure from the external environment. Furthermore, considering all the findings, an explanatory model, including new factors that influence the adoption of a DMS by destination-based stakeholders, has been proposed.

The paper also provides several practical implications. First, the factors that were found to influence DMS adoption highlight the need for destination managers who are aiming to implement a DMS to develop socio-technical strategies to cope with the lack of skills of the tourism industry regarding DMSs, as well as with challenges deriving from poor collaboration levels amongst stakeholders. The identified novel factors also provide practical implications, such as the need for an integrated and complementary approach to DMS implementation from destination managers. As indicated by the results, it is crucial to ensure cooperation amongst entities adopting a DMS in one specific destination, and isolated attempts to implement a DMS in the absence of such systems in neighbouring destinations, or on a higher level of the administration (i.e., a national DMO), are likely to be less successful in ensuring the adoption of these web platforms by stakeholders, than those which are integrated in a broader system.

In addition, the original factor related to the negative influence that major OTAs have on DMS adoption intentions asks for a thorough analysis, both from destinations already adopting DMSs as well as from those considering adoption, on the role that these systems should play. Results indirectly seem to suggest that DMSs should not aim at competing with OTAs, offering the same transactional functions, because they will be perceived as irrelevant by stakeholders, but instead should try to offer new opportunities for destinations to be managed and promoted to the market in an integrated way.

Although providing important contributions to the tourism field and research on DMSs, this paper has some limitations, especially regarding the restricted territorial context where the model was tested. Therefore, it would be important to test the model within other territorial contexts. Another limitation of the study is that the differences amongst the opinions of different stakeholders regarding the adoption of DMSs, and factors that affect this adoption, have not been examined and, as such, this is a relevant topic to explore in future studies. Finally, further research should also be carried out to analyse which types of functionalities destination players would find relevant to have in a DMS.

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## CHAPTER 11

### Factors influencing the relevance of DMSs' functionalities: The stakeholders' perspective

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#### Reference

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## **11. Factors influencing the relevance of DMSs' functionalities: The stakeholders' perspective**

### **Abstract**

Destination Management Systems (DMSs) have proven relevant to destination competitiveness, namely to attract visitors and foster coordination of destination-based stakeholders. Previous research suggests that one reason explaining the success of DMSs is the ability to engage destination-based players in adopting these systems and in using its functionalities. Nevertheless, there is almost no research on factors explaining the importance that destination-based stakeholders assign to specific functionalities typically found in DMSs, neither on the factors that influence that importance. This research is especially important to design more useful DMSs and promote the use of these platforms. The present paper examines the factors influencing the relevance that stakeholders assign to several DMSs' functionalities. The empirical study was performed in a Portuguese region – the NUTS II Centre of Portugal. Results indicate that the importance given by stakeholders to DMSs' functionalities is influenced by factors such as their perceptions on the destination's readiness to adopt these systems, the perceived usefulness of DMSs and, in some cases, by the resources and strategic vision of their own organisation, type of respondent, the stakeholders' knowledge on DMOs' platforms and affiliation to DMOs. However, the impact of the previously mentioned factors differs according to the kind of functionalities considered.

**Keywords:** Destination management systems, destination stakeholders, functionalities, information and communication technologies, information systems.

## 11.1 Introduction

The marketing of tourism destinations is substantially different from that of individual enterprises (Sautter & Leisen, 1999) mainly due to the several players and varied levels of skills that they encompass (Line & Wang, 2017). Such diversity poses considerable challenges to the marketing and management inherent to Destination Management Organisations (DMOs) (Hristov & Zehrer, 2019).

The advent of the Internet revolutionised the role and capabilities of DMOs, mainly in the field of destination marketing (Xiang, Magnini, & Fesenmaier, 2015). Most national, regional and even local DMOs have developed, since the beginning of the Internet era, some kind of online information system, usually aimed at promoting their attractions and tourism in demand markets (Qi, Law, & Buhalis, 2008). However, despite the latest development in online platforms, many of those systems developed by DMOs remain mere relatively static brochure websites, where the DMOs publish information and promotional messages used to appeal to visitors (Fernández-Cavia, Rovira, Díaz-Luque, & Cavaller, 2014).

Nevertheless, ever since the advent of the Internet, in the mid-90s, a few destinations attempted to implement online platforms aimed at broadening its overall role instead of merely improving the role of information systems to DMOs, which were known as Destination Management Systems (DMSs) (Pollock, 1995). In fact, the main initial goal and distinctive factor of DMSs was their focus to support DMOs in coordinating their own departments and staff in, for instance, assisting visitors at tourism information centres providing the most accurate and up-to-date information possible (Estêvão, Carneiro, & Teixeira, 2011). To do so, inherent to these systems are intranets connecting the various branches of DMOs in order to provide up-to-date and coherent data internally, as well as appropriate information to visitors (Pechlaner & Abfalter, 2005).

In addition, DMSs also developed extranets which provided networks linking the DMOs to destination businesses, including tourism attractions, as well as linking these businesses (Blank & Sussmann, 2000). Such networks were firstly intended at assisting the DMOs' governance and leadership of the destination, by enhancing communication flows with the tourism suppliers (Ndou & Petti, 2007). However, DMSs soon provided a network enabling communication and cooperation amongst different types of stakeholders (Sigala, 2014). Hence, these systems allowed DMOs to take advantage of the Internet, not only to coordinate their internal tasks but also to coordinate the destination as a whole (Llodrà-Riera, Martínez-Ruiz, Jiménez-Zarco, & Izquierdo-Yusta, 2015; Petti & Solazzo, 2007).

Furthermore, although DMSs also include front-end websites aimed for tourists, they have significantly different features from traditional destination portals which allow greater coordination made possible by the systems' intranets and extranets (Fesenmaier, Gretzel, Hwang, & Wang, 2004). Furthermore, in a Business-to-Consumer (B2C) perspective, instead of only conveying relatively detached and ephemeral promotional messages to potential visitors, DMSs seek to manage long-lasting and meaningful relationships with their customers (Horan & Frew, 2007; Stienmetz & Fesenmaier, 2013). In order to do so, they aggregate functionalities which allow prospective tourists to manage their own travel arrangements autonomously through, for instance, trip planners, dynamic packages or bookings and purchases made directly to the destination with no need for external intermediaries (Sigala, 2012).

Nowadays, smart tourism destinations (SD) require a dynamic interconnection between stakeholders through a technological platform on which information related to tourism activities can be shared instantly (Del Chiappa & Baggio, 2015). Hence, DMSs are important systems that can leverage the development of SDs due to their role as the pivotal systems coordinating the many actors and applications inherent to this kind of destinations (Ivars-Baidal, Celdrán-Bernabeu, Mazón, & Perles-Ivars, 2019).

Stakeholders which adopted a DMS ended up not using many of its functionalities (e.g. updating of contents related to their own services in the Content Management System), either for not perceiving benefits in their use or by lack of skills to use them (Daniele & Frew, 2008). It would therefore be relevant to analyse the perceived importance of DMSs' functionalities to stakeholders and the factors that influence this perception. This research would be of great value since it would provide valuable insights on what functionalities should be integrated in DMSs. Nevertheless, only scarce research has explored the factors explaining DMS adoption (Bédard, Louillet, Verner, & Joly, 2008; Buhalis & Spada, 2000; Estêvão, Carneiro, & Teixeira, 2014; Li & Wang, 2010; Mistilis & Daniele, 2005; Ndou & Petti, 2007; Petti & Solazzo, 2007; Sigala, 2013; Sigala, 2014; Wang, 2008; Wang & Russo, 2007) and almost none have approached the willingness of destination-based stakeholders to use specific functionalities inherent to DMSs (Sigala, 2014). As far as DMSs' functionalities are concerned, no empirical study that examined the factors influencing the perceived importance of those functionalities was found.

The main goal of this paper is to contribute to attenuate this gap in the literature by seeking to understand the factors that influence the importance that destination players attribute to a set of functionalities which typically differentiate DMSs from other types of tourism



destination platforms. In order to accomplish this goal, an empirical study based on a questionnaire survey was conducted in the Centre of Portugal which has its own DMO but lacks a DMS. The results of this survey applied to three types of destination-based tourism stakeholders are expected to provide new insights concerning the factors that influence the perceived importance of DMSs' functionalities and, consequently, the relevance of including this kind of functionalities in DMSs. This study further aims to assist in DMS' conceptualisation and design, in order to improve the performance of these systems considering the needs of stakeholders.

## **11.2 Theoretical background**

### **11.2.1 Main functionalities conveyed by DMSs**

As referred above, traditional DMO websites are, to a great extent, informational publishing tools aiming at promoting the destination. In contrast, since DMSs are designed to also assist the management of DMOs and suppliers located at the destinations, they are required to hold further dimensions beyond the informational (Wang & Russo, 2007).

In order to analyse the levels of performance and sophistication of DMSs, Wang (2008) proposed a model for classifying the functionalities of these systems into four dimensions, namely: (i) informational; (ii) communicational; (iii) transactional; and (iv) relational. In this paper this framework will be used to characterise the functionalities typically conveyed by DMSs as well as the factors that might influence the perceived importance of these functionalities to destination-based stakeholders.

#### **11.2.1.1 Informational dimension**

Although the first dimension – informational – is also inherent to traditional destination websites, the sophistication of these functionalities in DMSs is higher (Wang & Russo, 2007). In fact, instead of only conveying prospective tourists standardised data and generic promotional messages about the destination, as traditional DMO websites tend to do (Gibbs, Gretzel, & Noorani, 2016), DMSs provide tailor made information which suits the profile of each user (Buhalis & Wagner, 2013). Moreover, one of its main goals in terms of informational dimension is to spread top-bottom as well as bottom-up coherent, accurate and up-to-date information among organisations that integrate the supply chain of the destinations (e.g. DMOs, destination-based stakeholders such as tourism accommodations

and tourism attractions) (Benckendorff, Xiang, & Sheldon, 2019). For instance, when describing the British DMS (*Visitbritain*), Guthrie (2011) highlights the possibility that the system gave to tourism boards of small rural communities to share information about local events which became automatically available in the main *Visitbritain* front-end website.

One distinctive factor of DMSs' informational dimension is its dynamic nature, which enables to provide up-to-date information on various services of the destination such as services' prices, services' availability or upcoming events (Gajdošík, 2018). These information requirements are crucial to effectively assist visitors to plan their travel experiences.

Especially the earlier approaches to the DMS concept often defined these platforms as one-stop-only platforms integrating all the information and tools aimed at assisting users' travel arrangements (Buhalis, 2003). However, perhaps due to the low levels of cost-benefit or to the inability of DMOs to actually process vast amounts of data on elements such as weather, transportation schedules, prices or service quality rankings, DMSs are progressively giving access to third party websites conveying such information instead of conveying all the information in the platforms (Benckendorff et al., 2019).

#### **11.2.1.2 Communicational dimension**

Within the communicational dimension, DMSs usually provide tourists brochure request capabilities, search functions by category, e-mail newsletter and interactive tools, such as maps or chatrooms where it is possible to interact with DMOs' staff for support (Wang, 2008). However, this dimension goes well beyond the provision of tools enabling an immediate communication between tourists and destinations, since DMO websites also have a role in enhancing potential tourists' destination brand awareness (Zavattaro, Daspit, & Adams, 2015). In fact, web destination online platforms are an essential element of the DMOs' strategy to communicate their destination brands' attributes to potential visitors, including their emotional values, since these are particularly relevant to the subsequent development of ties that lead to meaningful relationships with the demand (Jabreel, Moreno, & Huertas, 2017).

Under a Business-to-Business (B2B) perspective, perhaps the main role of a DMS is to enhance the communication flows amongst destination players (Sigala, 2014). Lusch and Webster (2011) suggest that rather than prioritising customers, marketing efforts should start by focusing on creating value amongst partners through the use of collaborative

networks. To serve this goal, DMSs typically provide virtual forums where destination-based suppliers can communicate amongst them and with the DMO (Baggio, 2011). However, the communication dimension of DMSs also encompasses a B2C scope, since these systems typically enable individual tourists to communicate with DMOs' staff through tools such as chatrooms, interactive tools, advanced search functions, and comment boxes among others (Wang & Russo, 2007).

#### **11.2.1.3 Transactional dimension**

The transactional dimension is mostly aimed at visitors. The tools within this dimension are intended to enable them to book and purchase tourism products, either individually or aggregated into packages. In order to be able to sell products to the demand in real time, a DMS booking engine must be connected to the computers' reservation systems of each supplier (e.g. Property Management Systems of hotels) (Brown, 2004). Within their transactional dimension, DMSs typically convey the online reservation of tourism products (predominantly accommodation) (Inversini, 2010), cross-selling opportunities of products of the destination not directly related to tourism (Buhalis & Wagner, 2013), events' tickets (Estêvão, Carneiro, & Teixeira, 2012) and shopping carts (Buhalis, 2003).

The advent of the online travel agents (OTAs) whose dominance over individual suppliers and whole destinations continues to grow, poses relevant questions concerning the role that DMOs and DMSs should play regarding transactions. A noteworthy example of the conflict of interests and consequent clash between intermediaries and DMSs occurred in Ireland with Gulliver (Keaney, 2011). The pressure from intermediaries as well as the online purchasing habits of tourists, which are progressively used to the booking engines of global OTAs (Buhalis & Wagner, 2013), has forced DMOs to rethink their approach to e-commerce (Dredge, 2016).

Gonzalo (2013) suggests that instead of fighting against the overwhelming dominance of OTAs, DMOs should build partnerships with them. Inherent to these partnerships was the division of the sales commissions between the DMO and the OTA, which actually provided the booking engine solutions (Gonzalo, 2013).

