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Ski Tourism and Web Marketing Strategies: The Case of Ski Resorts in France and Spain

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Abstract: The impacts of climate change are affecting ski tourism in Europe's southernmost ski resorts, such as those in France, and Spain. This is leading to changes in the scheduling of activities which, in turn, imply changes in how ski resorts are managed. The main aim of this work is to analyze whether ski resort websites are developing an effective marketing strategy and if they are adapted to e-commerce and the needs of contemporary society, including the adaptations needed to better face climate change and the stagnation the sector is suffering. In order to achieve this, we have developed a model to analyze ski resort websites; it is based on web content analysis, taking four factors into account: information, communication, e-commerce, and additional functions. We will, secondly, apply the eMICA (Extended Model of Internet Commerce Adoption) methodology to analyze the maturity of such e-commerce activities in ski tourism. Fifty-two ski resorts in Spain and 173 in France were analyzed. Results show that, while alpine ski resorts in general, and those in France in particular, are better prepared, resorts still have to facilitate more effective communication and interaction with their target public. A minority of resorts provide information on environmental certifications and snowmaking.

Keywords: ski tourism; e-commerce; ski resort; web content analysis; eMICA; climate change

1. Introduction

The impacts of climate change are affecting the geographic-tourism area, leading to changes in already highly fragile eco-systems, and affecting the social benefits and financial profits that the sector had previously enjoyed [1].

Furthermore, the Internet in particular, and new technologies in general, have greatly influenced consumer habits and the behavior of tourists [2,3]. The Internet has resulted in better-informed, more demanding consumers; tourists themselves increasingly choose their trip and make all the arrangements [4]. The Internet has become a source of top-quality tourist information, with increasing numbers of tourists consulting the range of products and services offered [5]. Not only do tourists consult information, the proportion of bookings made on the Internet is rising [6]. The same is true of social media, with the tourism sector integrating them into their marketing strategies as a way to communicate with and inform their clients [7]. Some authors have shown the influence of online communities and social media on the consumption of tourism [8]. Their results showed that companies that develop online communities gain a higher degree of consumer loyalty, generate higher profits and,

therefore, greater business opportunities. The main reason is that consumers find belonging to such communities useful; their needs for information are answered on the web, whether through opinions, ratings, recommendations or comparisons. Content generated by other social media users regarding their experiences is highly influential when making a purchase. The credibility of the source, the kind of information offered, and the interaction between both determine how influential they are to a much greater degree than any affinity between users and creators of content of social media [9].

Climate change is a threat to winter tourism in Southern European countries. The introduction of the Internet and new information and communication technologies has greatly influenced both the management of tourism businesses and the purchasing behavior of tourists but could also help to inform consumers about the risks of climate change and how to tackle them in the case of ski resorts. Therefore, this paper aims to analyze the Internet presence in a sector that is socially and economically strategic for some regions, that of ski tourism, but which is suffering great upheaval due to climate change.

The impacts of climate change in France and Spain are affecting ski tourism, leading to previously unseen temperature changes throughout the year; this, in turn, is a threat for the management of ski resorts. Rising temperatures are beginning to affect the scheduling of activities. A lack of snow means that the ski season starts ever later; the seasons themselves are more unstable; they are also longer since they tend to finish later [10–12]. One published article finds that measured snow-depth is a significant predictor of skier days in French ski areas [13]. Similarly, another work studied the vulnerability of Spanish alpine ski resorts to climate change, and evaluated the potential socio-economic and environmental implications [14]. Results show that lower-altitude areas may be more vulnerable to climate change than higher-altitude areas. A further change is that the tourist tends to divide their vacation time more, with shorter stays in each destination; they appreciate their free-time more and choose their destinations later. In addition, as they have fewer vacations and are better informed, they have become more demanding. Technological advances mean that they often use smartphones to find, compare and contrast information in real-time [15].

Ski tourism can be placed in the sport and nature tourism sector, as it is motivated by the desire to take part in sporting activities in natural surroundings in the snow and mountains [16]. According to the report produced by Vanat in 2018, 67 countries around the world have ski resorts that offer tourist and sporting destinations [17]. If we include indoor facilities, mountaineering areas and other facilities such as dry slopes, the figure may well reach 100. This study [17] identified around 400 million annual skier visits made to 6000 ski areas.

The present study covers skiable areas in France and Spain, and we shall analyze the situation in both countries. France is one of the three most important ski destinations in the world, the others being Japan and the United States [17]. France offers a wide range of ski slopes; it has over 1100 km^2 of skiable land, with 357 ski resorts in five mountain chains (the Pyrenees, the Central Massif, the Alps, the Jura Mountains, and the Vosges). In the 2016–17 season, this offer attracted over 54 million skiers. France, therefore, is a mature, well-established ski destination [18].

The winter sports offer in Spain in 2018 is of 1039 km on 380 slopes [19]. This figure is noteworthy when compared with the 3168 km of the Spanish coastline. Spain has 52 ski resorts in a large number of Autonomous Communities (Andalusia, Aragón, Asturias, Cantabria, Castile and León, Catalonia, Madrid, Galicia, La Rioja, and Navarre). Just as in France, Spanish ski resorts are an important economic sector. While there has been stagnation in the sector, the number of people who visited the resorts or skied reached almost 5 million in the 2015–2016 season, and there is accommodation for over 217,000 people [19]. The sector also feeds related economic activities, among which are transport, hotel and catering, clothing and accessories, rentals, and the sale of sporting equipment [20,21].

Some studies show that the population of towns with ski resorts increases, as does the number of people employed in the tertiary sector, while numbers of those in the primary sector fall [22,23]. Data regarding the number of skiers shows the economic importance that this sector plays in mountainous areas [24].

If we examine why a skier chooses a specific destination, we see that a number of factors determine the choice. These include internal aspects, such as the characteristics of the individual concerned, their personal motives, and the opinions and assessments of other clients; and external ones, among which are the characteristics of the destination [25], the condition of the slopes, the number of skiable kilometers, and the weather forecast. It is, therefore, vital that ski resorts use their websites to inform their users of skiing conditions; and that the websites are interactive, use social media and include the opinions of users. The tourist is looking for a series of activities that provide them with a series of experiences. Thus, those activities available when making a booking play a large role in the choice of destination. The tourist's motivations and the ability of a destination to meet their prior expectations are variable strategies in the marketing of destinations [26]. Therefore, precisely how ski resorts communicate their range of activities and characteristics is of vital importance when the skier chooses their destination; this justifies the study of the online presence as a means to communicate the tourist resources of mountainous areas.

Some research studied destination choice, the satisfaction and loyalty of ski resort customers. Their results showed that tourist satisfaction is directly influenced by the image of the destination; and that, in turn, destination loyalty is influenced by overall satisfaction [27]. Another study used the factor-cluster method to identify six different customer segments [28]. These are passive tourists; cross-country skiers; want-it-all; all-but-downhill skiing; sports seekers; and relaxation seekers. Further research, determined how customers value the various factors that result in satisfaction with, and loyalty to, the ski resort [29,30].

Such research covers facilities for the skier; however, attention should also be given to facilities for the non-skier, and après-ski activities such as shopping, fine dining, pubs and clubs, and the opportunity to participate in other recreational activities offered by the destination.

The main aim of this paper is to assess the degree to which Spanish and French ski resorts harness the marketing and communication opportunities provided by the Internet in order to minimize the harm resulting from climate change and the stagnation the sector is currently suffering. In other words, taking advantage of new technologies to tackle changes derived from climate change in order to maintain the economic sustainability of resorts. No previous studies have covered this area of research. Therefore, this exploratory research will contribute to defining the current state of websites in such snow tourism facilities.

2. Snow Tourism and Climate Change

While climate change is just one of the factors that influence winter tourism, the presence or absence of snow, and more specifically, the amount of snow and its seasonability, are key elements when assessing the sector's long-term viability and sustainability [31]. Most authors who have researched the impact of climate change agree that its effects are currently more evident in winter tourism than sun and beach-based tourism, and that winter tourism clearly has greater problems in adapting to these threats [32,33]. In general, mountain areas are more vulnerable than coastal areas and islands; these latter may even be able to take advantage of climate change to increase the length of the tourist season.