#### **11.2.1.4 Relational dimension**

Ivars-Baidal et al. (2019) argue that the recently coined concept of Smart Tourism Destinations opens new horizons to DMSs as focal points where tourists can have access

to social media on the destination, as well as obtain mobile applications or tailor-made information enabling them to establish dynamic relationships with destinations. Social media, in particular, has transformed the relationships of organisations and their public (Xia, 2013), providing the former with valuable data on the profile and behaviour of the latter (Yang, Tang, Dai, Yang, & Jiang, 2013). The relationship dimension is perhaps the most sophisticated and challenging of the four dimensions in terms of implementation and management.

According to Wang (2008), the functionalities related to this dimension allow establishing an individual relationship, including the ability to personalise and customise content, such as travel experiences through dynamic packaging, as well as the chance to view or insert comments, ratings, photos or videos about the destination using User-Generated Content (UGC). Again, the relational dimension also transcends the B2C perspective, since the destination-based stakeholders are able, and are often required to participate in the updating and management of the contents related to their services through shared Content Management Systems (Guthrie, 2011). Moreover, the ongoing communication between DMOs and other players adopting DMSs, which is fostered by this kind of systems, also tends to strengthen their relationships and enhance the leading and coordinating capabilities of DMOs (Ndou & Petti, 2007).

Content personalisation is one of the main areas within website development (Nilashi, Ibrahim, Mirabi, Ebrahimi, & Zare, 2015). Nowadays, for instance, the content personalisation through clustering is used by companies to discover patterns of users with similar profiles and interests (Castellano & Torsello, 2009). According to Park and Gretzel (2007), in a DMO website context, customised and personalised content often includes multilingual webpages, interactive trip planners, the possibility to send online personalised cards, sign-up for visitors' members and DMO affiliates, as well as contents specifically tailored for the media.

In their study evaluating the performance of American DMOs' websites, Stepchenkova, Tang, Jang, Kirilenko and Morrison (2010) concluded that their levels of personalisation were considerably low and suggested that, in order to outperform above the average level, new websites should take into account the implementation of customised contents and tools. Under a B2B perspective, DMSs also foster content personalisation by users which are often encouraged, and sometimes required, to update the contents related to their own products (Benckendorff et al., 2019).

The level of collaboration amongst suppliers may be a relevant aspect influencing the perceptions of destination-based stakeholders about the adoption and use of content personalisation in a DMS, by themselves and by prospective visitors. If, as suggested by Ammirato, Felicetti, Della Gala, Raso, and Cozza (2018), a DMS is expected to offer personalised tools such as dynamic packaging, it is crucial that suppliers have high levels of communication and collaboration among them, in order to deliver composite tourism products tailored according to the needs and wants of tourists.

Research on the general use of UGC by DMOs suggests that it is still predominantly experimental (Molinillo, Liébana-Cabanillas, Anaya-Sánchez, & Buhalis, 2018). However, despite problems related to the anonymity of the uploaders of UGC that can spur some of them to spread falsities about a given service, it was proved to be one of the most trustworthy sources of information in tourism, ahead of, for instance, market-provided information (Chung & Buhalis, 2008; Del Chiappa, 2011). Regarding the use of UGC tools specifically by DMO websites, the few studies covering this issue tend to agree that this use is still relatively scarce, being reviews, evaluations, photos and videos the most frequently conveyed contents (De Ascaniis & Morasso, 2011). The only empirical study found that analyses the use of UGC by DMSs was carried out by Estêvão, Carneiro and Teixeira (2013) and focused on UGC usage by national and regional DMSs. This study showed that almost none of the analysed DMSs held any kind of UGC functions. This result was unexpected, since DMSs are supposed to engage in meaningful relationships with the demand, being UGC one of the most effective tools serving this goal in the tourism industry (Manap & Adzharudin, 2013).

### **11.2.2 Factors influencing the perceived importance of functionalities conveyed by DMSs**

As previously discussed, there are no studies regarding the factors explaining the importance given by stakeholders to specific DMS functionalities. However, several researchers already argued that various characteristics of the destinations are of major importance for the implementation of DMSs, including the cooperation among destination-based stakeholders (Blank & Sussman, 2000; Gržinić & Saftić, 2012; Sigala, 2013) and availability to share information (Ndou & Petti, 2007; Petti & Solazzo, 2007), a considerable size and tourist relevance of the destination, as well as DMOs having appropriate human resources and being able to coordinate the destination. It is expected that these factors,

while affecting the willingness to adopt DMSs, also influence the importance given to the functionalities of DMSs that are most distinctive.

Willingness to cooperate may affect more the use and relevance of some functionalities that require greater collaboration and availability to share information among stakeholders. This is for example the case of functionalities that enable the provision of updated information that, as some research suggests (Çetinkaya, 2009; Palmer, 2004) needs people to be available to share information and make it public. Therefore, one may suppose that the ability of DMSs to provide updated information about the destinations' services (Benckendorff et al., 2019), the stakeholders' readiness to regularly update their own contents in the system, as well as their perceptions about the benefits they will be able to reap from such efforts, are likely to influence the importance given to providing up-to-date information to visitors. This may be also the case of B2B functionalities specially designed to foster cooperation among stakeholders located in the destination (Bédard & Louillet, 2011; Énalán & Soteriades, 2012; Guthrie, 2011), and of transactional functionalities that visitors use for planning, booking or buying their trips. Hence, concerning these last functionalities, DMSs are expected to convey a holistic perspective of the destination, suggesting visitors to select previously assembled products featuring services from different suppliers or permitting visitors to build packages of travel products provided by different stakeholders (e.g. accommodation, transportation, visits to tourism attractions) through dynamic packaging, which requires a great cooperation among them (Alford & Clarke, 2009; Egger & Buhalis, 2011). Therefore, the importance given by stakeholders to information to assist travel planning, might also be influenced by their readiness to collaborate with other interested parties to assemble composite products instead of only worrying about the provision of information of their own services, as is often seen in fragmented destinations (Ndou & Petti, 2007).

Regional tourism entities, such as regional DMOs, try to foster cooperation among stakeholders located in the region they coordinate (Pechlaner, Volgger, & Herntrei, 2012; Trunfio, & Della Lucia, 2019). Stakeholders being informed about these organisations and, especially, being their members, may reflect their willingness to cooperate with other agents located at the destination and, therefore, affect the stakeholders' willingness to use functionalities that require sharing information and collaboration, as well as the relevance stakeholders assign to these functionalities.

Since the functionalities of the DMSs tend to be more complex than the majority of the functionalities of traditional websites used by DMOs (Buhalis, 2003; Estêvão et al., 2011;

Wang, 2008; Wang & Russo, 2007), the implementation, use and, consequently, the importance attributed to these functionalities may greatly depend on whether the organisations have the necessary resources – e.g. human, technical and financial resources – to implement and use them. The availability of resources may have a higher influence on the importance assigned to some functionalities that are more demanding regarding these resources. The availability of resources of stakeholders to effectively manage the UGC posted by visitors concerning their own products, might be a relevant factor in this scope. Moreover, most SMTEs may not have enough technological and human resources to take advantage of the data created by customers through UGC, which is one of the most relevant aspects required to develop a Customer Relationship Management (CRM) strategy (Sigala, 2018). Another great challenge when implementing DMSs with all their functionalities, corresponds to the common digital gap in tourism destinations, which are often composed of many SMTEs not holding any type of technological system able to process transactions (Egger & Buhalis, 2011). In such scenarios, it is almost impossible for them to interact with a DMSs booking engine.

The fact that other stakeholders and other destinations do not adopt DMSs, may limit the interest on these platforms and on some of their functionalities that require cooperation among stakeholders of the same or several destinations (Estêvão, Carneiro, & Teixeira, 2020; Sigala, 2013).

Considering that functionalities which differentiate DMSs from more traditional platforms used by DMOs offer stakeholders several opportunities to exchange information and cooperate, improving the service along the tourism supply chain (including suppliers, intermediaries and visitors), but also that these functionalities are usually more demanding in terms of resources, the likelihood of stakeholders using the previously mentioned functionalities greatly depends on the strategic vision the stakeholders have (Hsu, King, Wang, & Buhalis, 2016). Since B2B tools conveyed by DMSs are primarily aimed at fostering communication and collaboration among organisations belonging to the tourism's value chain (Stienmetz & Fesenmaier, 2013), some of the factors that might influence the willingness of destination-based stakeholders' use of B2B tools are likely to be their strategic vision, as well as the expected benefits from adopting such collaborative networks. Transactional functionalities are an example of the distinctive functionalities of DMSs, which open tourism suppliers and visitors a wide range of opportunities to commercialise and buying a great variety of destination's products using a single platform. However, when it comes to perceive the usefulness and benefits of transactional DMS functionalities to their

businesses, some suppliers may tend to consider that the profusion of different types of online booking engines in tourism may turn them redundant (Werthner et al., 2015). Despite the total lack of research seeking to explain the reasons influencing the provision of UGC by DMSs and its subsequent use by adopting stakeholders, another factor that may explain the importance assigned to UGC is the strategic vision of stakeholders on the process of establishing meaningful relationships with customers (Seo & Park, 2018). A limited strategic vision and readiness of destination stakeholders to manage the data provided by UGC may restrict the perceived usefulness concerning these tools and, ultimately, lead to a lack of support to their integration in DMSs (Mistilis & Daniele, 2005; Sigala, 2013, 2014; Wang, 2008).

The value of technological platforms and of their functionalities also depends on whether there are already other platforms with the same kind of functionalities or not (Eze, Duan, & Chen, 2014; Oliveira, Thomas, & Espadanal, 2014). In tourism, while some people recognise the great potential of DMSs and of their functionalities (Énalan & Soteriades, 2012; Ivars-Baidal et al., 2019; Sigala, 2013), others do not assign so much importance to them, mentioning the existence of platforms that perform some similar tasks (e.g. transactional tasks), such as OTAs (Werthner et al., 2015).

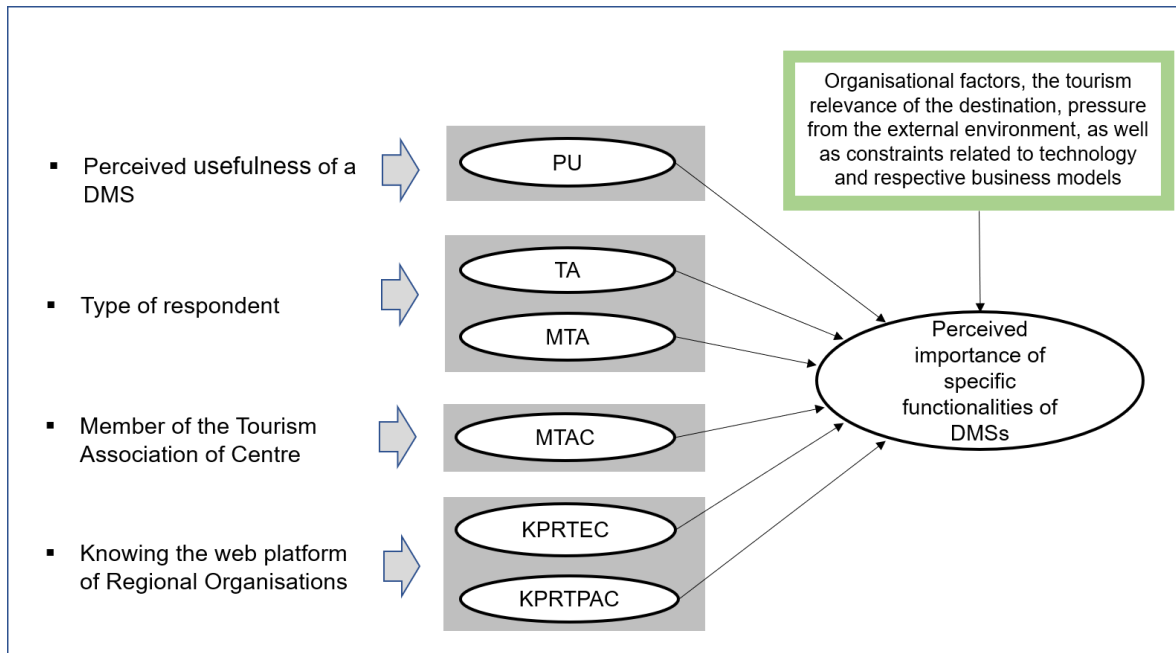
Two other aspects that may encourage the adoption of some DMSs' functionalities are the increasingly demanding tourism market (Énalan & Soteriades, 2012; Sigala, 2014) and the stakeholders' willingness to avoid intermediaries and their commissions (Estêvão et al., 2011; Qirici, Theodori, & Elmazi, 2011). Hence, the market increasingly values functionalities provided by DMSs, such as those providing updated and personalised information (Bédard et al., 2008; Tseng, Tu, Lee, and Wang, 2012), permitting UGC (Sigala & Marinidis, 2012) or enabling booking and buying products (Çetinkaya, 2009; Sigala, 2013; Wang, 2008). These last functionalities are especially useful when suppliers try to avoid intermediaries (Buhalis & Kaldis, 2008).

Considering that different types of stakeholders may have different business environments, with different cultures, levels of cooperation and opportunities of access to technological platforms (Horan & Frew, 2007; Robey, Im, & Wareham, 2008; Sigala, 2014), the importance assigned to DMSs' functionalities may also vary according to the type of stakeholder.



Considering the literature reviewed, the model presented in figure 11.1 is proposed, suggesting that the perceived importance of specific functionalities of DMSs is influenced by the following aspects:

- Factors related to the destination where the organisation is located, to the external environment and to the own organisation (resources, culture and strategic vision);
- Perceived usefulness of DMSs;
- Type of organisation that is considering to integrate a DMS (e.g. tourism accommodation, manager of a tourism attraction, city council);
- Interest of the own organisation on regional tourism entities, which may reflect an interest in cooperating with other stakeholders at the level of the destination, either demonstrated by knowing the web platforms of these entities or by being a member of these entities.



**Note:** PU - Perceived usefulness; TA - Tourism accommodation; MTA - Managers of tourism attractions; MTAC - Member of Tourism Association of Centre; KPRTEC - Knowing the web platform of the Regional Tourism Entity of Centre; KPRTPAC - Knowing the web platform of the Regional Tourism Promotion Agency of Centre.

**Figure 11.1 - Factors influencing the perceived importance of specific functionalities of DMSs**

## **11.3 Study contextualisation and methods**

### **11.3.1 Context of the study**

The empirical analysis that supports the present paper was conducted in the Centre Region (NUTS II), in Portugal. This region has a total area of 28199 Km<sup>2</sup> (31% of the Portuguese territory), which makes it the second largest of the seven Portuguese NUTS II. The region had 2,216,569 inhabitants in 2018, corresponding to about 22% of the country's population (Instituto Nacional de Estatística, 2019).

This region has a considerable diversity in terms of landscapes and local communities, including both mountain and beach destinations and offers a wide variety of tourism products. The region's promotional messages seem to want to take advantage of this diversity, using as slogan "A Country inside a Country". As all Portuguese NUTS II, the Centre has a public regional DMO – named Regional Tourism Entity of Centre -, and a public-private consortium specifically designed to promote the region abroad, designated as Regional Tourism Promotion Agency of Centre. Both entities developed their own official destination portals which cannot be considered DMSs, given to their predominantly static and informative character.

### **11.3.2 Data collection**

A survey questionnaire was carried out amongst three groups of stakeholders that may use DMSs – managers of tourism accommodations, managers of tourism attractions and representatives of city councils. The questionnaire is divided in three groups of questions encompassing the (i) perceptions of destination-based stakeholders regarding the importance of specific functionalities typically conveyed by DMSs; (ii) factors that may influence the perceived importance of these functionalities; and (iii) characterisation of the surveyed entity. It was considered necessary to slightly adapt the questionnaires to each of the three destinations' components, specifically the questions regarding the characterisation of the respondents, due to the distinct types of information required to characterise the respondents' organisations (e.g. number of rooms, types of attractions managed).

The respondents were asked to report how important it was for a DMS to be created in the Centre Region of Portugal to have 24 specific functionalities enabling: (i) support to travel

planning; (ii) access to up-to-date information; (iii) access to customised/personalised contents; (iv) access to third party sources; (v) the possibility to book and purchase tourism products; (vi) visualisation and insertion of contents using UGC; and (vii) the provision of B2B collaborative networks and tools. Respondents had to answer these questions using a Likert-type scale from 1 “not important at all” to 7 “very important”. These questions enable to understand the perceived importance that the stakeholders attached to these functionalities.

The group of questions regarding the factors that may influence the perceived importance of these functionalities included different types of questions. First, respondents were asked to indicate their level of agreement with statements concerning a set of factors that may influence the perceived importance of DMSs’ functionalities: organisational factors (e.g. collaboration levels, availability of suitable human resources; strategic vision); the tourism relevance of the destination (e.g. the relevance of the tourism sector at the destination); pressure from the external environment (e.g. pressure from competing destinations, pressure from the demand to adopt a DMS); and constraints related to technology and respective business models (e.g. the absence of complementary technology to ensure the good operation of a DMS, the existence of alternative technology to DMSs that can make these systems useless). These questions were created based on the research of several authors already mentioned in the literature review of this paper (e.g. Baggio, 2011; Egger & Buhalis, 2011; Ndou & Petti, 2007; Seo & Park, 2018; Stienmetz & Fesenmaier, 2013).

The questionnaire also encompassed several questions to measure the respondents’ levels or agreement regarding the usefulness of a DMS concerning the following features: (i) quality of service; (ii) presence in the global market; (iii) reduction of costs; (iv) customer feedback mechanisms; (v) services’ promotion; and (vi) communication and interaction with other destination stakeholders. These questions were included in the questionnaire since, as reported in the literature, some researchers (e.g. Ateljevic & Li, 2017; Werthner et al., 2015) believe that the perception of the usefulness of these systems may affect the perceived importance of some functionalities of the DMSs. The two sets of questions previously mentioned should be answered using a Likert-type scale from 1 “completely disagree” to 7 “completely agree”. Furthermore, the questionnaire also included other questions concerning factors that may influence the perceived importance of DMSs’ functionalities, namely the interest of respondents in cooperating at the destination level, specifically with regional entities. Most specifically, respondents were asked whether they were Members of Tourism Association of Centre (MTAC) and if they knew website platforms

of two regional entities of the Centre of Portugal – the [centerofportugal.com](http://centerofportugal.com) (from the Regional Tourism Promotion Agency of Centre (RTPAC)) and the [turismodocentro.pt](http://turismodocentro.pt) (from the Regional Tourism Entity of Centre (RTEC)). Finally, respondents were asked to answer some questions that permit to characterise them.

Different approaches were adopted to identify potential respondents among the three groups of stakeholders previously mentioned. In the case of the city councils the questionnaire was administered to representatives of all the 100 city councils of the Centre Region. In the case of tourism accommodation, the questionnaire was administered to managers of all the 607 hotels and rural tourism accommodations of the Centre Region. It was decided to survey managers of both hotels and rural tourism accommodations due to the importance of these accommodations and to the relevance of ensuring some diversity among the accommodations analysed. Hotels and rural tourism accommodations to contact were identified through the National Tourism Registry of Turismo de Portugal, IP, the Portuguese national DMO's (Turismo de Portugal, 2018). However, as far as tourism attractions are concerned, due to the difficulty of identifying the set of managers of all the attractions of the Centre Region, a snowball sampling procedure was adopted. Therefore, all the managers of attractions that answered the questionnaire were asked to indicate the managers of other tourism attractions to whom the questionnaire was subsequently sent. The representatives of the city councils were asked to answer the questionnaire considering the city council's planning and coordinating role. However, city councils that also managed tourism attractions received another questionnaire and filled it considering their role of attractions' managers.

The survey was administered online during four months, from April to August 2018. After identifying potential respondents, the authors contacted them by telephone, explaining the scope of the study and asking for their participation. Subsequently, an e-mail with the link to the questionnaire was sent to the stakeholders which had declared their willingness to participate in the survey.

### **11.3.3 Data analysis**

In order to identify a reduced number of factors that could represent considerably well the high number of items corresponding to the perceived importance of several functionalities of DMSs, a Principal Component Analysis (PCA) was done. A similar procedure was carried out to identify a reduced number of factors to represent a high number of features that may

affect the perceived importance of specific DMSs' functionalities, either related to the destination, to the external environment or to the own organisation of respondents.

Next, multiple linear regression analyses were carried out to examine the impact of several factors on the perceived importance of several DMSs' functionalities, including those related to organisational factors, the tourism relevance of the destination, the pressure from the external environment and constraints associated with technology and respective business models.

## **11.4 Analysis and discussion of results**

### **11.4.1 Characterisation of the sample**

A total of 326 completed questionnaires were obtained. Of these, 133 were from attraction managers, 93 from accommodation businesses and 100 from city councils. It is noteworthy that 315 of the 326 organisations analysed have their own website, while 11 do not. With regard to content updating and content management, 229 organisations do so using their staff alone, 24 use only specialised companies to do so, while 62 websites are updated and managed by the organisations' staff and external companies. Regarding the transactional dimension of the reporting organisations' websites, only 91 organisations implemented a direct booking system on their websites (29% of the 315 reporting companies' websites). When it comes to bookings through third party websites, 91 of the organisations surveyed (of which 70 have direct bookings on their websites) market their products through OTAs, the overwhelming majority being accommodation units. On average, 52% of the sales made by these 91 organisations derive from OTAs, with the average commission charged being 15.5% of the sale price to the public.

The respondents' awareness about the RTPAC and RTEC online platforms reveals somewhat disparate results for both. Thus, while in the case of the former only 204 (63%) of the respondents said they knew about it, in the case of the latter, 291 (89%) of these admitted to knowing their official platform. This disparity may perhaps be justified by the fact that the RTEC has as their central tasks the qualification of the supply and the internal promotion of the regional destination, while the RTPAC focus on the promotion of Portugal's regional destinations abroad. Similarly, only 150 of the organisations surveyed said they had some kind of presence on the RTPAC platform (74% of the 204 who knew it which correspond to 46% of the total 326 respondents), while 257 admitted to being represented

on the RTEC platform (88% of organisations that knew it and 81% of the total of 326 respondents).

#### **11.4.2 Perceived importance of the functionalities of DMSs**

First, a PCA with a Varimax rotation was carried out on the items regarding the perceived importance of functionalities of DMSs. Some items were excluded from the analysis due to having low communalities. As a result, the following four factors were obtained (Table 11.1):

- Factor 1 - Functionalities supporting travel planning and bookings (TPB). This factor includes the importance given to B2C functionalities such as the purchase of flights, attractions tickets and accommodation stays, isolated or through dynamic packaging. The possibility to download maps, brochures or mobile apps through the DMS are also included in this factor.
- Factor 2 - Access to UGC tools and third-party information (UGCTP). It encompasses the relevance attached to functionalities enabling front-end users to view or insert contents using UGC, either in the DMS website (e.g. share itineraries previously planned by individual users), or via links it provides to third party platforms (e.g. *TripAdvisor*). This factor also includes the provision of blogs and forums by the DMS, as well as B2B functions enabling destination businesses to apply or renew their affiliation to the DMO or to the DMS. This factor further encompasses the provision of links to third-party booking engines of intermediaries and suppliers, as well as the access to their services' availability and prices.
- Factor 3 - Functionalities providing customised and updated information (CUI). This factor comprises the relevance assigned to the provision of updated information to visitors on services' availability, prices and timetables, as well as updated information and purchase of special offers. It also encompasses the possibility to customise content according to the users' own profile.
- Factor 4 - B2B functionalities (BTOB). It encompasses the provision of strategic materials to destination players, such as reports on the destination's performance, the visitation levels of the DMS's area dedicated to an individual service or attraction, alongside the possibility of individual businesses to actively integrate a network linking the destination.

**Table 11.1 - Importance of potential functionalities of a DMS - Results of a PCA (with Varimax rotation)**

	Mean	Standard deviation	Com.	Factor loadings	Eig.	Cumulative variance explained (%)	Cronbach's alpha
<b>Factor 1: Functionalities supporting travel planning and bookings (TPB)</b>	<b>5.90</b>	<b>1.012</b>			<b>4.651</b>	<b>21.141</b>	<b>0.923</b>
Bookings and purchases of flights' and attractions' tickets	6.00	1.058	0.823	0.786			
Bookings and purchases of accommodation services	6.04	1.005	0.789	0.768			
Support to users through chatrooms	5.50	1.212	0.698	0.699			
Real-time dynamic packaging	6.04	1.028	0.731	0.660			
Downloads of maps and brochures	5.96	0.999	0.725	0.649			
Downloads of destinations' mobile apps	5.88	1.029	0.643	0.589			
<b>Factor 2: Access to UGC tools and third-party information (UGCTP)</b>	<b>5.47</b>	<b>0.898</b>			<b>4.364</b>	<b>40.977</b>	<b>0.930</b>
Links to third party service evaluation platforms (e.g. <i>TripAdvisor</i> )	5.51	1.210	0.796	0.805			
Insertion of comments and evaluations by visitors	5.59	1.178	0.786	0.738			
Share of previously planned itineraries	5.47	1.202	0.785	0.735			
Access to third party online booking engines (e.g. <i>Booking</i> )	5.70	1.366	0.705	0.656			
Access to blog/forum aimed at sharing information on the destination	5.25	1.310	0.638	0.618			
Access to tourism enterprises' reservation systems	5.81	1.193	0.782	0.608			
Accept/renew DMO affiliate memberships	5.00	1.534	0.572	0.553			
<b>Factor 3: Functionalities providing customised and updated information (CUI)</b>	<b>5.87</b>	<b>1.014</b>			<b>4.338</b>	<b>60.696</b>	<b>0.930</b>
Availability of destination tourism services in a given date	5.96	1.122	0.845	0.772			
Updated prices of tourism services (e.g. accommodation)	5.84	1.186	0.793	0.738			
Updated timetables of transportation services	5.86	1.261	0.759	0.731			
Information and purchase of special offers	5.94	1.083	0.793	0.715			
Customized content according with the user's profile	5.87	1.179	0.716	0.671			
Updated information (e.g. upcoming events)	5.73	1.226	0.701	0.658			
<b>Factor 4: B2B functionalities (BTOB)</b>	<b>5.55</b>	<b>1.195</b>			<b>3.368</b>	<b>76.005</b>	<b>0.954</b>
Reports on the performance of the destination provided to affiliate members	5.68	1.275	0.873	0.812			
Information on the visitors' operations in the website	5.52	1.230	0.902	0.811			
Access to a network enabling interaction with the DMOs and other businesses. provided to affiliate members	5.45	1.241	0.868	0.791			

Note: Only factors loadings with absolute values  $\geq 0.3$  are presented in the matrix. Com - Communalities. Eig. - Eigenvalue. KMO = 0.929; Bartlett's test of sphericity = 7462.855 ( $p = 0.000$ ). N=326.

This factor analysis is of good quality. given that it has a KMO=0.929 (higher than the 0.7 required) and the  $p$ -value of the Bartlett's test is  $<0.05$ . In addition, all the communalities are higher than 0.5 and every item has a factor loading higher than 0.5 in one of the four factors identified. Additionally, all these factors have a Cronbach's alpha considerably higher than the 0.7 required. Moreover, the cumulative variance explained is 76.005%, which is higher than the 60% required.