The effects of climate change on winter tourism imply shorter seasons. The scarcity of snow on the lower slopes of mountains, above all in south-facing ski resorts, results in greater use of artificial snow; this leads to a considerable increase in production costs, and greater use of water resources [33]. Further concern was expressed in the fourth report of the Intergovernmental Panel on Climate Change, which stated that "the impact of climate change on the winter sports tourism industry is potentially grave" [15,34].

According to some scholars, winter tourism demand depends on a number of factors: national and international income; prices; transport; costs; the date of the Easter holidays; and climate change [35]. The latter has been shown to be an important factor, especially for some low-altitude ski resorts. As these resorts are heavily dependent on snow depth, the decline in demand is much more

pronounced [35]. This leads companies to invest principally in high-altitude ski resorts, with the aim of creating large ski areas to attract foreign skiers [36,37].

French ski resorts have thus been affected by new competitors from Eastern Europe offering new infrastructures and attractive prices. Ski resort managers also have to deal with aging facilities. In fact, one of the defining characteristics of ski resorts is the technical infrastructure that skiing requires, such as ski slopes, trails, toilets, artificial snow equipment, lockers, and reception facilities [38].

According to the literature, the motivations of the traveler and the perceived ability of a specific place to satisfy prior expectations are strategic variables in the marketing of destinations [26]. The above-mentioned authors focus their research on the motivations of young German tourists when traveling to the mountains. Among other points, they differentiate between the motivations behind summer and winter travel. These travelers are far more active in winter and choose more stimulating attractions, such as those linked to sport and fun. They want to enjoy the landscape, nature and meet new people. However, in summer, more importance is placed on experiencing the natural world and relaxation. Those motivations linked to cultural or traditional activities, or luxury and comfort, become secondary for these young tourists, in both summer and winter.

Ski resorts are a large enough tourism resource to have their own destination marketing organization [39]. Destination marketing organizations are aware of the possibilities offered by the Internet to promote their tourism products and services [40]. As already noted, an online presence provides an important opportunity to increase the awareness and visibility of destination brands, including ski resorts and their surrounding areas; however, simply having a website is no guarantee of success for a destination such as a snow tourism resort, although there is a positive relation between website adoption and revenue growth [41].

This paper could be useful because it offers evidence, firstly about the ski resorts' level of maturity in electronic commerce, and secondly, about their level of use of Web 2.0 in information, communication, e-commerce, and functionality dimensions.

3. Methodology

The website plays a key role in the communication of an organization. The development of a valid, reliable method to assess the characteristics of a website is therefore of paramount importance both for professionals and researchers. Numerous authors state that there is no universally-accepted methodology with which to assess a website [42–44]. For this reason, we consider that this study is useful in providing new approaches to the analysis of website contents.

When assessing websites, the most common research methods are principally based on experimental assessment, surveys and content analysis [45]. However, the literature states that the most widely-used methodological approaches in measuring websites in tourist research fall into five groups; (1) the counting method; (2) the automatic method; (3) the numerical calculation method; (4) the user-opinion method; and (5) the combined method [44]. This research will use the counting method.

A counting method is used to determine a website's content richness or evaluate its performance. This method requires a checklist to confirm the existence of characteristics on a website, and a group of individuals to do the actual counting in a laboratory. It is one of the most widely-used methods in evaluating websites [44].

User-judgment methods assess user satisfaction or perceptions. These users could be any combination of academic researchers, industrial practitioners, and consumers, among others. Automatic methods involve the evaluation of websites using different software systems, such as content mining or web usage mining tools. Numerical calculation methods use mathematical functions to calculate website performance based on a number of attributes, usually represented by a set of numerical scores. Finally, researchers can also use different combinations of website evaluation methods [44,45].

Nowadays, new evaluation methods, such as neuroscientific tools, are beginning to be used [46–48]. Among them are face reading, eye tracking, electroencephalogram signals (EEG),

galvanic skin conductance, functional magnetic resonance imaging (FMRI), and positron emission tomography (PET), and they are used to evaluate different aspects of website performance [48].

In terms of the analytical approach, much research refers to a series of indicators that can be grouped into four main classes; these are commercial, technical, content-related, and design-related [45–50]. Some researchers introduce the perspective of market orientation. This implies the assessment of websites through identifying users as potential clients; the assessment is focused towards those aspects related to the promotion of activities, online transactions, and information regarding products and services [51]. This study uses such a research perspective.

As can be seen in Figure 1, our methodological process includes both web content analysis and the application of the eMICA, adapted for ski resorts. The variables used to assess the level of adoption of e-commerce on ski resort websites were adapted from the eMICA and chosen after reviewing published articles. On the other hand, we felt that, in order to move from one level to the next and establish its position, the website had to include a number of attributes [51,52]. Therefore, a level will be passed whenever the website contains the variables that correspond to the previous level or layer. The scale for all variables is dichotomous.

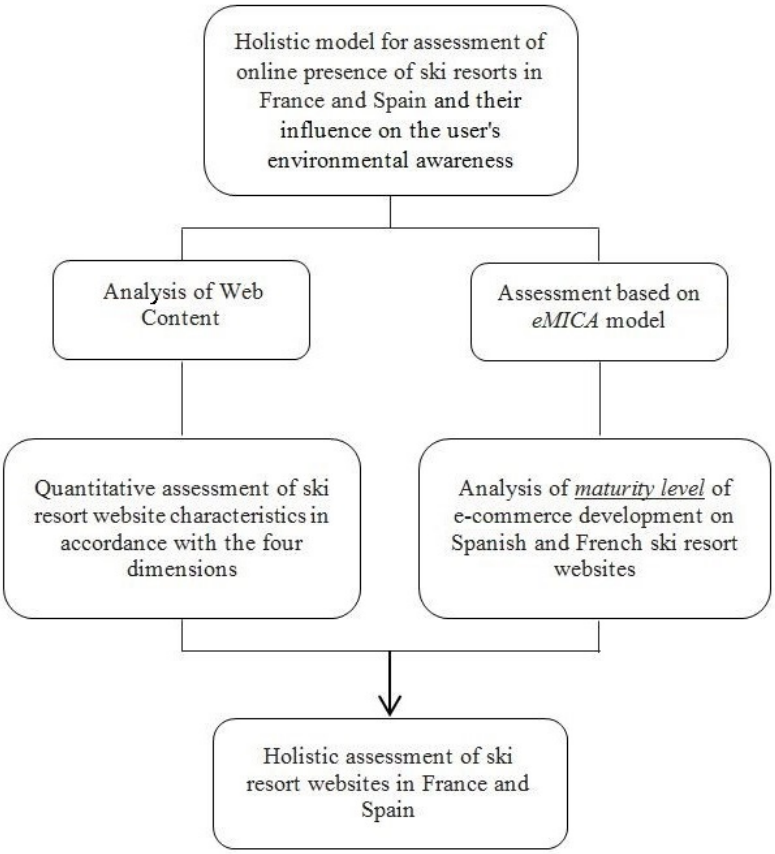

Figure 1. Design of research process.

The analysis focuses on the websites of ski resorts in Spain and France. In order to meet the aims outlined above, the websites were analyzed of all 52 Spanish ski resorts that form part of ATUDEM (The Tourist Association of Ski and Mountain Resorts in Spain). Since France has a great number of ski resorts, the aim was met by analyzing the websites of those resorts that are members of the "Association Nationale des Maires des Stations de Montagne" ("National Association of Mayors of Mountain Resorts") [53], and those nordic skiing resorts that have an official Nordic Skiing certification. A total of 173 French websites were analyzed. The analyses were carried out between January and April 2017.