All kinds of functionalities identified were considered very important (with ratings above 5 in a Likert type scale from 1 "not important at all" to 7 "very important"). However, the functionalities found more important were those supporting travel planning and bookings (TPB) (5.90). This result seems to indicate the preference of stakeholders for solutions enabling them to sell directly to visitors. Next, the functionalities found most important were those designed for providing customised and updated information (CUI) (5.87), suggesting that stakeholders value the provision of updated and customised information related to specific products available at the destination. The means obtained by the B2B functionalities (BTOB) (5.55) and functionalities providing access to UGC tools and third-party information (UGCTP) (5.47) seem to indicate that stakeholders do not value the potential role of DMSs in optimising B2B communication and collaboration efforts and in building meaningful and lasting relationships with the demand as much as the more immediate, short-term provision of direct sales and updated information to visitors.

### **11.4.3 Factors influencing the perceived importance of the functionalities of DMSs**

Another PCA with Varimax rotation was undertaken on some items that may affect the perceived importance of several DMSs' functionalities, encompassing those regarding organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models. Again, some items were excluded from the analysis due to having low communalities. The following five factors were identified in the PCA (Table 11.2):

- Factor 1 - Destination readiness and favourable conditions for DMSs' adoption (DREFC), which includes several facilitators of the DMS adoption that exist in the destination where the organisation of the respondents is located;



- Factor 2 - Pressure from the external environment (PEE), related to the likelihood of adopting a DMS to decrease the pressure of the demand, intermediaries and even, of competitors;
- Factor 3 - Resources and strategic vision of own organisation (RSVOO), associated with the resources, culture and strategic vision of the own organisation of the respondents;
- Factor 4 - Constraints related to technology and respective business models, as well as DMO's unfavourable role (CTBMDUR), corresponding to constraints that may make the adoption of a DMS difficult, either related to complementary (e.g. a national DMS) or alternative web platforms (e.g. *Booking, Expedia*) or to the performance of DMOs;
- Factor 5 - Lack of resources and cooperation of other organisations of the destination (LRCOO), associated with constrains caused by other organisations located at the destination.

The good quality of the PCA is attested by the communalities and factor loadings (higher than 0.5), the cumulative variance explained (66.833%), the KMO (0.846) and the  $p$ -value of the Bartlett's test ( $<0.05$ ). Moreover, the Cronbach's alphas are all higher than 0.7, except one that corresponds to 0.676, which is still an acceptable value in an exploratory factor analysis, according to Hair, Black, Babin and Anderson (2010).

Finally, the Cronbach's alpha of 9 items related to the usefulness of DMSs was calculated in order to examine if it could be considered that all these items represented only one dimension of usefulness. Since the Cronbach's alpha is 0.948 it may be concluded that all the 9 items can well represent a unidimensional construct of DMSs' usefulness.

**Table 11.2 - Factors concerning organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models – Results of a PCA**

(continues)

	Com.	Factor loadings	Eig.	Cumulative variance explained (%)	Cronbach's alpha
<b>Factor 1: Destination readiness and favourable conditions for DMSs' adoption (DREFC)</b>			4.229	18.386	0.891
Collaboration levels between destination-based stakeholders favour DMS adoption	0.652	0.790			
Players of the destination would adopt a DMS	0.663	0.757			
Other destination players' willingness to pay commissions for sales made through the DMS	0.535	0.718			
DMO's ability to lead and coordinate the implementation of a DMS	0.670	0.691			
Adequacy of adopting a DMS given the territorial size of the destination	0.775	0.665			
Adequacy of adopting a DMS given the relevance of the tourism sector	0.769	0.641			
Appropriateness of enlarging the DMO's functions to include the implementation of a DMS	0.616	0.631			
Enough human resources and knowledge to manage a DMS in regional tourism organisations	0.610	0.578			
<b>Factor 2: Pressure from the external environment (PEE)</b>			3.391	33.128	0.855
Ability of the DMS to decrease the power of tour operators and of other intermediaries	0.748	0.788			
Competitive pressure of other destinations	0.799	0.787			
Willingness to adopt a DMS if other destination-based players would	0.592	0.719			
Pressure exerted by tourism demand to adopt a DMS	0.523	0.599			
<b>Factor 3: Resources and strategic vision of own organisation (RSVOO)</b>			3.239	47.209	0.873
Own organisation has financial resources required to adopt a DMS	0.860	0.890			
Own organisation has adequate technological resources required to adopt a DMS	0.763	0.839			
Own organisation has adequate human resources required to adopt a DMS	0.688	0.775			
Own organisation has culture and strategic vision compatible to DMS adoption	0.628	0.590			

**Table 11.2 - Factors concerning organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models – Results of a PCA  
(continuation)**

	Com.	Factor loadings	Eig.	Cumulative variance explained (%)	Cronbach's alpha
<b>Factor 4: Constraints related to technology and respective business models, as well as DMO's unfavourable role (CTBMDUR)</b>			2.393	57.615	0.676
The absence of a national or regional DMS would jeopardize any attempt to adopt a regional DMS	0.605	0.722			
Existence of online tourism platforms that make DMSs unnecessary	0.694	0.705			
A publicly funded DMS would be unacceptable	0.581	0.605			
The bureaucratic and inefficient nature of the public sector would jeopardize DMS adoption	0.520	0.549			
<b>Factor 5: Lack of resources and cooperation of other organisations of the destination (LRCOO)</b>			2.120	66.833	0.752
Unwillingness of other players of the destination to share data related to their operations (e.g. available rooms)	0.785	0.854			
Fear of other players of the destination to adhere to a DMS due to penalties imposed by intermediaries	0.743	0.790			
Insufficient resources to manage a DMS by other players of the destination	0.552	0.724			

Note: PCA with a Varimax rotation. Only factors loadings with absolute values  $\geq 0.3$  are presented in the matrix. Com - Communalities. Eig. - Eigenvalues. KMO = 0.846; Bartlett's test of sphericity = 4743.228 ( $p = 0.000$ ).

Considering that the main aim of the empirical study is to examine the impact of several factors on the perceived importance of specific functionalities of DMSs, several stepwise regression analyses were carried out. In order to do these regressions, first the mean of the items of each of the four factors representing DMSs' functionalities were calculated, and these means corresponded to the dependent variables of the four regressions carried out (see equation 1). Some independent variables of the four regressions correspond to the perceived utility of DMSs and to factors related to organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints associated with technology and respective business models. All these variables were measured through the mean of several items assessed using 7-point Likert type scales. Other independent variables correspond to dummy variables coded with yes or no, indicating the type of respondent (e.g. tourism accommodation, manager of a tourism attraction, city council), whether the respondent is a member of a regional entity (specifically of the Tourism Association of Centre of Portugal) and whether the respondent knows web platforms of regional tourism entities (Regional Tourism Promotion Agency of Centre and the Regional Tourism Entity of Centre).

$$\begin{aligned}
 \text{(Eq. 1)} \quad PIF_{ij} = & \alpha + \beta_1 DREFC_i + \beta_2 PEE_i + \beta_3 RSVOO_i + \beta_4 CTBMDUR_i + \\
 & \beta_5 LRCCO_i + \beta_6 PU_i + \beta_7 TA_i + \beta_8 MTA_i + \beta_9 MTAC_i + \beta_{10} KPRTEC_i + \\
 & \beta_{11} KPRTPAC_i + \varepsilon_i
 \end{aligned}$$

Note:

Dependent variables

PIF – Perceived importance of functionalities of DMSs

$i = 1 \dots n$  – Number of organisations who answered the questionnaire

$j = 1 \dots 4$  – Perceived importance of different types of functionalities of DMSs (1 = Functionalities supporting travel planning and bookings, 2 = Access to UGC tools and third-party information, 3 = Functionalities providing customised and updated information, 4 = B2B functionalities)

Independent variables

Factors concerning organisational factors, the tourism relevance of the destination, pressure from the external environment, as well as constraints related to technology and respective business models.

DREFC - Destination readiness and favourable conditions for DMSs' adoption (mean);

PEE - Pressure from the external environment (mean);

RSVOO - Resources and strategic vision of own organisation (mean);

CTBMDUR - Constraints related to technology and respective business models, as well as DMO's unfavourable role (mean);

LRCOO - Lack of resources and cooperation of other organisations of the destination (mean);

PU - Perceived usefulness of a DMS (mean).

Type of respondent:

TA - Type of respondent (tourism accommodation) (0 – no, 1 – yes);

MTA - Type of respondent (managers of tourism attractions) (0 – no, 1 – yes);

MTAC - Member of Tourism Association of Centre (0 – no, 1 – yes);

Knowing some web platforms:

KPRTEC - Knowing the web platform of the Regional Tourism Entity of Centre (0 – no, 1 – yes);

KPRTPAC - Knowing the web platform of the Regional Tourism Promotion Agency of Centre (0 – no, 1 – yes).

Tables 11.3, 11.4, 11.5 and 11.6 present the findings of the four regression analyses carried out. The destination readiness and favourable conditions for DMSs' adoption (DREFC) have a positive significant influence on the importance assigned to the four types of functionalities considered in this empirical study that represent the dependent variables of the four regressions. It is also important to remark that DREFC is also the variable with the highest impact on three of these four variables – functionalities supporting travel planning and bookings (TPB), access to UGC tools and third-party information (UGCTP) and B2B functionalities (BTOB) (when considering the standardised coefficients of the regression analyses). As above referred, the absence of previous studies analysing the importance that destination stakeholders assign to adopt specific functionalities available at DMSs makes it difficult to do comparative analyses with similar studies. Regarding this particular issue, the results contrast with those obtained by Sigala's (2014) study on the perceptions

of Greek tourism stakeholders on relevant aspects to take into consideration when evaluating a DMS, which is possibly the more similar research to the present paper in terms of research goals. Thus, while its empirical analysis suggests that internal collaboration was not considered a relevant element of DMS performance, the results of the present study clearly indicate the influence of collaborative practices in the willingness to adopt DREFC functionalities. Regarding the influence of the DREFC on the importance that stakeholders give to DMSs' functionalities aimed at supporting travel planning and bookings (TPB), one of the most relevant items is, as previously discussed, the collaborative practices within destinations, as posited by previous research (Blank & Sussman, 2000; Gržinić & Saftić, 2012; Sigala, 2013). Concerning the transactional functionalities of a DMS, which are included in the TPB category, the influence exerted by the DREFC is backed by previous research suggesting that high collaboration and technical readiness is required from destination players in order to successfully adopt DMS transactional tools (Alford & Clarke, 2009; Egger & Buhalis, 2011). As suggested by previous studies, if B2B sections within DMO portals are built to establish or maximise collaborative networks within destinations, their success and viability heavily depends on the existing levels of B2B communication and collaboration among destination-based stakeholders (Bédard & Louillet, 2011; Énalán & Soteriades, 2012).

Furthermore, the results also suggest a positive influence of a DMO's leading capabilities – a component of DREFC - on the perceived importance to adopt TPB functionalities, what is indirectly supported by previous research advocating the need for high levels of leadership from DMOs as crucial to achieve collaborative marketing practices within destinations (Laws, Scott, & Parfitt, 2002), such as the adoption of DMS (Énalán & Soteriades, 2012). In addition, since the success of DMSs is closely linked to their adoption and use by destination-stakeholders, the results of the present study corroborate the findings of previous studies demonstrating the positive influence of aspects related to DREFC - e.g. the willingness of destination-based stakeholders to cooperate and adopt DMSs - in the ability to successfully adopt DMSs (Ndou & Petti, 2007; Petti & Solazzo, 2007).

The perceived usefulness (PU) of a DMS also has a significant positive impact on all the types of functionalities considered, revealing that the more useful respondents find the DMSs to be, the more important they find the functionalities examined. Those include the transactional dimension, which greatly differentiates DMSs from other more traditional platforms. In addition, the PU was the construct having the highest impact on functionalities providing customised and updated information (CUI). The results revealing that perceived

usefulness of DMSs (PU) contributes to find the functionalities under analysis more relevant are in line with previous research postulating the positive influence of PU in the adoption of DMSs by destinations (Sigala, 2013, 2014; Wang, 2008). Findings also suggest that, as was expected, respondents considering DMSs more useful also value more distinctive functionalities of this kind of platforms. In line with the insights provided by Bhattacharjee and Hikmet (2008) when analysing the perceived usefulness of IOIS in the health care sector, the observed impact of PU on CUI may indicate that the usefulness assigned to DMSs is greatly related to the fact that these systems include functionalities that, according to Ammirato et al. (2018), enable the provision of personalised information and attention to customers and functionalities that give access to updated information.

**Table 11.3 - Factors influencing the perceived importance of functionalities supporting travel planning and bookings (TPB) - Results of a regression analysis**

	Unstandardized coefficients		Standardized coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.327	0.053	0.366	6.189	0.000	0.513	1.951
Resources and strategic vision of own organisation (RSVOO)	0.094	0.032	0.144	2.923	0.004	0.743	1.346
Perceived usefulness of DMSs (PU)	0.185	0.039	0.260	4.730	0.000	0.593	1.686
(Constant)	3.047	0.191		15.919	0.000		

N=326; R=0.651; R<sup>2</sup>=0.423; F=78.772 (p=0.000).

**Table 11.4 - Factors influencing the perceived importance of access to UGC tools and third-party information (UGCTP) - Results of a regression analysis**

	Unstandardized coefficients		Standardized coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.397	0.054	0.378	7.423	0.000	0.595	1.68
Perceived usefulness of DMSs (PU)	0.304	0.043	0.364	7.087	0.000	0.584	1.712
Type of respondent (tourism accommodation) (TA)	-0.305	0.094	-0.130	-3.24	0.001	0.954	1.049
(Constant)	2.134	0.219		9.752	0.000		

N=326; R=0.710; R<sup>2</sup>=0.503; F=108.813 (p=0.000).

**Table 11.5 - Factors influencing the perceived importance of functionalities providing customised and updated information (CUI) - Results of a regression analysis**

	Unstandardized coefficients		Standardized coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.324	0.055	0.321	5.885	0.000	0.585	1.708
Perceived usefulness of DMSs (PU)	0.284	0.044	0.354	6.470	0.000	0.580	1.723
Member of Tourism Association of Centre (MTAC)	0.300	0.106	0.125	2.829	0.005	0.889	1.125
(Constant)	2.661	0.213		12.523	0.000		

N=326; R=0.663; R<sup>2</sup>=0.440; F=84.195 (p=0.000).



**Table 11.6 - Factors influencing the perceived importance of B2B functionalities (BTOB) - Results of a regression analysis**

	Unstandardized coefficients		Standardized coefficients	t	p	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Destination readiness and favourable conditions for DMSs' adoption (DREFC)	0.491	0.066	0.413	7.389	0.000	0.499	2.002
Resources and strategic vision of own organisation (RSVOO)	0.135	0.040	0.156	3.364	0.001	0.723	1.383
Perceived usefulness of DMSs (PU)	0.120	0.049	0.127	2.444	0.015	0.579	1.728
Knowing the web platform of the Regional Entity Tourism of Centre (KPRTEC)	0.371	0.160	0.097	2.312	0.021	0.880	1.137
Type of respondent (tourism accommodation) (TA)	-0.599	0.111	-0.227	-5.402	0.000	0.886	1.129

N=326; R=0.708; R<sup>2</sup>=0.501; F=64.235 (p=0.000).

The resources and strategic vision of the own organisation of the respondents (RSVOO), although not usually having such a higher impact as that of the previously mentioned factors, have a significant positive influence on two of the four types of functionalities - functionalities supporting travel planning and bookings (TPB) and B2B functionalities (BTOB). This probably happens because some of these functionalities may be more complex than those functionalities of platforms traditionally used by DMOs and, especially the B2B ones, are more challenging and require more effort and resources from the own organisation in, for example, sharing information and interacting with other organisations (Fuchs, Höpken, Föger, & Kunz, 2010). Another reason for this impact is that, as suggested by Hsu, King, Wang and Buhalis (2016), organisations with more strategic vision and a culture of cooperation, are more willing to have access to functionalities that permit them a more effective and easier creation of networks with other organisations with whom to cooperate. These organisations are also likely to be more receptive to use functionalities that enable them to commercialise their products in platforms conjointly with other products of the destination, even requiring further efforts to provide up-to-date pricing and other

information necessary for product booking and sale and being more open to share information (Horan & Frew, 2007; Robey et al., 2008; Sigala, 2014).

The type of respondent, specifically, being a tourism accommodation or not, also significantly affects the importance assigned to two types of functionalities. Managers of tourism attractions and representatives of city councils seem to consider both the functionalities providing access to UGC tools and third-party information (UGCTP) and B2B communications and collaboration (BTOB) more relevant than the respondents who represent tourism accommodations (TA). This may happen for several reasons, such as the fact that tourism accommodations have access to other web platforms, usually owned by OTAs, that enable them to sell their products (e.g. *Booking*) and not finding much benefits in making efforts towards improving their long-term relationships with consumers through UGC tools. The lower importance assigned by accommodations to UGC tools may be due to the fact that managers of accommodations are more likely to already use this kind of tools when adopting relationship marketing strategies to make consumers loyal, not recognising great value added in the UGC tools provided by DMSs (Hills & Cairncross, 2011; Williams, van der Wiele, van Iwaarden, & Eldridge, 2010). Another possible reason can be the fact of city councils and managers of tourism attractions being more willing to cooperate with other organisations using DMSs' B2B functionalities, revealing to have a more collaborative mind-set than the hotel industry (Peiró-Signes, Segarra-Oña, Miret-Pastor, & Verma, 2015).

Two other aspects, encompassing the respondents' knowledge about the regional DMOs web platform as well as their DMO affiliate/non-affiliate status, also affect the importance given to some functionalities of DMSs. Hence, knowing the web platform of the Regional Tourism Entity of Centre (KPRTEC) has a significant positive influence in recognising B2B functionalities (BTOB) as relevant. Moreover, the Member of Tourism Association of Centre (MTAC) perceive the functionalities that provide customised and updated information (CUI) as being more relevant, than the non-members. This probably happens because respondents having interest in engaging with regional tourism entities, probably are more willing to cooperate with other organisations from the destination (Garrod & Fyall, 2017), namely through the use of DMSs, thus being more available to provide information on their organisation and update it, as well as to work and share information with other organisations using B2B functionalities.

## 11.5 Conclusions

This exploratory study was the first empirical approach to the factors influencing the importance that destination stakeholders assign to four different types of functionalities of DMSs, namely those allowing: (i) travel planning; (ii) access to UGC and third-party sources; (iii) customised and updated information; and (iv) B2B communication and interaction. As expected, the destination's readiness, which includes aspects such as the internal coordination of its players or the ability of the DMO to act as a leader and coordinator, is a relevant positive determinant of the importance given by the stakeholders to the four types of functionalities. This is also the case of the perceived usefulness of DMSs, although to a lesser extent. The study also demonstrated that both functionalities with a higher degree of complexity and demanding more cooperation and efforts to share information – functionalities supporting travel planning and bookings as well as B2B tools – are seen by stakeholders as being more dependent on their strategic vision and availability of resources. Interestingly, the external pressure from other players or competing destinations has no significant influence on either of the four types of functionalities. Similarly, the results indicate that the DMOs' unfavourable role, related to the inefficient and bureaucratic nature sometimes attributed to them by internal stakeholders, as well as the existence of alternative online platforms (e.g. *Booking*, *Expedia*) - which may turn DMSs transactional functions redundant – do not significantly affect the perceptions of tourism players about the relevance of the functionalities considered in the study. This probably happens because these factors may be more likely to significantly affect the willingness to adopt a DMS than to influence the relevance assigned to the several DMS functionalities. Regarding the B2B functionalities, aimed at enhancing collaboration and coordination efforts amongst tourism players, the knowledge that these players have about the current ICT initiatives of the DMO has a positive effect on the willingness to adopt them. Inversely, results also indicate that accommodation businesses (which represented the amenities component in this study) consider B2B functionalities less important than other stakeholders. Considering the aspects previously mentioned, the main theoretical contributions of the present paper are the insights provided concerning the importance stakeholders assign to different DMSs' functionalities and the factors that influence this perceived importance.

In addition, this paper provides relevant practical contributions. In this context, the present study suggests that DMOs considering the adoption of a DMS must achieve high levels of coordination and leadership internally. A DMS is not a panacea from which leadership and coordination emerges, but rather a tool to improve them. In addition, the results suggest

that the relevance of the internal stakeholders' readiness, strategic vision and technical resources justifies the development of socio-technical projects coping with the lack of skills of the tourism industry to use the whole array of functionalities of a DMS, as well as to engage collaborative practices with other players. At this level, the role of the DMO in fostering the recognition of the benefits inherent to collaboration between tourism businesses seems instrumental to successfully implement a DMS and its B2B functionalities. Moreover, the positive influence of the perceived benefits of the DMS on the importance that stakeholders assign to functionalities, requires DMOs to promote the concrete and short-term benefits that DMSs may have to the competitiveness of individual businesses.

The empirical analysis, carried out in the Centre of Portugal, involved three types of destination-based stakeholders (attractions, services and ancillary services), in order to ensure that different perspectives and needs would be represented in the results. However, in the future it would be relevant to extend this research to other destinations in order to understand if the same results can be found in destinations with different characteristics. Furthermore, the present study only used a quantitative approach. Future studies on this topic, adopting a qualitative approach could also be carried out to better understand the reasons why some of the factors here examined, influence the importance that stakeholders assign to the most distinctive functionalities of DMSs.

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# **Part V**

# **Conclusion**

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## CHAPTER 12

### Conclusions and suggestions for further research

The present chapter aims at (i) discussing the main conclusions of the research undertaken on the factors influencing the adoption of DMSs by destination-based stakeholders, (ii) presenting the main theoretical and practical implications of the obtained outcomes, as well as (iii) suggesting future pertinent research on this topic.

#### 12.1 Conclusions

The research underlying the present thesis sought to achieve two main general goals, namely to: (i) understand the role of DMSs to destinations and visitors as well as to identify the main functionalities that better characterize them; and (ii) understand the factors that may affect the adoption of DMSs in order to foster the implementation of these systems in various destinations.

However, in order to achieve these main goals, other four accessory and more specific objectives were established in this research. These objectives were: (i) to deeply analyse the still ill-defined concept of DMS as well as the benefits of these platforms; (ii) to thoroughly examine the functionalities that characterize DMSs worldwide, based on literature review and empirical studies; (iii) to understand the current business models and implementation challenges of DMSs worldwide, also by means of an extensive literature review and empirical studies; (iv) to identify factors affecting the potential adoption of DMSs by stakeholders of tourism destinations that provide services to visitors, such as local administrations, attractions and accommodation suppliers in the Centre of Portugal; and (v) to identify the factors determining the willingness of tourism stakeholders to adopt specific types of functionalities often attributed to DMSs, based on literature review and empirical studies undertaken in the Centre of Portugal.

A first conclusion related to these objectives, which justifies the pertinence of the present thesis, is the scarce and somewhat erratic nature of previous research on DMSs. It has been scarce and not very thorough since, although DMS was a relatively popular research topic in the early 90s and 00s, only a few studies attempt to clearly and deeply define this concept and establish its boundaries regarding their architecture, functionalities and expected roles. Moreover, most research on DMSs has been conducted in Europe.

As far as the **first specific objective** is concerned, which is addressed in chapters 2 to 4, it was observed that in most studies on DMSs there was an attempt to define them by giving examples of functionalities and roles that they should convey instead of those that they must provide in order to be considered DMSs (Bédard & Louillet; Guthrie, 2011; Schröcksnadel et al., 2011). It seems reasonable to consider that it is not possible to define a certain phenomenon or object only by exemplifying some of its features without the systematic identification of its components. For instance, most definitions of DMSs suggest that these systems typically convey transactions of destinations' tourism services to visitors. However, those same definitions fail to clarify if the provision of transactions is a crucial element for a destination platform to be considered as a DMS or not.

The linguist Ray Jackendorff (1989) argues that "a concept must be some sort of finite scheme that can be compared with the mental representations of other objects to produce a judgment of conformance or non-conformance" (pp. 71). However, the same author also posits that novel objects may suffer from "a potential degree of indeterminacy either in the lexical concept itself or, in the procedure of comparing it with mental representations of novel objects, or in both" (Jackendorff, 1989: pp. 71). The DMS concept seems to suffer from both sources' indeterminacy, either due to its imprecise and loose definition in previous research as well as because of its unclear distinction from other types of tourism destination online platforms.

As discussed in chapter 3, the lack of a consensual and comprehensive definition of the DMS concept, as well as of an identification of its intrinsic functionalities appear to be, per se, a major research gap in this field. Such gaps were likely to be widened by the fact that very scarce research on DMSs was conducted since the early 2010s. It seems as if the definition of this concept has been left hanging even before its foundations had been laid. Werthner et al. (2015) suggest that the recent rise of global OTAs and their dominance over the sales of tourism products of destinations worldwide has been questioning the relevance of DMSs, as if e-commerce was their most relevant and distinctive capability. However, previous research has indicated that the main role and advantage of DMSs is the establishment of a virtual network across a destination aiming to enhance communication flows and foster cooperation and coordination efforts internally (Pechlaner, Abfalter, & Raich, 2002; Spyriadis, Buhalis, & Fyall, 2011). Thus, despite the eventual obsolescence of certain individual functionalities that the evolution of ICT in tourism may have originated, it seems possible and relevant to devise the following specific roles and capabilities of DMSs which distinguish them from other destination online platforms:

- a) DMS intranet connecting all sections and branches of the adopting DMO, in order to digitalize internal information exchange flows and provide a more coherent, adequate and up-to-date information to visitors in, for instance, tourism information centres;
- b) DMS extranet comprising: (i) the products, services, and attractions' databases, whose editing and updating is shared by the DMO and adopting/affiliate destination players; (ii) Visitor CRM tools enabling the development of personalized content; and (iii) management of tourism products (e.g. dynamic packaging and ICT tools, such as apps);
- c) Visitor website, which should include: (i) search engine optimization (SEO), and analytics (e.g. Google Tag manager; Google Analytics); (ii) UGC tools; (iii) access to third-party sources (e.g. OTAs, social media, mapping, transactions); and (iv) access to affiliated destination players' own booking engines.

The **second specific objective** is in close proximity with the first because the current functionalities provided by DMSs derive from the expected benefits of these platforms. Earlier research on DMSs suggests that these systems distinguished themselves from traditional destination websites by not only informing tourists about a destination's features and products, but also providing travel planning and bookings opportunities, as well as a set of CRM tools able to establish meaningful and lasting relationships with them (Wang, 2008). However, the growing dominance of OTAs and metasearch engines, which provide travel planning and bookings while extensively using peer-to-peer content (UGC) in that process, has led to a decreased use of DMO online platforms by prospective tourists in their search and planning stages (Luxton, 2016).

The in-depth interviews underlying this thesis demonstrated that most DMOs which have adopted DMSs are becoming less interested in developing their own transactional (e.g. booking engines) and relational dimensions (e.g. UGC) than in providing more accurate and up-to-date information to users, such as real-time services' availability and public transportations' schedules.

At the same time, as discussed in chapter 8, instead of trying to combat OTAs, DMSs are starting to establish partnerships with them, providing links to the pages of their products and services in the platforms of major tourism booking engines. The in-depth interviews to DMSs' solutions providers as well as to DMOs which have adopted these systems (chapter 8) were particularly useful to the understanding of the current expected role of DMSs given

recent trends in the tourism industry, such as the growing dominance of the major OTAs. Many DMOs were encouraged not to engage on direct sales, since the competition from OTAs in this field is overwhelming. In addition, the in-depth interviews were also instrumental to determine the range and relevance of their B2B functionalities. Among these, especially the interviewed American DMO representatives highlighted the DMSs' extranet enabling adherent businesses to insert and manage their own information in the Content Management System.