3.1. Web Content Analysis

Published writings were thoroughly reviewed [51,54–60], and a model constructed for a Web Content Analysis that was applied to ski resorts (Table 1). The aim of this model is to provide an overview of the resources that ski resorts offer on their websites that enable users to obtain the necessary information and interact with the websites. This interaction may include e-commerce activities (purchase of ski passes, restaurant services, booking of classes, material rental, etc.), or asking questions on a secure platform that guarantees compliance with the quality standards of a website.

Table 1. Proposed model for ski resort web content analysis.

Dimension	Definition	Authors
Information	Assesses the information available on the ski resort website and the ease with which users can find it.	[51,55–68]
Communication	Measures the extent to which the website enables interaction with costumers, whether through communication mechanisms, Web 2.0 resources or the availability of information in multiple languages.	[51,55–65,68–71]
e-Commerce	Assesses the extent to which the website enables secure commercial transactions.	[51,57–63,68,72]
Additional Features	Measures the extent to which the website conveys a sense of security through data protection features and certifications and the use of new media such as a mobile version of the website or an app.	[51,64,71–73]

The resulting model is structured in four factors of website analysis. These are information, communication, e-commerce, and additional functions, as shown in Table 1. Each factor has its own characteristics and items to be assessed. The assessment indicators for each of the blocks are collected in Tables 2–4.

Table 2. Items for the information (I) variable.

Category	Items
1. Information about the ski resort	I.1.1. Description of the ski resort (type of resort, number of ski lifts, km of skiing, snow depth, size, etc.) I.1.2. Virtual tours I.1.3. Pictures of the resort I.1.4. Availability of information on ski pass rates and season passes I.1.5. News/information about events I.1.6. Resort location I.1.7. Links to tourism service review websites I.1.8. Ski resort status (open or closed) I.1.9. Status of roads to the resort (open/closed/snow chains) I.1.10. Information about the weather: current weather/forecast I.1.11. Trail maps I.1.12. Availability of trail safety rules I.1.13. Availability of pass rules I.1.14. Complete season calendar I.1.15. Different information for each season (winter and summer) I.1.16. Information about access to the ski resort through public transportation I.1.17. Information about environmental policy
2. Ski resort facilities and services	I.2.1. Information about restaurants I.2.2. Information about ski school I.2.3. Information about child care I.2.4. Information about locker and ski storage services I.2.5. Store information I.2.6. Information about available snow cannons I.2.7. Information about area covered by snow cannons
3. Ski resort surroundings	I.3.1. Tourist information about the area in which the resort is located I.3.2. Links to related businesses (e.g., accommodation, restaurants, adventure sports)
4. Promotions	I.4.1. Promotional material and advertising I.4.2. Incentives: vouchers or coupons, Internet-only offers, online contests

Source: Authors.

Table 3. Items for the communication (C) variable.

Categories	Items
1. Interaction with customers	C.1.1. Email and telephone number of the establishment C.1.2. Possibility for customers to submit online comments C.1.3. Instant messaging C.1.4. Online surveys C.1.5. FAQs C.1.6. Option to sign up to receive newsletters C.1.7. Restricted area for customers C.1.8. Possibility for customers to rate the quality of or their satisfaction with the services rendered
2. Web 2.0 resources	C.2.1. Content syndication (RSS) C.2.2. Podcasting/vodcasting C.2.3. Applications allowing users to post content C.2.4. Possibility for customers to share content with friends (tweet, share, etc.) C.2.5. Link to Twitter (microblogging) C.2.6. Link to corporate blog C.2.7. Links to external image and video platforms (YouTube, Flickr, etc.) C.2.8. Links to corporate social media accounts (Facebook, LinkedIn, etc.) C.2.9. Link to wiki C.2.10. Other 2.0 platforms (Technorati, Netvibes, etc.)
3. Language capabilities	C.3. Website available in multiple languages

Source: Authors.

Table 4. Items for the additional features (AF) variable.

Categories	Items
1. Security of the information	AF 1. Privacy policy or legal notice
2. Certifications	AF 2.1. ISO 9000 quality certifications AF 2.2. Q Certification of Tourism Quality AF 2.3. Environmental certifications (ISO 14000) AF 2.4. Other certifications (ISO 27000, OSHAS 18000)
3. Mobile version	AF 3.1. Link to mobile version of the website AF 3.2. Availability of a resort app

Source: Authors.

3.1.1. Information (I)

The tourist sector is characterized by its intensive use of information [5]. One of the main reasons is the distance between where clients live and the destination itself [51]. It is, therefore, vital to develop adequate communication channels in order to offer the necessary information on the destination. The dissemination of information thus becomes one of the main goals of tourist promotion websites. For this reason, we have introduced this information variable that assesses the availability of aspects related to the information offered; it is in four categories: (1) information about the ski resort; (2) facilities and services offered; (3) surroundings; and (4) promotion (Table 2).

3.1.2. Communication (C)

When designing the Internet presence of an organization or tourist destination, it is vital to focus on the capacity for interaction with the client [74]. Some studies state that this interaction leads to a series of advantages, among which are more time spent on the website, higher processing and impact of information, and the creation of a longer-lasting relation with the client [69]. Due to the intangible nature of tourist services and the great use made of social media, reviews and assessments become highly influential when deciding a purchase [2,75]. It is, therefore, highly important for tourist destinations and businesses to introduce tools on their websites that favor client feedback [49], and in which tourists play an active role, particularly on those social media sites that are characterized

by their interactivity [69]. This communication variable is used to measure the presence of tools that enable communication with the client on ski resort websites (Table 3).

3.1.3. E-Commerce (EC)

This factor is focused on the distribution and commercialization capability of tourist services and products [51]. This variable permits the assessment of those aspects related to the mechanisms by which online bookings are made (EC1), and the purchase of services (EC2).

3.1.4. Additional Functions (AF)

Along the lines of research such as that carried out by [43] or [49], among others, a series of additional functions have been added that take into account e-commerce regulations such as quality certificates or data protection. Functionality and accessibility are of paramount importance for users [49,76]. For this reason, and bearing in mind the increasing use of mobile phone technology, this factor includes the existence of a mobile version of the website. According to some scholars, mobile devices are one of the main tools in the search for information and payment of purchases in the tourism sector [73–77].

The attributes in this dimension that are most connected with climate change are those related to environmental certifications. Ecological or environmental labels are widely used tools in marketing strategies in many industrial sectors, and particularly in tourism [78,79].

In this research project, we have chosen a model that assesses websites from the marketing perspective. The assessment process identified the products and services offered online. The research was carried out through the identification of a series of informative contents and interactive services that were deemed useful or interesting for users of a tourist website [44,51,57,58]. Each item was chosen after a review of published writing. Furthermore, they were modified, or new elements were added, to adapt them to the specific context of ski resorts.

In order to carry out the fieldwork, a template was produced based on the above-mentioned model. With the aim of clarifying the online presence of the websites, the level of information and interaction on the Internet, it was decided to use the content analysis technique with a quantitative perspective [20,43,51,58,62]. A 52-indicator template was used to test structures around the following dimensions: information, communication, e-commerce, and additional functions. This template was used in each of the ski resort websites, following the model proposed above.

As it is suggested we designed an eight-stage content analysis process [80]:

Stage 1. Formulating research questions or hypotheses: We confirmed that the ski industry represented a major tourist attraction in mountainous areas. Thus, the effects of climate change play an important role in how such facilities manage their communication.

Stage 2. Identifying variables: We identified variables related to the information, communication, e-commerce, and additional functions that ski resorts websites provided.

Stage 3. Defining categories and units of measurement: We analyzed the entire website for each ski resort (not just the "home page" or landing page). The websites were chosen as the unit of analysis since they contained all the elements we wanted to examine.

Stage 4. Creating a coding scheme: A codebook containing the categories and their measurements was created. All items were included in the following dimensions: information, communications, e-commerce, and additional functions.

Stage 5. Sampling: We selected the websites of those Spanish ski resorts belonging to ATUDEM and the French resorts members of the "Association Nationale des Maires des Stations de Montagne." A total of 225 websites were analyzed.

Stage 6. Training coders: Two trained coders used the codebook to evaluate the ski resorts' websites. Training sessions reconciled any coding differences between the coders.

Stage 7. Coding: Sample coding was processed independently, based on the codebook.

Stage 8. Data analysis: Data analysis was conducted by assessing the presence or absence of certain features, and aggregating data into tables and charts.

3.2. The eMICA

The eMICA (Extended Model of Internet Commerce Adoption) was first developed by Burgess and Cooper in their research into the Australian metal manufacturing industry [81]. The model states that there is a series of stages in the development of a company's Internet presence. While the first website is simple, over time it becomes more complex, incorporating new processes which are the result of increasing experience and knowledge in the use of ICT. The model has three phases, developing three business-process levels: (1) Web-based promotion, (2) the provision of information and services, and (3) transaction processes. These stages show a path that indicates the degree to which a specific industry has developed e-commerce activities. For our research, we will apply this model to ski resorts.

The Internet and websites are constantly evolving. This MICA model reflects this through the various stages of development, from the beginning (promotion), through consolidation (provision) to maturity (processes). Each stage is comprised of different levels of website complexity and functionality. These levels show the company's evolution from a merely static Internet presence to a dynamic website through increasing degrees of interactivity that incorporate the integration of a value chain and new applications that add value through information management and greater functionality [82].

In recent years, the MICA model has been applied to a range of sectors; this has been widespread in the tourism sector [20,43,53,72,82–85]. This has led to an extension to the original model, called the Extended Model of Internet Commerce Adoption (eMICA). A number of levels of sophistication have been added, adapting MICA to the particularities of a virtual environment (Table 5). As mentioned above, this model, which is based on an assessment by levels, facilitates the analysis of websites from a basic, promotional level to a more evolved level, which includes transactional processes and e-commerce. Considering that the eMICA model responds to a process of gradual Internet adoption, it might be possible to find cases where a site may group functionalities and incorporate elements from different stages and levels of the model. This can make the classification complex sometimes. Being an on-going process, a site is not classified as stage 3 of online commerce unless it has passed the previous stages. What is measured is the current state of website maturity. The concept of website maturity means not only that it provides for e-commerce. It is a broader concept and for that reason, we complement it with the WCA.

Table 5. Extended Model of Internet Commerce Adoption (eMICA).

eMICA		Functionality Examples
Phase 1	Promotion	
	Level 1. Basic information	Name, physical address and contact details, resort status, the status of roads to the resort
	Level 2. Rich information	Annual report, email contacts, information on activities and business environment, online incentives, weather forecast, etc.
Phase 2	Provision	
	Level 1. Low interactivity	Complete product catalog, hyperlinks to additional information, online query form, possibility to complete online surveys
	Level 2. Medium interactivity	Complete product catalog, user support (FAQs, website maps, virtual tours, georeferencing, webcam, etc.), industry information
	Level 3. High interactivity	Chat feature, discussion forums, multimedia features, newsletters or news by email. Presence on social media and links to tourism review websites
Phase 3	Processing	Secure transactions, digital signature and encryption, order tracking and status, interaction with servers and databases, Web 2.0, user-generated content.

Source: [83,84].

Some authors state that this model is limited as it tends to reduce the level of complexity of research, and that a website may be present on two levels at the same time, or even on none [66]. The aim of this work is to ascertain the degree of maturity of French and Spanish ski resort websites. We

believe that, once the necessary adaptations have been made, the eMICA can include the necessary logical dimensions that a website should have: information; communication; and transaction [86,87].

3.2.1. First Phase: Promotion (Information)

The first phase analyzes the use of the website as a way for the ski resort to communicate information and services to the market (Table 6). This stage is characterized by a low level of functionality and a basic visual and informative character. There are two levels within this phase; the first requires a minimum of three of the proposed six variables; the second requires three of seven.

Table 6. Promotion variables.

Phase 1: Promotion (Information)
Level 1: Basic information (at least three of the six proposed variables)
Contact details: name, address, telephone number, fax number, other
Date and time of the last update
Resort status: open/closed
Status of roads to the resort: open/closed/snow chains
Photos of the resort
Information about the resort's location
Level 2: Abundant information (at least three of the seven proposed variables)
Email address and/or contact form
Trail report: profile, lifts, snow depths, elevations, other
Weather report: current weather/forecast
Availability of website in more than one language
Quality certifications
News/information about events
Promotions and online incentives (bonuses/coupons, Internet-only offers, online contests)

Source: Authors, based on the eMICA [83].

3.2.2. Second Phase: Provision (Dynamic Information)

The second phase aims to establish whether the website offers dynamic information about the ski resort and its surroundings (Table 7). This latter point is important, as a ski and mountain resort is a tourist destination, that is, a geographical area, with its own characteristics and ability to develop common planning instruments that are commercialized as a single entity [53]. There are three levels to this phase. To pass the first level, a minimum of four of the nine variables are necessary. The second level requires six of 12; and the third, six of 13.

Table 7. Provision variables.

Phase 2: Provision (Dynamic Information)
Level 1: Low level of interactivity (at least four of the nine proposed variables)
Season pass and season rates
Trail map
Links to internal information: lodging, restaurants, other
Links to external information: lodging, restaurants, other
Links to resort services: school, crèche, ski storage
Links to seasonal resort info (winter/summer)
Complete season calendar
Trail safety rules
Terms and conditions of use

Table 7. *Cont.*

Level 2: Average level of interactivity (at least six of the 12 proposed variables)
Web map
Webcam
Possibility of booking accommodation
Possibility of purchasing passes (passes only)
Downloadable brochures and/or materials and/or photos
Possibility to sign up to receive news by email
Privacy policy or legal notice
Online surveys
FAQs
Suggestions
Search function (by keywords)
Online store (as showcase)
Level 3: High level of interactivity (at least six of the 13 proposed variables)
Customer/partner area
Interactive trail map
Multimedia applications
Blogs, forums and/or chat features
Newsletters
Access to the ski resort's social media profiles
Possibility to collect online reviews from customers
Possibility for clients to rate the quality of/their satisfaction with the services provided
Links to tourism service review websites
Virtual tour
Videos using Flash animation
Mobile version of the website
Downloadable mobile app

Source: Authors, based on the eMICA [83].

3.2.3. Third Phase: Process (Functional Maturity)

The final phase must show that the Internet presence of the ski resort is an important vehicle for e-commerce. If this phase has been reached, the website has to permit the sale of those products and/or services offered. In essence, it shows the degree of the website's functional maturity. It requires a minimum of two of five variables (Table 8).

Table 8. Processing variables.

Phase 3: Processing (Functional Maturity) (at least two of the five proposed variables)
Complete purchase (or renewal) process for season passes
Complete purchase process in the online shop (other products)
Complete purchase process for accommodation
Secure online transactions (in possible purchase processes, digital signature, encryption, mobile security code)
Interaction with the server: database queries (access to customer profile, the possibility to modify it, access to purchase history, etc.)

Source: Authors, based on the eMICA [83].

4. Results

Tables 9 and 10 show the frequency of WCA and eMICA indicators. In order to identify the presence of each of the elements, and facilitate analysis and comparisons between ski resorts of different countries and types, the results shown represent the percentage of facilities that use each tool depending on the type of resort and country. The phi coefficient was used to analyze the differences and the significance level was determined through transforming the phi coefficient, and the chi-squared distribution. The phi coefficient shows the importance of the differences detected in scale one (the tables show the absolute values of significant differences).

Table 9. WCA items by country and type.