The same trend was verified within UGC, since the in-depth interviews as well as the DMSs' content analysis suggests that, unlike early DMSs (e.g. *Gulliver*), which developed their own UGC tools, today's DMSs are predominantly fed by UGC posted in major OTAs (e.g. *Booking*) and metasearch engines (e.g. *TripAdvisor*). The content analysis of DMSs worldwide underlying chapter 6 provides ample evidence that, despite these systems' proclaimed advanced capabilities regarding visitors' empowerment, UGC is seldom present in most of them. Although some DMSs held relatively elementary UGC tools such as photo sharing, only two of them proved to convey more advanced functionalities, such as "product reviews/rating", which are usually provided by e-intermediaries (e.g. *TripAdvisor*). It therefore seems to be a mismatch between the supposedly more dynamic and interactive features of DMSs and their low levels of UGC adoption.

Regarding B2C functionalities, there is also a relative mismatch between the literature review and the current practices of adoption by DMOs that emerged from the in-depth interviews conducted with international DMOs (chapter 9). In fact, most literature encompassing the functionalities of DMSs refers to the relevant role of their extranets in fostering collaboration amongst stakeholders (Zehrer, Pechlaner, & Hölzl, 2005) by providing them, for instance, virtual discussion forums between destination-based stakeholders or demanding them to update and manage their own contents in the Content Management Systems of the DMS (Baggio, 2011; Brown, 2004; Guthrie, 2011). However, the interviews demonstrated that most DMOs did not use any function fostering the communication between the various stakeholders.

When confronting the content analysis of DMSs worldwide with the content analysis of the national Portuguese tourism platform (chapter 5) and of the regional destinations (chapter 7), it is clear that all are traditional platforms that cannot be considered DMSs. However, the former holds more transactional and relational tools than traditional DMOs' websites of the latter ones, which tend to be more informational. Nevertheless, the analysis to the

Portuguese national and regional destination platforms unveiled an almost complete predominance of information-type functionalities, a considerable poor range of communication and relationship tools, as well as a complete absence of transactional capabilities in these platforms.

Regarding the **third specific objective** of the thesis - to understand the current business and management models of the DMSs and implementation challenges – some relevant discrepancies were found between North American and European surveyed platforms and corresponding DMOs (chapter 9). This was particularly evident in the interviews to the eleven DMO officials, in which it was possible to conclude that the DMSs own features mirror their own organizational culture, level of integration within the destinations' tourism system as well as technological expertise.

In terms of ownership, most surveyed DMOs stated that the DMSs were totally owned by them. However, most of them also claimed that, in order to guarantee their presence in the DMS, a payed affiliation is required, except in the case of temporary and non-commercial contents. In most cases, those same affiliate members can enjoy from gradually increasing levels of exposure in the DMSs in exchange of additional fees. As far as the funding of DMSs is concerned, the North American seem to rely solely on their own capability to generate revenue from bookings, advertising and the affiliated members' fees. Contrastingly, most European DMOs claimed to be partially dependent on public subsidies from their national/local governments and, sometimes from the European Union as well as, to a minor extent, to the revenues generated by the DMS.

When it comes to the management of the DMS, while some surveyed American DMOs encourage individual stakeholders to update and manage their own contents, most of the European counterparts claimed not to authorize individual stakeholders to update and manage their own areas of the CMS, due to the content quality requirements of the DMS. Only a few DMOs authorized individual players to update service details of their services in the DMSs, such as fares, availability of special offers (chapter 9).

Regarding the current challenges inherent to the development of DMSs, they were identified through an extensive literature review as well as with an empirical approach, using in-depth interviews with both DMS developer companies and DMOs that adopted DMSs. These challenges were summarized in a framework on DMSs' adoption and management proposed in chapter 9. Perhaps the major challenge for European interviewees is the funding of DMSs, given the apparent disinvestment of governments on DMOs whose

subsidies are, in contrast with the American scenario, the most relevant financial support of European platforms. For American DMOs, one of the major DMS development challenges seems to be choice of a set of consensual and transparent criteria concerning which stakeholders to promote in the DMS and at what cost. Both European and American DMOs and DMS provider companies agreed on key challenges in the development of DMSs, such as: (i) the need to identify the best technology suppliers and to integrate their solutions in the DMS, where appropriate; (ii) the necessary cooperation between regional and local DMOs regarding the collection and sharing of customer information and the development of joint online promotional initiatives; (iii) the imperative of quickly adapting to drastic and fast technological transformations; and (iv) the need to enhance knowledge on visitors' preferences and to present them more effectively to the destination's tourism industry.

When it comes to the **first general goal** of the present thesis, results also seem both relevant and original. Regarding the role of DMSs to tourism destinations, there seems to be a relevant mismatch between some of the research in this field and the empirical evidences provided by practitioners. One of its causes might be the fact that most of the research on the potential benefits of DMSs has been conducted in the late 1990s and early 00s. By then, perhaps the relatively incipience of OTAs and other online distribution channels has led both researchers and DMOs to consider that the tourist demand would likely use destinations official platforms as a one-stop-only means to search, plan and purchase the whole array of services which compose a tourism product. These capabilities were thought to bring numerous advantages to destination-based stakeholders, such as a growing autonomy from external intermediaries made possible by the ability of the destination to sell its tourism-related products through its own DMS. However, the overwhelming rise of global OTAs would soon question such belief. Indeed, in the 2010s some of the scarce research on DMSs suggested that DMSs should no longer aim at competing with OTAs when it comes to provide tourists with effective tools to plan and purchase tourism products. This view is shared by most of the DMS developers and DMOs surveyed in the present study through in-depth interviews. Hence, in a B2C perspective, they tend to consider that the main benefits of the DMSs are their enhanced mobile technology capabilities as well as their improved responsiveness to the algorithms of the main global search engines, such as *Google*, which are virtually absent from the literature on DMSs' adoption.

However, despite the fact that early literature on DMSs already suggested the importance of these systems to the internal coordination and collaboration between destination-based

stakeholders (chapter 3), most of the DMS developers and DMOs surveyed seemed to privilege their benefits regarding the more dynamic relationship with the demand. Nonetheless, more recent approaches of research in ICTs seem to favour the relevance of the internal capabilities of DMSs, namely their potential role in terms of coordination of the vast range of applications and players within SDs. Hence, although some specific capabilities often attributed to DMSs may have become obsolete (e.g. direct transactions), others could have gained – or might gain, in the future - relevance and pertinence due to their alignment with the latest trends regarding ICTs in tourism, such as the recently coined concept of SD, which has been at the centre of research in ICTs in tourism since the early 2010s (Buhalis & Amaranggana, 2014). As suggested by Ivars-Baidal, Celdrán-Bernabeu, Mazón and Perles-Ivars (2019), SDs require focal online networks established by DMOs in order to coordinate the higher levels of complexity inherent to them, both in terms of technology and interaction between tourism players. According to these authors, DMSs are the most adequate types of platforms to fulfil this role. This thesis' empirical analysis on the factors influencing the willingness of destination-based stakeholders to adopt a DMS, which aims to respond to the **fourth specific objective**, provided original contributions to the body of research on DMSs' adoption (chapter 10). First, it revealed that some factors influencing the relevance that individual stakeholders' assign to the implementation of a DMS in a given tourism destination – in this case the Centre region of Portugal - differs from those determining their own willingness to adopt these systems. Specifically, it was detected that the stakeholders' perception of their resources and strategic vision positively influences their willingness to adopt a DMS but not their opinion concerning the importance of the adoption of such a system by the whole destination. Second, findings also showed that the advent of OTAs negatively influences stakeholders' adoption intentions. Third, the thesis also reveals the lack of other DMSs in neighbouring regions or in an entire country also negatively influences the willingness to adopt a DMS. In addition, results confirmed the positive influence of factors identified in previous research on DMSs' adoption, such as the role of the DMO and of its strategic vision as perceived by destination-based players, including the DMO's ability to lead and coordinate the implementation of a DMS, the destination-based stakeholders' own perceptions of their organizational readiness to adopt such systems, which includes their collaboration and coordination capabilities, as well as the pressure from the external environment (e.g. the pressure from other destinations, from other destination-based players and from the tourism demand). The relevance and novelty of the results justified the proposal of an explanatory model for DMSs' adoption by

destination-based stakeholders which integrates the newly identified factors, named DeMSAM.

In order to achieve the **fifth specific objective**, the last research work included in the present thesis sought to unveil the factors influencing the perceptions of destination-based stakeholders regarding the relevance of specific functionalities typically conveyed by DMSs (chapter 11). The results of the research work provide new insights to the body of research on DMSs that may be useful within these systems' implementation processes. Among its main outcomes, it seems pertinent to highlight the positive effect of (i) the internal coordination between destination-based stakeholders and of (ii) the leading capabilities of the DMO on the importance assigned to the four most distinctive types of DMSs' functionalities which emerged from the first PCA - travel planning, access to UGC and third-party sources (e.g. weather forecasts), customized and updated contents, as well as tools enabling B2B interactions amongst destination players. Such results also stress the relevance of the strategic leading and pivotal role of DMOs as a key aspect of destination competitiveness in general, and to the successful adoption of a DMS. Inversely, neither the (i) pressure from the external environment, (ii) the emergence and current dominance of alternative booking engines (i.e. OTAs), nor (iii) the DMO's unfavourable role (e.g. inefficiency and excessively bureaucratic nature) were found to exert any influence on the relevance attributed by respondents to any type of DMSs' functionalities. In addition, results also suggest that the willingness to cooperate with regional DMOs in providing updated information and to collaborate with stakeholders of the destination, positively influence the perceived relevance of functionalities designed to provide customized and updated contents, and the relevance of B2B functionalities, respectively. It was also observed that managers of tourism attractions and representatives of city councils assign more relevance both to functionalities providing access to UGC tools and third-party information and B2B communications and collaboration (BTOB), than managers of tourism accommodations.

## **12.2 Theoretical and practical contributions**

The results of the ten research works underlying this thesis provide relevant theoretical and practical implications to the field of ICT adoption by tourism destinations in general and to the adoption of DMSs in particular, which are presented in the artefact that resulted from the methodological approach adopted – Design Science Research (DSR) (Figure 12.1). This framework remarks several benefits of DMSs to DMOs and to the destination, such as



the role of DMSs in conveying a coherent and effective promotion of the destination globally, as well as in fostering the communication among internal stakeholders. The recognition of the DMSs' benefits led to carrying out research on the composition of this kind of platforms regarding components and functionalities. The framework reveals the findings of the thesis' research regarding the functionalities that DMSs may have, as well as those that seem to have an especially important role nowadays. In this context, it highlighted, for example, the importance of the particular role of B2B functionalities to adherent players, such as databases of the destinations' products, enabled by the DMSs' extranet, which enhance the communication between stakeholders, previously mentioned. The DSR framework further encompasses the factors which were found to have a positive or a negative influence on the willingness of DMS adoption by destination-based stakeholders as well as on the importance the stakeholders assign to specific functionalities typically conveyed by these systems.

In a context of fast and continuous change regarding the use of ICTs within the tourism industry, it seems relevant to further clarify the DMS concept as well as the strategic goals which ought to underly the adoption of these systems. Despite the fact that some specific tasks and functionalities which have been appointed as inherent to DMSs may have been questioned by recent trends in ICTs and/or in tourism, more research on the broader expected roles and capabilities of DMSs must be undertaken.

The negative influence that the rising dominance of OTAs exerts in the willingness of destination-based stakeholders to adopt these systems remarks the need of a revision of the DMS concept regarding functionalities which were typically attributed to them such as in-house transactions and UGC. Although the stakeholders surveyed in the empirical research undertaken in the Centre of Portugal recognized that all the four types of functionalities analysed are important, the in-depth interviews to DMO officials and DMS developers suggest that those responsible for managing DMSs should mainly explore the potential of functionalities enabling a closer and more effective relationship with visitors as well as amongst the destination's tourism players. Hence, the empirical study with the DMO officials and DMS developers indicates that instead of unsuccessful attempts to compete with the major OTA's booking engines and UGC tools, those responsible for managing DMSs should aim to further coordinate the ever-growing quantity and complexity of ICT tools that make up current SDs. Thus, current and future DMSs should focus more on providing up-to-date information to tourists and, especially, on coordinating their internal networks of stakeholders and technologies than on transactional and social media

purposes, namely through collaborative extranets fostering communication and the digitalization of processes within adopting destinations.

Moreover, the positive influence that the existence of DMSs in neighbouring regions or at the national level exerts on the willingness of stakeholders to adopt such systems clearly suggests that, in order for a regional DMS to be successful, it should be part of a coordinated strategy contemplating the implementation of other DMSs in neighbouring regions. This insight was shared by various of the surveyed European DMO representatives, who considered their ability to coordinate with other regional DMSs as a paramount condition for the future success of their DMSs.

In addition, the positive effect of the internal coordination between destination-based stakeholders as well as of the leading capabilities of DMOs on the willingness to adopt DMSs and some of its key functionalities, seem to remark the relevance of the strategic and management dimension of DMSs. Thus, DMOs considering the adoption of DMSs should strive to play a leading and coordinating role for the destination, rather than to limit themselves to the more restricted initiatives such as promotion of the destination. In a time when severe cuts in the funds allocated by public administrations to DMOs raise serious questions regarding their intended role and capabilities (Aureli, & Del Baldo, 2019; Pike, 2016), these results clearly indicate that these organizations should strive to lead the development efforts of their destinations and corresponding stakeholders. In order to do so, their human resources should be up to the task of strategically planning and managing a destination instead of merely promoting its offerings.