	Country			Type		
	Spain (n = 52)	**France (n = 173)**	**Phi Coefficient**	**Alpine (n = 139)**	**Nordic (n = 86)**	**Phi Coefficient**
Information						
1. Information about the ski resort						
I. 1. 1	82.7%	97.7%	0.271 ***	99.3%	86.0%	0.276 ***
I. 1. 2	5.8%	0.6%	0.166 *	2.2%	1.2%	
I. 1. 3	98.1%	93.6%		92.1%	98.8%	0.146 *
I. 1. 4	94.2%	97.1%		97.1%	95.3%	
I. 1. 5	67.3%	94.2%	0.349 ***	92.1%	81.4%	0.160 *
I. 1. 6	92.3%	98.3%	0.145 *	99.3%	93.0%	0.175 **
I. 1. 7	3.8%	11.0%		12.2%	4.7%	0.127 $^{\Phi}$
I. 1. 8	90.4%	86.1%		87.8%	86.0%	
I. 1. 9	63.5%	39.3%	0.205 **	51.8%	33.7%	0.177 **
I. 1. 10	80.8%	97.1%	0.276 ***	97.8%	86.0%	0.230 ***
I. 1. 11	86.5%	98.8%	0.265 ***	97.8%	93.0%	0.119 $^{\Phi}$
I. 1. 12	51.9%	8.7%	0.468 ***	25.2%	8.1%	0.213 ***
I. 1. 13	75.0%	2.3%	0.779 ***	23.7%	11.6%	0.150 *
I. 1. 14	48.1%	60.1%		71.2%	34.9%	0.357 ***
I. 1. 15	19.2%	89.0%	0.662 ***	77.7%	65.1%	0.138 *
I. 1. 16	42.3%	73.4%	0.277 ***	86.3%	33.7%	0.541 ***
I. 1. 17	23.1%	10.4%	0.157 *	18.7%	4.7%	0.201 **
2. Ski resort facilities and services						
I. 2. 1	82.7%	63.6%	0.173 **	86.3%	38.4%	0.500 ***
I. 2. 2	86.5%	69.9%	0.159 *	95.0%	39.5%	0.612 ***
I. 2. 3	86.5%	47.4%	0.333 ***	81.3%	16.3%	0.637 ***
I. 2. 4	86.5%	2.3%	0.860 ***	25.2%	16.3%	
I. 2. 5	3.8%	0.0%	0.173 **	0.7%	1.2%	
I. 2. 6	34.6%	31.2%		42.4%	15.1%	0.285 ***
I. 2. 7	34.6%	20.2%	0.143 *	33.8%	7.0%	0.307 ***
3. Ski resort surroundings						
I. 3. 1	19.2%	88.4%	0.653 ***	78.4%	62.8%	0.170 *
I. 3. 2	38.5%	88.4%	0.500 ***	81.3%	69.8%	0.133 *
4. Promotions	0.0%					
I. 4. 1	69.2%	89.0%	0.230 ***	92.1%	72.1%	0.268 ***
I. 4. 2	23.1%	49.7%	0.226 ***	54.7%	25.6%	0.285 ***
Communication						
1. Interaction with the customers						
C. 1. 1	86.5%	98.8%	0.265 ***	97.8%	93.0%	0.119 $^{\Phi}$
C. 1. 2	42.3%	2.9%	0.511 ***	10.8%	14.0%	
C. 1. 3	0.0%	2.9%		2.9%	1.2%	
C. 1. 4	3.8%	12.1%	0.115 $^{\Phi}$	13.7%	4.7%	0.145 *
C. 1. 5	26.9%	8.7%	0.230 ***	18.0%	4.7%	0.193 **
C. 1. 6	32.7%	81.5%	0.450 ***	76.3%	60.5%	0.168 *
C. 1. 7	13.5%	23.7%		34.5%	0.0%	0.410 ***
C. 1. 8	0.0%	6.9%	0.130 $^{\Phi}$	5.8%	4.7%	
2. Web 2.0 resources						
C. 2. 1	11.5%	0.0%	0.302 ***	3.6%	1.2%	
C. 2. 2	0.0%	0.0%		0.0%	0.0%	
C. 2. 3	3.8%	0.6%	0.120 $^{\Phi}$	1.4%	1.2%	
C. 2. 4	32.7%	58.4%	0.217 ***	79.9%	8.1%	0.698 ***
C. 2. 5	96.2%	9.2%	0.805 ***	22.3%	40.7%	0.196 **
C. 2. 6	44.2%	15.6%	0.290 ***	18.7%	27.9%	
C. 2. 7	21.2%	67.1%	0.390 ***	79.1%	19.8%	0.582 ***
C. 2. 8	69.2%	94.8%	0.343 ***	88.5%	89.5%	
C. 2. 9	0.0%	0.0%		0.0%	0.0%	
C. 2. 10	0.0%	0.0%		0.0%	0.0%	
3. Language capabilities						
C. 3. 1	44.2%	80.3%	0.339 ***	86.3%	48.8%	0.406 ***
E-commerce						
CE. 1	46.2%	43.4%		57.6%	22.1%	0.347 ***
CE. 2	50.0%	59.0%		69.1%	37.2%	0.313 ***
Additional Features						
1. Security of the information						
AF. 1. 1	57.7%	94.2%	0.441 ***	92.8%	74.4%	0.256 ***
2. Certifications						
AF. 2. 1	0.0%	3.5%		0.0%	7.0%	0.210 **
AF. 2. 2	26.9%	47.4%	0.175 **	39.6%	47.7%	
AF. 2. 3	0.0%	5.8%	0.118 $^{\Phi}$	5.8%	2.3%	
AF. 2. 4	26.9%	0.6%	0.445 ***	10.8%	0.0%	0.210 **
3. Mobile version						
AF. 3. 1	51.9%	96.0%	0.531 ***	95.7%	69.8%	0.361 ***
AF. 3. 2	26.9%	17.9%		26.6%	9.3%	0.210 **

Phi coefficient in absolute value. p value: $^{\Phi}$ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Source: Authors.

Table 10. eMICA items by country and type.

	Country			Type		
	Spain (n = 52)	**France (n = 173)**	**Phi Coefficient**	**Alpine (n = 139)**	**Nordic (n = 86)**	**Phi Coefficient**
Stage 1—Promotion						
Layer 1—Basic information	96.2%	97.7%		97.8%	96.5%	
EMICA1.1.1	94.2%	99.4%	0.166 *	100.0%	95.3%	0.171 **
EMICA1.1.2	88.5%	2.3%	0.874 ***	22.3%	22.1%	
EMICA1.1.3	90.4%	86.1%		87.8%	86.0%	
EMICA1.1.4	63.5%	39.3%	0.205 **	51.8%	33.7%	0.177 **
EMICA1.1.5	98.1%	93.6%		92.1%	98.8%	0.146 *
EMICA1.1.6	94.2%	98.3%		99.3%	94.2%	0.154 *
Layer 2—Rich information	84.6%	98.3%	0.267 ***	98.6%	89.5%	0.203 **
EMICA1.2.1	88.5%	98.8%	0.236 ***	97.8%	94.2%	
EMICA1.2.2	82.7%	97.7%	0.271 ***	99.3%	86.0%	0.276 ***
EMICA1.2.3	80.8%	97.1%	0.276 ***	97.8%	86.0%	0.230 ***
EMICA1.2.4	46.2%	80.3%	0.323 ***	86.3%	50.0%	0.395 ***
EMICA1.2.5	9.6%	60.1%	0.426 ***	33.8%	72.1%	0.372 ***
EMICA1.2.6	67.3%	94.2%	0.349 ***	92.1%	81.4%	0.160 *
EMICA1.2.7	23.1%	49.7%	0.226 ***	54.7%	25.6%	0.285 ***
Stage 2—Provision						
Layer 1—Low-level interactivity	88.5%	95.4%	0.121 $^{\Phi}$	97.8%	87.2%	0.214 ***
EMICA2.1.1	94.2%	97.1%		97.1%	95.3%	
EMICA2.1.2	86.5%	98.8%	0.265 ***	97.8%	93.0%	0.119 $^{\Phi}$
EMICA2.1.3	82.7%	63.6%	0.173 **	86.3%	38.4%	0.500 ***
EMICA2.1.4	38.5%	88.4%	0.500 ***	81.3%	69.8%	0.133 *
EMICA2.1.5	86.5%	93.6%	0.110 $^{\Phi}$	95.0%	87.2%	0.139 *
EMICA2.1.6	19.2%	89.0%	0.662 ***	77.7%	65.1%	0.138 *
EMICA2.1.7	48.1%	60.1%		71.2%	34.9%	0.357 ***
EMICA2.1.8	51.9%	8.7%	0.468 ***	25.2%	8.1%	0.213 ***
EMICA2.1.9	75.0%	2.3%	0.779 ***	23.7%	11.6%	0.150 *
Layer 2—Medium-level interactivity	19.2%	80.3%	0.545 ***	72.7%	55.8%	0.173 **
EMICA2.2.1	21.2%	94.8%	0.747 ***	81.3%	72.1%	
EMICA2.2.2	80.8%	88.4%		95.0%	73.3%	0.310 ***
EMICA2.2.3	46.2%	60.7%	0.124 $^{\Phi}$	71.9%	33.7%	0.376 ***
EMICA2.2.4	46.2%	43.4%		57.6%	22.1%	0.347 ***
EMICA2.2.5	50.0%	92.5%	0.473 ***	84.2%	80.2%	
EMICA2.2.6	9.6%	82.1%	0.642 ***	69.8%	58.1%	0.119 $^{\Phi}$
EMICA2.2.7	57.7%	94.2%	0.441 ***	92.8%	74.4%	0.256 ***
EMICA2.2.8	5.8%	12.1%		14.4%	4.7%	0.153 *
EMICA2.2.9	26.9%	8.7%	0.230 ***	18.0%	4.7%	0.193 **
EMICA2.2.10	7.7%	45.7%	0.332 ***	21.6%	61.6%	0.403 ***
EMICA2.2.11	15.4%	53.2%	0.321 ***	45.3%	43.0%	
EMICA2.2.12	3.8%	12.7%	0.121 $^{\Phi}$	13.7%	5.8%	0.124 $^{\Phi}$
Layer 3—High-level interactivity	30.8%	35.3%		41.7%	22.1%	0.201 **
EMICA2.3.1	13.5%	32.9%	0.182 **	34.5%	18.6%	0.172 **
EMICA2.3.2	25.0%	17.9%		26.6%	8.1%	0.226 ***
EMICA2.3.3	73.1%	37.0%	0.306 ***	46.0%	44.2%	
EMICA2.3.4	23.1%	15.6%		18.7%	15.1%	
EMICA2.3.5	32.7%	81.5%	0.450 ***	77.0%	59.3%	0.188 **
EMICA2.3.6	82.7%	93.6%	0.162 *	94.2%	86.0%	0.140 *
EMICA2.3.7	5.8%	2.9%		4.3%	2.3%	
EMICA2.3.8	0.0%	6.9%	0.130 $^{\Phi}$	5.8%	4.7%	
EMICA2.3.9	3.8%	12.7%	0.121 $^{\Phi}$	14.4%	4.7%	0.153 *
EMICA2.3.10	5.8%	0.6%	0.166 *	1.4%	2.3%	
EMICA2.3.11	38.5%	80.3%	0.388 ***	65.5%	79.1%	0.145 *
EMICA2.3.12	59.6%	96.0%	0.464 ***	95.0%	75.6%	0.285 ***
EMICA2.3.13	26.9%	17.3%		26.6%	8.1%	0.226 ***
Stage 3—Processing						
Layer 1—Processing	38.5%	58.4%	0.168 *	66.9%	32.6%	0.335 ***
EMICA3.1	50.0%	59.0%		69.1%	37.2%	0.313 ***
EMICA3.2	21.2%	9.8%	0.145 *	15.8%	7.0%	0.130 $^{\Phi}$
EMICA3.3	40.4%	19.1%	0.210 **	36.0%	4.7%	0.356 ***
EMICA3.4	3.8%	58.4%	0.461 ***	54.7%	31.4%	0.227 ***
EMICA3.5	0.0%	58.4%	0.495 ***	54.0%	30.2%	0.232 ***

Phi coefficient in absolute value. p value: $^{\Phi}$ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ Source: Authors.

4.1. Web Content Analysis

The first dimension analyzes those mechanisms that ski resorts establish to inform about their products and services, as well as tourist information about the area (Table 9). An aspect that should be mentioned is the fact that French ski resorts offer much more tourist information on the area (I.3.1), with links to other resources or related companies (I.3.2) than Spanish ones. Similarly, French resorts

make greater use of their websites to advertise offers (I.4.1). In general, we can state that, as far as disseminating information is concerned, ski resorts meet the basic conditions for the client to be informed when choosing their snow tourism destination.

Regarding negative points, we should highlight the paucity of information on the sale of products (I.2.5); or aspects related to the Internet 2.0, such as virtual visits (I.1.2) and links to rating websites (I.1.7). The management of ski resort website presence must strengthen these attributes of the Information dimension since they are key and may well prove decisive when skiers use the Internet to choose their destination. Focusing on this dimension's items that are most closely related to climate change, i.e., I.1.1, I.1.8, and I.1.10, shows that these are aspects that are widely discussed on ski resort websites in general. Most ski resorts (66.2%) provide information about access via public transport (I.1.16), which is highly useful for potential visitors. Alpine ski resorts and French ski resorts provide information more frequently about such access. Few ski resorts (13.3%) provide information about environmental policy (I.1.17), and there are few differences between countries. The proportion with this information is somewhat higher in the case of Spanish resorts and alpine ski resorts (Table 9).

Approximately 32.0% of the ski resorts report that they have snow cannons (I.2.6), and 23.6% report the area covered by snow cannons (I.2.7). Alpine ski resorts provide this information more frequently. Overall, the low percentage of ski resorts that provide information on snow cannons is surprising given that snowmaking is an important short- and medium-term measure to mitigate the effects of climate change.

The communication dimension includes those tools that facilitate interaction with the consumer through the website (Table 9). Results regarding interactivity are lower than those of the previous dimension. In general, resorts make minimal use of the website to establish a dialogue with users. As can be seen, the most frequent communication channels for contacting users are traditional, being the telephone and email (C.1.1), followed by forms that collect clients' comments (C.1.2) in the Spanish case, given that this is almost anecdotal in French resorts. To a lesser degree, FAQs (Frequently Asked Questions) are used (C.1.5) and magazines produced by the resorts themselves (C.1.6). However, in this case, there are differences between the country and the type of resort: Spanish resorts use FAQs more frequently than French ones, while French resorts produce newsletters to keep users informed. Regarding areas that are restricted to clients (C.1.7), alpine resorts in the three countries offer them, and no nordic resort does. None of the Spanish resorts analyzed offered instant messaging services (C.1.3) or the option for clients to rate the quality of, or their satisfaction with, the services provided (C.1.8); and in France, the number was very low.

If we focus on website interactivity, the vast majority of websites analyzed offer links to Twitter accounts, their own blogs (C.2.6), and to other social media, such as Facebook or LinkedIn (C.2.8). To a lesser degree, there are links to external image or video platforms such as YouTube or Flickr (C.2.7). French resorts are slightly more participative on social media, although Spanish resorts use tools, such as blogs, more intensively. Content syndication (C.2.1) or applications that allow the user to publish comments (C.2.3) are much more limited and mainly used by Spanish resorts.

When analyzing the availability of different languages on websites, more French resorts have a version in at least one other language than Spanish ones, and the number is greater in alpine than nordic resorts (C.3.1.). This fact is highly important given the significant number of foreign visitors to French and Spanish resorts; according to some studies, 27% of skiers in French resorts are foreign, while in Spain this number is 10%.

The third dimension is related to e-commerce, and shows payment and booking mechanisms that enable users to access products and services on official ski resort websites. Despite the increasing use of e-commerce, our analysis shows that ski and mountain resorts still make infrequent use of such mechanisms. The lowest figures correspond to nordic ski resorts (EC.1).