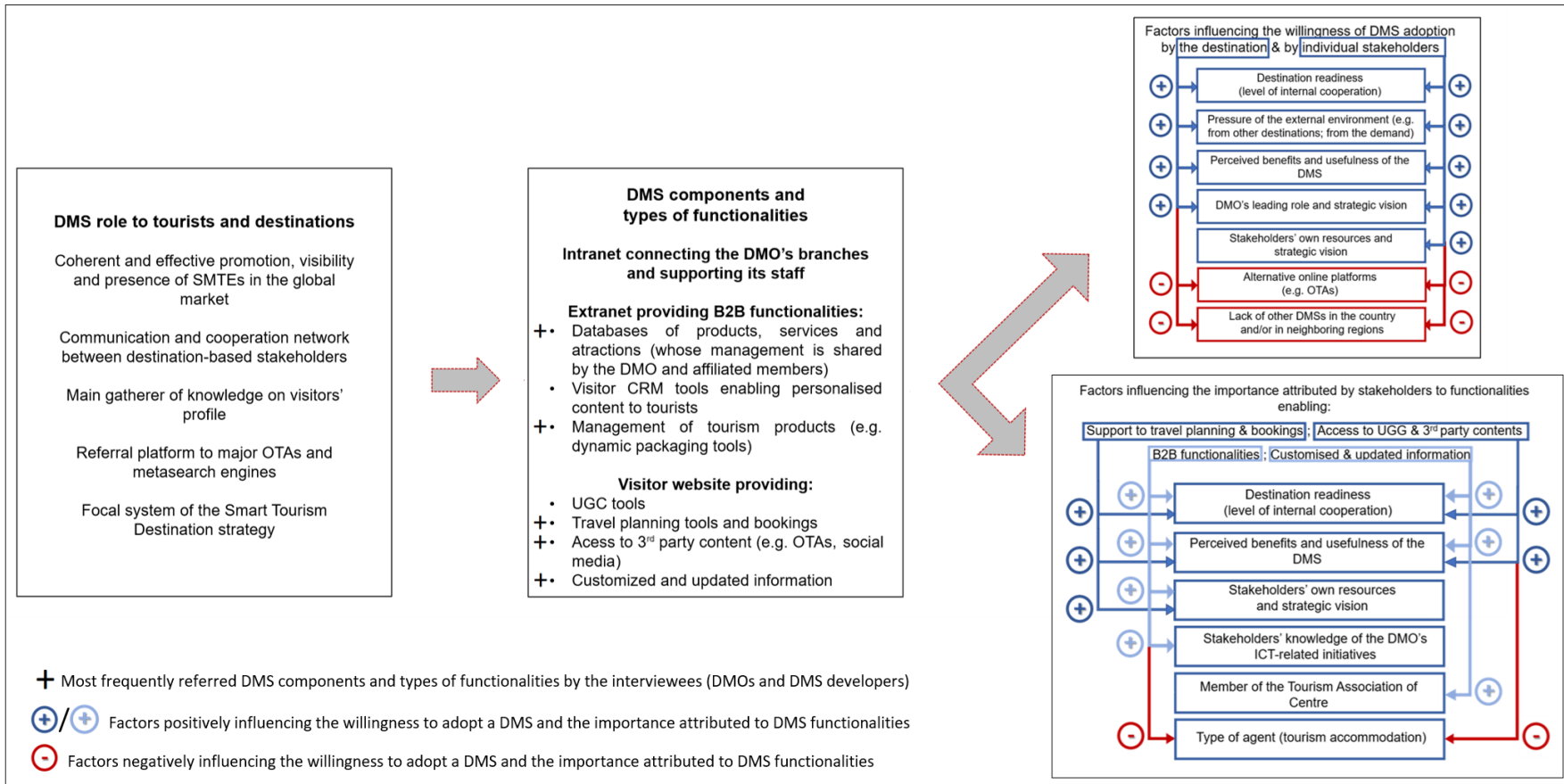
Regarding the lower importance attributed by accommodation providers to UGC and B2B communication and collaboration tools of a DMS, findings suggest that DMOs should engage in efforts aiming to further integrate the accommodation managers, some of them more likely to be self-centred, within the overall development strategy of their destinations.

Drawing from the four website dimensions framework proposed by Wang and Russo (2007), results of the content analysis to the regional Portuguese destination platforms indicate that, unlike DMSs, they are predominantly informational and almost completely lack transactional functionalities. Moreover, most of them did not convey any type of relationship tool (e.g. content personalization, UGC, interactive tools) and a limited variety of communication functionalities (e.g. forums, chatrooms). Hence, they are, to a greater extent, publishing tools providing electronic brochures of the regional destinations to tourists rather than an internal managing and coordinating tool for destination-based tourism players. In the

empirical research undertaken in the Centre region of Portugal, the stakeholders surveyed agreed with the relevance of implementing a DMS in that region and with the importance of their organisations adopting this kind of platforms. This remarks relevance of creating a DMS for this region and the valuable role that this platform could have for these stakeholders. In order to achieve this purpose, it would be particularly important to extend the range of functionalities available to other kind of functionalities such as travel planning and UGC tools for tourists as well as collaborative extranets for adherent suppliers.

As the empirical analysis of the factors underlying the adoption of a DMS undertaken in the present thesis was carried out in a Portuguese region lacking this type platform, it may be particularly useful for the eventual implementation of DMSs in Portugal.

The literature reviewed, namely the researches of Ivars, Solsona, and Giner (2016) and Ivars-Baidal et al. (2019), suggest that DMSs are well positioned to become a basis to develop and leverage Smart Tourism Destinations (SDs), especially when it comes to the coordination of the overwhelming profusion and diversity of ICTs they require.



**Figure 12.1 – Framework of the factors influencing DMS adoption by destination-based stakeholders and their perceived importance of DMS functionalities**

### **12.3 Limitations and future research**

Despite the main contributions of this thesis, this research also holds some limitations. It seems pertinent to continue the effort to clarify the concept of DMS and the expected role that these systems should play. For instance, it is still unclear if the provision of a booking engine should or not be one of the criteria to consider a destination online platform a DMS or not. Although the results of the present thesis seem to suggest otherwise, the distinctive functionalities and roles of DMSs require further analysis and discussion.

The empirical research carried out is also limited regarding its geographical scope, being only undertaken in a region of Portugal. Hence, future studies on the factors influencing the adoption of DMSs should also be conducted in other geographical contexts, including regions outside Portugal, in order to validate the models proposed.

In the present thesis the perceptions of the three types of destination-based stakeholders surveyed (accommodation providers, attractions' managers, city councils) are not analysed separately but rather in bulk. Future studies encompassing the adoption of DMSs should seek to identify the factors that influence the perceptions of each type of stakeholder located at the destination vis-à-vis the adoption of these systems in general and of its key functionalities in particular.

In addition, despite the recent resurgence of studies encompassing the potential role of DMSs as the focal system of SDs, so far, only a very residual number of studies have explicitly related DMSs with SDs under a destination management perspective. Thus, more research on the specific ways in which DMSs should coordinate SDs actors and applications is required. Hence, it seems crucial that research on ICTs in tourism revisits the DMS concept in order to review its key functions and redefine its role in the SDs era, as well as examines which emerging technologies may be integrated in these systems.



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# Appendixes

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## **APPENDIX I**

### **Script of the semi-structured interviews to DMOs' staff members**

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## **Interview script - Staff members of DMOs which have implemented DMSs**

### **1. About the DMO**

- 1.1. Before approaching your online platform, could you briefly characterize the DMO? (e.g. is it a public or private entity? Does it admit private businesses as members? If so, how many members does it have?)
- 1.2. How many employees integrate the permanent DMO staff? How many of them participate in managing/updating the Destination Management System (DMS)?

### **2. DMS history and development**

- 2.1. When was it first launched and how long did then its implementation process take?
- 2.2. Which entity first proposed the adoption of a DMS and for what reasons? Which problems did it seek to address?
- 2.3. Can you point some of the main challenges that occurred in the DMS implementation and adoption stage?
- 2.4. Was the DMS partly or totally built in-house or with the assistance of a specialized DMS provider?

### **3. Ownership, management and business model**

- 3.1. Who is/are its owners? Only the DMO or a consortium?
- 3.2. Can/should private destination players become DMS members?
- 3.3. If so, can you mention the DMS members' benefits and duties?
- 3.4. Are non-member suppliers represented in the DMS?

- 3.5. Who is in charge of its daily management, namely content insertion and updates? Is this a shared task between the DMO, the DMS developer company and private members (tourism service suppliers)? Which elements can/should each actor manage?
- 3.6. Did the DMO staff and/or member organizations receive any training to enable them to appropriately use the DMS? If there was some training:
  - 3.6.1. Who was(were) the organization(s) responsible for the training?
  - 3.6.2. Which type of training was provided (e.g. face-to-face, based on tutorials, online with some interaction)?
- 3.7. I made a generic content analysis of your online platform and I was able to identify transactional functionalities within the system. Can you confirm that? Are there real-time transactional possibilities (e.g. possibility of booking or purchasing services)?
- 3.8. How are they processed? (e.g. Is there a real-time connection to the suppliers' reservation systems, such as hotels' PMSs?)
- 3.9. Considering the eCommerce tools conveyed by the DMS [name of the DMSs created], are there any legal constraints to the involvement of public organizations (such as DMOs) in commercial initiatives? If so, how did the DMO overcome such restrictions?
- 3.10. Which tourism subsectors tend to adhere more and less to the DMSs transaction functionalities?
- 3.11. Member companies processing transactions through the DMS pay a commission fee? How is it calculated? Are those fees used to finance the DMS?
- 3.12. Who finances the DMS and how? (e.g. state subsidies; DMO's budget; transaction commissions; membership fees)

#### **4. Adoption levels and relevance for the destination**

- 4.1. Could you tell me the approximate percentage of the destination's service suppliers that became members of the DMS? (if possible, by destination component, i.e. attractions, amenities, access, ancillary services).
- 4.2. What benefits did the DMS brought to the destination?
- 4.3. What is the relevance of the DMS as a distribution channel compared to others?
- 4.4. The main aim of developing the DMS was to avoid tour operators, thus diminishing the destination's dependence on external intermediaries? If so, has it succeeded?
- 4.5. Does the DMS produces and release reports with indicators on the development and relevance of the DMS to destination stakeholders?

#### **5. Functionalities**

- 5.1. Could you enumerate and briefly describe the main types of contents and functionalities available to both the DMO and members?
- 5.2. Which of those same functionalities are more commonly used and why?
- 5.3. Which of them are less used and why?
- 5.4. Could you enumerate and briefly describe the main types of contents and functionalities available to visitors that most distinguish this DMS from traditional websites for promoting destinations?

#### **6. Future challenges and development**

- 6.1. What are the future perspectives for the development of your DMS as well as the main challenges it will have to face?





## **APPENDIX II**

### **Script of the semi-structured interviews to DMS providers**

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## **Interview script – Directors of companies providing Destination Management Systems' (DMS)**

### **1. DMSs history and development**

- 1.1. Which entity usually first proposes the adoption of a DMS and for what reasons? Which problems do they seek to address?
- 1.2. How long does the implementation of your DMSs usually take?
- 1.3. Can you point some of the main challenges that occur during your DMSs implementation and adoption stages?

### **2. Ownership, management and business model**

- 2.1. Who is/are usually its owners? DMOs alone or any consortia?
- 2.2. Who is in charge of their daily management, namely content insertion and updates? Is this a shared task between the DMO, the DMS developer company and private members (tourism service suppliers)? Which elements can/should each actor manage?
- 2.3. Do the DMOs' staff and/or member organizations receive any training to enable them to appropriately use the DMS? If there is some training:
  - 2.3.1. Who is(are) usually the organization(s) responsible for the training?
  - 2.3.2. Which type of training is provided (e.g. face-to-face, based on tutorials, online with some interaction)?
- 2.4. Do all the DMSs you have developed allow real-time transactions (e.g. possibility of booking or purchasing services)? How are they processed? Is there a connection to the suppliers' reservation systems, such as hotels' PMSs?

### **3. Functionalities aimed at DMO's staff and other members**

- 3.1. Do you agree with the scientific literature when suggesting that only DMO platforms with transactional capabilities can be considered DMSs? If not, what is the difference between DMSs and common destination websites?
- 3.2. Could you enumerate and briefly describe the main types of contents and functionalities available to both the DMO and members?
- 3.3. Could you enumerate and briefly describe the main types of contents and functionalities available to visitors that most distinguish the DMSs you created from traditional websites for promoting destinations?

### **4. Future challenges and development**

- 4.1. What are the future perspectives for the development of your DMSs as well as the main challenges they will have to face?

### **5. Other DMS developers**

- 5.1. Could you name any other two companies providing DMS development services?

## **APPENDIX III**

### **Questionnaire applied to the Centre region's tourism players**

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**Example of the questionnaire administered to managers of tourism accommodation units (similar questionnaires were administered to managers of tourism attractions and to city councils)**



## QUESTIONÁRIO RELATIVO À UTILIDADE DE UMA POSSÍVEL PLATAFORMA ELETRÓNICA- SISTEMA DE GESTÃO DE DESTINOS (SGD) - PARA A REGIÃO CENTRO

Este questionário insere-se no âmbito de uma tese de doutoramento do Programa Doutoral em Turismo da Universidade de Aveiro que me encontro a realizar. Através deste questionário pretende conhecer-se a opinião de pessoas com responsabilidades em meios de alojamento turístico da Região Centro relativamente à utilidade de uma possível plataforma eletrónica - Sistema de Gestão de Destinos (SGD) - para gerir o turismo na Região Centro. As respostas são confidenciais, sendo os resultados obtidos apresentados sempre de forma agregada, nunca sendo identificada a resposta de qualquer inquirido individualmente. A resposta ao questionário demora no máximo 15 minutos, aproximadamente. A entidade em que trabalha tem um papel fundamental no âmbito do turismo, sendo a sua opinião de extrema importância para possibilitar a concretização deste trabalho de investigação.