The final dimension includes those general aspects that can be deemed relevant for a website in the current context. Three fundamental aspects are assessed: safety, certification, and mobility. The security of the information (AF.1.1) shows similar results to the others in that nordic resorts and

Spanish resorts are less adapted. Regarding data protection or legal notices, the majority of resorts provide sufficient information. Only ten ski resorts, all of which are French, have environmental certifications (ISO 14000): eight alpine ski resorts (Ceillac en Queyras, La rosière, Les Carroz d'araches, Montchavin les coches, Peyragudes, Serre Chevalier, Thollon les Mémises, and Valmeinier) and two nordic ski resorts (Le Dévoluy and Pontarlier-Gounefay). These ski resorts fulfill more requirements than the average (58.1% compared to 49.6%), in both eMICA (64.0% compared to 54.8%), and WCA (52.5% compared to 44.8%). Beyond the Q certification of tourism quality (42.7%), few ski resorts hold quality certifications (2.7%), environmental certifications (4.4%), or other certifications (6.7%). In addition, only one ski resort holds two of these certifications (Le Dévoluy, ISO 9000, and ISO 14000). While some action has been taken, it seems clear that obtaining voluntary certifications is not a priority. When examining the availability of a version for mobile devices, we note that, in line with the previous results, excepting resorts in Spain, the vast majority of the rest include links to the mobile version of the website (AF.3.1).

The availability of a mobile application may provide a great advantage; a study on tourist applications showed that two-thirds of travelers tended to use their mobile phones to look for, buy, and book their activities, while three-quarters of frequent travelers used their smartphone during their stay [88]. Currently, access to such an important group of travelers through mobile devices may prove to be an important competitive advantage for businesses in the tourism sector [89]. The analysis of these four indicators shows us how the great majority of ski resorts in Spain and France have an online presence that serves as a channel for communication; in the case of nordic resorts, development is much more limited.

4.2. eMICA

The information shown in this section forms an indicator regarding the current state of snow tourism with respect to the commercial applications of the Internet (Table 10). If we analyze the results as a whole, we observe that there is still room for improvement in the adoption of e-commerce by ski and mountain resorts in Spain and France. The fact that the vast majority are at Stage 2 is proof of the low degree of functional maturity attained by the resorts in the development of their websites. This is indicative of a certain movement from a static perspective to a dynamic website with increasing levels of interactivity. Nonetheless, it should be pointed out that this figure is largely due to those resorts that offer downloadable content or the option of subscribing to content, while Internet 2.0 tools or online shops are less represented.

Regarding Stage 3 of the process, it can be seen that most websites, as well as offering purchasing processes and secure payment gateways, also provide communication mechanisms that favor interactivity with the user. However, the fact that most of the resorts studied do not offer a start-to-finish online purchase process may well result in a loss of potential clients, as the physical distance that separates possible skiers from the facilities is too great. Conversely, if we analyze results by country and type of resort, French resorts and alpine resorts are those with the greater number of websites by layers and stages; they are also those that show the most positive results.

4.3. Combined Analysis (eMICA and WCA)

Seventeen numerical variables were generated that indicate those criteria that are met in each section, both eMICA and WCA, for the 225 ski resorts analyzed. The sample analyzed meets, on average, 49.6% of those items considered. French ski resorts (51.2%) comply with more items than Spanish ones (44.5%), and alpine ski resorts (54.8%) more than nordic ski resorts (41.3%).

A principal component analysis was carried out on the 17 variables. The PCA detects the existence of correlations between variables and reduces the initial variables to four non-correlated factors with values superior to one (Table 11). The resulting four factors explain 66.6% of the variance of the original variables and are used to carry out a descending cluster analysis through the Howard-Harris algorithm.

The cluster analysis was segmented into 5 groups that explained 52.6% of the variance of the four factors (this implies 35% of the variance of the initial variables). The ANOVA table of differences between groups includes, apart from the four factors used in the analysis, the 17 original variables; this facilitates the interpretation of results (Table 12). The resulting groups divide ski resorts depending on the information provided, from more to less:

- Group 1 (29.3%). This is one of the groups where item compliance is greatest (59.1%). It meets a high number of items on the eMICA scale, although its level of compliance with level 3 of phase 2 is low. Many of the WCA items are complied with, although the level of certifications is lower than that of the sample's average (Table 12). French alpine ski resorts predominate in this group (Table 13).
- Group 2 (12.4%). Compliance levels are similar to those of group 1 (59.5%). Levels lower than the sample's average (Table 12) are only found in information about the surrounding areas (I.3), offers (I.4), and the availability of a range of languages on the website (C.3). Alpine ski resorts predominate and in particular those in Spain (Table 13).
- Group 3 (29.8%). The compliance level is slightly lower than the sample's average (49.6%). On average, they do not meet level 3 of phase 2 or phase 3 of the eMICA. Regarding the WCA, levels are below the sample's average in information, communication, and e-commerce (Table 12). This group consists of French ski resorts, many of them nordic (Table 13).
- Group 4 (13.3%). There is a low level of compliance with the items (39.6%). On average (Table 12), they only meet phase 1, and level 1 of phase 2 of the eMICA. Regarding the WCA, above-average compliance is found in information about the ski resort (I.1), its facilities and available services (I.2). This group is largely formed of Spanish resorts (Table 13).
- Group 5 (15.1%). This is the group with the fewest items (32.1%) and providing less information than the sample's average in all blocks analyzed (Table 12). On average, they offer 54% of the information provided by the resorts in groups 1 and 2. They only meet phase 1 of the eMICA, and this is the group with the greatest lack of information. French nordic resorts are predominant in this group (Table 13).

Table 11. Principal component analysis.

	Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Communalities**
eMICA					
eMICA1.1	−0.123	0.846	0.156	0.041	0.757
eMICA1.2	0.750	0.081	0.492	0.042	0.814
eMICA2.1	0.566	0.498	0.139	0.382	0.734
eMICA2.2	0.671	−0.103	0.372	0.379	0.743
eMICA2.3	0.429	0.122	0.569	0.442	0.719
eMICA3.1	0.306	−0.052	0.289	0.686	0.651
WCA					
WCA-I.1	0.491	0.598	0.378	0.332	0.852
WCA-I.2	0.082	0.600	−0.134	0.571	0.711
WCA-I.3	0.752	−0.203	−0.024	−0.112	0.619
WCA-I.4	0.733	0.137	0.114	0.112	0.582
WCA-C.1	0.538	0.122	0.040	0.356	0.432
WCA-C.2	−0.031	0.218	−0.004	0.740	0.596
WCA-C.3	0.695	0.064	0.157	0.182	0.544
WCA-CE	0.240	0.111	0.146	0.794	0.722
WCA-AF.1	0.431	−0.141	0.524	0.226	0.531
WCA-AF.2	0.077	0.231	0.717	−0.223	0.622
WCA-AF.3	0.089	0.076	0.769	0.279	0.683
Own Value	**4.007**	**1.934**	**2.434**	**2.937**	
Variance	**23.57%**	**11.38%**	**14.32%**	**17.28%**	

Source: Authors.

Table 12. Cluster analysis (ANOVA).