Muito obrigado, desde já, pela sua colaboração!

João Vaz Estêvão  
Aluno do Programa Doutoral em Turismo da Universidade de Aveiro

Caso tenha qualquer dúvida poderá enviar uma mensagem para vaz\_estevao@hotmail.com

### I. CARACTERIZAÇÃO GERAL DA ORGANIZAÇÃO EM QUE TRABALHA OU DA QUAL É PROPRIETÁRIO(A)

1. Localização Concelho: \_\_\_\_\_

#### 2. Tipologia

Hotel  Categoria: \_\_\* Turismo em Espaço Rural/de Habitação  Alojamento Local   
*(caso tenha assinalado alojamento local ou turismo em espaço rural passe para a questão 4)*

3. Gestão/Propriedade Grupo Hoteleiro  Independente  Outro  Qual? \_\_\_\_\_

4. Tipologia predominante dos hóspedes Lazer  Negócios  Ambos   
*(assinale apenas uma opção)*

5. Dimensão/Capacidade N.º de quartos: \_\_\_\_\_

6. A sua organização tem plataforma (website) própria? Sim  Não   
*(se respondeu "não" passe à pergunta 7)*

6.1. Responsável pela gestão da plataforma (introdução e atualização de conteúdos) Funcionários da organização  Empresa(s) terceira(s)   
*(pode assinalar mais do que uma opção)*

6.2. Esse website permite a realização de reservas e/ou compra? Sim  Não

## 7. Motores de reserva online que a sua organização utiliza

7.1. Utilização de motores de reservas *online* (ex. *Booking*) Sim  Não   
(se respondeu "não" passe à pergunta 8)

7.2. Percentagem aproximada das reservas/vendas totais feitas através de motores de reservas *online* \_\_\_\_\_%

7.3. Comissão paga, em média, sobre a venda de um quarto reservado nesses motores de reservas \_\_\_\_\_%

## 8. Redes sociais que a sua organização utiliza

### A sua organização...

8.1. Está presente no *TripAdvisor*? Sim  Não

8.2. Tem página no *Facebook*? Sim  Não

8.3. Tem página/conta em outra(s) rede(s) social(is)? Sim  Não

Se tem, qual(is)? \_\_\_\_\_

## II. CONHECIMENTO E OPINIÃO SOBRE AS ATUAIS PLATAFORMAS OFICIAIS DO DESTINO "CENTRO DE PORTUGAL"

9. É membro da Associação de Turismo do Centro de Portugal? Sim  Não

### 10. Conhece as seguintes plataformas?

10.1 *centerofportugal.com* - da Agência Regional de Promoção Turística do Centro Sim  Não   
(se respondeu "não", não responda às perguntas 11, 13.1 e 14.1)

10.2 *turismodocentro.pt* - da Entidade Regional de Turismo do Centro Sim  Não   
(se respondeu "não", não responda às perguntas 12, 13.2 e 14.2)

11. A sua organização está presente no *visitcentro.com*? Sim  Não

12. A sua organização está presente no *turismodocentro.pt*? Sim  Não



**13. Utilizando a escala que a seguir se apresenta, assinale com que frequência visita as seguintes plataformas oficiais.** *(responda só no caso de conhecer a plataforma)*

	Nunca						Muito frequentemente
	1	2	3	4	5	6	7
13.1. a plataforma Visitcentro.com	1	2	3	4	5	6	7
13.2. a plataforma <i>Turismodocentro.pt</i>	1	2	3	4	5	6	7

**14. Indique como avalia a relevância das seguintes plataformas relativamente aos aspetos apresentados seguidamente.** *(responda só no caso de conhecer a plataforma)*

Utilize a escala apresentada e, em cada linha, assinale o número que melhor corresponde à sua opinião.

	Nada importante							Muito importante
	1	2	3	4	5	6	7	
14.1. Visitcentro								
Competitividade do setor turístico	1	2	3	4	5	6	7	
Captação de turistas para a Região	1	2	3	4	5	6	7	
Promoção de empresas e produtos turísticos	1	2	3	4	5	6	7	
14.2. Turismo do Centro								
Competitividade do setor turístico	1	2	3	4	5	6	7	
Captação de turistas para a Região	1	2	3	4	5	6	7	
Promoção de empresas e produtos turísticos	1	2	3	4	5	6	7	

### III. FATORES QUE PODEM INFLUENCIAR A ADOÇÃO DE UMA PLATAFORMA ELETRÔNICA - SISTEMA DE GESTÃO DE DESTINOS (SGD) - PARA A REGIÃO CENTRO

Os Sistemas de Gestão de Destinos (SGD) são plataformas *online* oficiais de destinos turísticos geralmente pertencentes à entidade responsável pela promoção e desenvolvimento do destino, representando uma rede virtual que interliga entidades gestoras do destino, atrações, empresas turísticas e serviços de apoio ao setor.

#### Benefícios dos SGD

Os SGD permitem a **promoção** do destino perante potenciais visitantes e a **coordenação interna** das atrações e serviços turísticos do destino. Os SGD diferem dos *websites* comuns de destinos pois permitem aos turistas realizar operações mais dinâmicas e complexas (ex. através de

funcionalidades interativas que permitem a personalização da informação), tais como: criação de pacotes turísticos personalizados em tempo real, consulta de disponibilidade de serviços (ex. alojamento), reserva e compra de produtos turísticos em tempo real. Muitos SGD permitem às organizações do destino aceder a documentação estratégica relevante, tal como estatísticas sobre a procura turística do destino.

### Exigências dos SGD

Os SGD exigem uma elevada cooperação entre os agentes turísticos de um destino, podendo requerer que as organizações aderentes ao sistema insiram e atualizem parte ou toda a informação relativa aos seus serviços.

Para responder às restantes perguntas do questionário tenha em consideração o conceito de SGD acima apresentado.

### 15. Indique, na sua opinião, qual a importância de um futuro SGD da Região Centro incorporar as funcionalidades que permitam realizar as ações apresentadas na tabela abaixo.

Utilize a escala apresentada e, em cada linha, assinale o número que melhor corresponde à sua opinião.

Nada importante							Muito importante
1	2	3	4	5	6	7	

#### Fornecer informação sobre...

preços atualizados de serviços turísticos (ex. alojamento)	1	2	3	4	5	6	7
disponibilidade de serviços turísticos para uma determinada data	1	2	3	4	5	6	7
horários atualizados de transportes	1	2	3	4	5	6	7
ofertas especiais, dando acesso à sua compra <i>online</i>	1	2	3	4	5	6	7

#### Enviar regularmente *newsletter* digital com...

informação atualizada (ex. eventos)	1	2	3	4	5	6	7
conteúdo adaptado ao perfil de cada turista (ex. idade, país de origem, tipo de produtos turísticos preferidos)	1	2	3	4	5	6	7

#### Possibilitar aos turistas...

comentar e avaliar a qualidade do destino e dos fornecedores de serviços turísticos	1	2	3	4	5	6	7
possuir ligações para <i>websites</i> em que os utilizadores comentem e avaliem a qualidade do destino e dos fornecedores turísticos (ex. <i>TripAdvisor</i> ).	1	2	3	4	5	6	7
partilhar no SGD itinerários anteriormente planeados	1	2	3	4	5	6	7
ter um <i>blog</i> /fórum virtual em que troquem informação sobre o destino	1	2	3	4	5	6	7
fazer o <i>download</i> de uma aplicação móvel de apoio à visita do destino	1	2	3	4	5	6	7
fazer o <i>download</i> de brochuras e mapas	1	2	3	4	5	6	7



dispõem de recursos financeiros suficientes para suportar um SGD	1	2	3	4	5	6	7
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#### **As empresas turísticas da Região...**

valorizariam a implementação de um SGD e adeririam a uma plataforma deste tipo	1	2	3	4	5	6	7
concordariam em pagar uma comissão, inferior à praticada por motores de reservas <i>online</i> (ex. <i>Booking</i> ), pela venda dos seus produtos através do SGD	1	2	3	4	5	6	7
não teriam recursos para gerir um SGD	1	2	3	4	5	6	7
não queriam partilhar num SGD dados relativos à sua disponibilidade (ex. quartos disponíveis) ou preços	1	2	3	4	5	6	7
poderiam não aderir ao SGD com receio de penalizações por parte de operadores turísticos e outros intermediários	1	2	3	4	5	6	7

#### **Na Região Centro...**

a importância da atividade turística justifica a adoção de um SGD	1	2	3	4	5	6	7
a dimensão territorial da Região justifica a adoção de um SGD	1	2	3	4	5	6	7
os níveis de colaboração entre os agentes turísticos da Região Centro permitiriam a adoção bem-sucedida de um SGD	1	2	3	4	5	6	7
o cariz burocrático e a gestão ineficiente inerentes ao setor público, comprometeriam o sucesso de um SGD	1	2	3	4	5	6	7
a procura turística não utiliza plataformas semelhantes aos SGD	1	2	3	4	5	6	7

#### **Considera que...**

a inexistência de um SGD nacional, ou de um SGD em outras regiões turísticas do país, poria em causa o sucesso da sua adoção apenas pela Região Centro	1	2	3	4	5	6	7
já existem plataformas <i>online</i> suficientes para promover/vender os produtos turísticos da Região, sendo um SGD desnecessário	1	2	3	4	5	6	7
um SGD cofinanciado pelo setor público seria reprovável, pois representaria concorrência desleal a empresas privadas que vendem produtos turísticos	1	2	3	4	5	6	7

#### **A sua organização...**

dispõe dos recursos financeiros necessários à adoção de um SGD	1	2	3	4	5	6	7
dispõe dos recursos tecnológicos necessários à adoção de um SGD	1	2	3	4	5	6	7
tem recursos humanos qualificados para a adoção de um SGD	1	2	3	4	5	6	7
tem cultura e visão estratégicas compatíveis com a adoção de um SGD	1	2	3	4	5	6	7

#### **Sente...**

pressão, por parte da procura turística, para adotar plataformas como os SGD	1	2	3	4	5	6	7
que poderia atenuar o poder dos operadores turísticos e de outros intermediários através da adoção de um SGD	1	2	3	4	5	6	7
que adotaria um SGD devido à elevada competição existente com outros destinos e empresas turísticas	1	2	3	4	5	6	7
que adotaria um SGD se outras empresas turísticas do destino o fizessem	1	2	3	4	5	6	7

**17. Indique a sua opinião relativamente à utilidade que um eventual SGD, a criar na Região Centro, teria para a organização para a qual trabalha. Para tal, mencione o seu grau de concordância com os seguintes aspetos.**

Utilize a escala apresentada e, em cada linha da tabela, assinale o número que melhor corresponde à sua opinião.

Discordo totalmente							Concordo totalmente
1	2	3	4	5	6	7	

**A presença da sua organização num SGD da Região Centro permitiria à sua organização...**

melhorar a qualidade dos serviços prestados	1	2	3	4	5	6	7
diversificar os serviços	1	2	3	4	5	6	7
tornar a promoção dos serviços mais atrativa	1	2	3	4	5	6	7
melhorar o desempenho da organização	1	2	3	4	5	6	7
obter mais facilmente <i>feedback</i> dos utilizadores dos serviços sobre os serviços prestados	1	2	3	4	5	6	7
aumentar a visibilidade junto do mercado turístico	1	2	3	4	5	6	7
reduzir custos	1	2	3	4	5	6	7
ter uma relação/comunicação mais próxima e regular com as entidades gestoras do destino	1	2	3	4	5	6	7
ter uma relação/comunicação mais próxima com outras empresas turísticas da Região	1	2	3	4	5	6	7

**A presença da sua organização num SGD da Região Centro...**

seria benéfica para a sua organização	1	2	3	4	5	6	7
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#### IV. ADOÇÃO E GESTÃO DE UM SISTEMA DE GESTÃO DE DESTINOS (SGD) PARA A REGIÃO CENTRO

**18. Indique o seu grau de concordância relativamente aos seguintes aspetos, respeitantes à adesão a um eventual SGD a criar na Região Centro**

Utilize a escala apresentada e, em cada linha da tabela, assinale o número que mais corresponde à sua opinião.

Discordo totalmente							Concordo totalmente
1	2	3	4	5	6	7	

O destino "Centro de Portugal" deveria implementar um SGD oficial	1	2	3	4	5	6	7
A minha organização aderiria a um SGD oficial da Região Centro	1	2	3	4	5	6	7

**19. Que entidade(s) deveria(m), na sua opinião, ser a(s) proprietária(s) e gestora(s) de um SGD da Região Centro?**

*(assinale apenas uma opção)*

- Unicamente a Entidade Regional de Turismo do Centro
- Unicamente a Associação de Turismo do Centro / Agência Regional de Promoção Turística do Centro
- A Entidade Regional de Turismo do Centro e a Agência Regional de Promoção Turística do Centro

**20. Através de que sistema(s) devia ser financiado um SGD da Região Centro?**

*(pode assinalar mais do que uma opção)*

- Mensalidade/anuidade paga por todos os membros da entidade promotora do sistema
- Mensalidade/anuidade adicional a pagar pelas organizações que queiram estar presentes no sistema
- Comissões sobre vendas de produtos turísticos realizadas no SGD
- Mensalidade/anuidade paga pelos membros da Associação de Turismo do Centro

**21. Que entidade(s) deveria(m), na sua opinião, atualizar os conteúdos relativos às organizações fornecedoras de produtos turísticos que tivessem aderido a um SGD do destino turístico "Centro de Portugal"?**

*(pode assinalar mais do que uma opção)*

- A própria organização que fornece o produto / serviço
- Turismo do Centro
- Outras entidades  Qual(is)? \_\_\_\_\_

Muito obrigado pela sua colaboração!