	Cluster 1 (29.33%)	Cluster 2 (12.44%)	Cluster 3 (29.78%)	Cluster 4 (13.33%)	Cluster 5 (15.11%)	Snedecor's F	*p* Value
Factors							
Factor 1	0.643	−0.760	0.596	−0.657	−1.217	76.030	0.000
Factor 2	−0.234	1.056	−0.118	1.106	−1.157	60.619	0.000
Factor 3	−0.220	1.188	0.300	−1.265	−0.026	41.474	0.000
Factor 4	0.942	0.785	−0.844	−0.447	−0.417	83.256	0.000
eMICA							
eMICA1.1	4.242	5.393	4.343	5.167	3.618	25.051	0.000
eMICA1.2	5.849	5.464	6.179	3.933	4.000	39.865	0.000
eMICA2.1	6.864	6.821	5.955	5.933	3.618	51.930	0.000
eMICA2.2	8.076	6.071	6.866	2.967	3.882	66.738	0.000
eMICA2.3	5.682	6.250	4.746	2.967	3.029	37.125	0.000
eMICA3.1	3.288	2.786	1.149	0.533	0.765	41.784	0.000
WCA							
WCA-I.1	11.394	12.571	10.687	9.633	7.471	50.205	0.000
WCA-I.2	3.591	4.893	1.672	3.633	0.794	61.445	0.000
WCA-I.3	1.909	0.786	1.970	0.900	0.853	37.699	0.000
WCA-I.4	1.591	1.214	1.493	0.933	0.618	22.257	0.000
WCA-C.1	3.091	2.286	2.194	1.733	1.500	19.605	0.000
WCA-C.2	3.182	3.357	1.910	2.400	1.941	26.812	0.000
WCA-C.3	0.955	0.679	0.851	0.500	0.235	25.229	0.000
WCA-EC	1.697	1.643	0.627	0.533	0.353	48.671	0.000
WCA-AF.1	1.000	0.964	0.985	0.333	0.706	41.313	0.000
WCA-AF.2	0.288	1.286	0.836	0.200	0.294	20.730	0.000
WCA-AF.3	1.167	1.750	1.060	0.500	0.941	31.543	0.000

Source: Authors.

Table 13. Cross-tabulation.

	Total		Country				Type			
			Spain (n = 52)		France (n = 173)		Alpine (n = 139)		Nordic (n = 86)	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Cluster 1	66	29.3%	3	5.8%	63	36.4%	60	43.2%	6	7.0%
Cluster 2	28	12.4%	18	34.6%	10	5.8%	28	20.1%	0	0.0%
Cluster 3	67	29.8%	0	0.0%	67	38.7%	31	22.3%	36	41.9%
Cluster 4	30	13.3%	24	46.2%	6	3.5%	12	8.6%	18	20.9%
Cluster 5	34	15.1%	7	13.5%	27	15.6%	8	5.8%	26	30.2%

Chi-squared (Country) = 114.414 (p = 0.000). Chi-squared (Type) = 74.959 (p = 0.000) Source: Authors.

The five groups show two profiles with the greatest content on their websites, although there are differences (groups 1 and 2), and a trend towards less content in groups 3, 4, and 5.

5. Discussion

This section aims to synthesize the results obtained by applying both web content analysis and the eMICA in the ski resorts. If we focus first on web content analysis, we can state that, as far as disseminating information is concerned, ski resorts meet the basic conditions for the client to be informed when choosing their snow tourism destination.

The results of the communication dimension show that the establishments make little use of those web 2.0 tools that an online presence offers to establish a dialogue with users. This dialogue would provide the ski resort with greater knowledge of its customer and, thus, improve the service offered.

Interaction is essential when talking about online presence. The ski resorts have much work to do before they can really take advantage of the possibilities offered by the Internet. It should, however, be noted that these companies do have a presence on social media, which acts as an element of communication. As mentioned above, French resorts are more active on social media, although Spanish resorts make more intensive use of other types of tools, such as blogs.

The analysis of the e-commerce section shows that there are low levels of implementation of online booking and payment mechanisms in this type of mountain sports facility, with the worst results being those of nordic ski resorts. These results are in line with those obtained in previous research on web content in ski resorts [20,53].

Among other aspects, the presence of quality certifications on the websites was analyzed. The results obtained were poor, with alpine ski resorts in both countries the only ones to provide evidence

of their Q certifications of tourist quality, or other similar certifications. If we observe studies applied to other sectors, such as restoration or the social economy, the results are similar [43,86].

The application of the eMICA shows us that ski resorts have not reached a high level of maturity in their e-commerce activities. As a result of the application of the two methods of web presence analysis, we note that the online presence of the vast majority Spanish and French ski resorts is at an intermediate stage of development, serving basically as a communication tool. The full range of online business possibilities is still undeveloped.

The information provided by nordic resorts is clearly inferior to that of alpine resorts. Furthermore, Spanish resorts provide less information than French ones.

Finally, it is worth mentioning that a minority of resorts are reporting information on environmental certifications and snowmaking

6. Conclusions, Limitations, and Future Lines of Research

6.1. Theoretical Implications

Climate change and the massive use of digital technology by consumers mean that the future of tourism in general, and snow and mountain tourism in particular, should be faced from new perspectives that focus on innovation and the harnessing of ICT, such as all facets of the Internet. This should not only be a channel for communication, but also for commercialization.

The results of this research show that ski resorts are well aware of the importance of an Internet presence since they all have websites. Nonetheless, the mere presence on the Internet is no longer enough. These organizations should move beyond a traditional presence, by favoring interaction and online collaboration, connectivity, and the chance for users to generate and share content and knowledge, using digital marketing techniques.

Ski resort websites, in general, show an average level of interactivity; this is in line with their role as leading tourist destinations. However, just a quarter of the websites analyzed permitted online purchases. How far resorts progress beyond this point depends on the use they make of their online presence, the understanding of the benefits provided by new technologies as they become available, the degree to which an organization innovates, adopts new technologies, and incorporates digital functionalities in the form of consumer comments and ratings, the implementation of blogs, presence on social media, and of, course, financial limitations.

The results of this research show that ski resorts in Spain and France are relatively advanced in their development and use of the Internet. We can, therefore, state that the resorts are making the most of the opportunities the Internet provides as a viable tool for the promotion of mountainous areas. Furthermore, the results provide additional proof of the usefulness of the stages method proposed by the eMICA in the development of commercial websites in the tourism sector, as well as the proposed model for web content analysis, based on the four dimensions of information; communication; e-commerce; and additional functions.

Tourist companies have been pioneers in the intensive use of ICT. Having said this, certain sectors still underuse the possibilities that digital resources offer [25,30]. If we focus on mountain tourism, the few studies carried out show that ski resort websites do not incorporate advanced functions that promote relations with their users; their websites are used for communication and do not take advantage of interactivity and individualized communication with the client [17,32]. The results of this study clearly show that the ski resorts analyzed fail to use the entire range of possibilities that the interactive nature of the Internet offers; this is further confirmation of the results of the few previous studies.

6.2. Managerial Implications

Regarding management implications, we recommend that managers pay more attention to the website, as this will improve consumer attitude; a good online presence will have a positive impact on

the organization's image. In order to do this, a series of guidelines should be followed when designing the ski resort's corporate website, and this should include a group of basic features connected to the four proposed dimensions; information; communication; e-commerce; and additional functions. An effective Internet presence will mean better results, whether in the number of visits, or the number of bookings made.

Above all, however, we recommend a much greater harnessing of the possibilities for interaction that digital technology offers. Enhancing e-commerce capabilities and fostering social media interaction are aspects of paramount importance in facing the threats of climate change. In particular, when climate change leads consumers to make last-minute purchasing decisions, greater e-commerce services (i.e., booking through the website) gain importance. Social media interaction also becomes vital essential in order to foster these last minute bookings.

Furthermore, interaction with clients can be used for the development of new products and services in value co-creation processes with the client. Creating superior value for customers should be the core purpose of any business organization. Traditionally, it was the seller who was systematically thinking of different ways of creating value for their customers. However, more recently, some authors [90–92], have emphasized that value can also emerge from the reciprocal interaction between sellers and buyers through a process of value co-creation; in this sense, one author claims that "value co-creation applies the initiatives of firms' innovation with the consumers, rather than for the consumers" [93] (p. 25).

In conclusion, ski resort managers have limited power to influence a slow-down in climate change but, through the redesigning of processes, they may involve their clients in the process of value creation, using the possibilities offered by digital technology. After all, as leading natural and landscape features, the mountains and ski resorts are ideal places for the development of leisure and tourist activities. If there is to be less snow in the future, managers (with the help of consumers) can try to reinvent tourism in mountainous areas, proposing new environmentally-sustainable recreational activities that can take place amid such privileged natural surroundings.

6.3. Limitations and Future Lines of Research

Regarding limitations, the main drawback of the eMICA is that it only measures the presence or absence of a service or application, but does not measure the ease with which a resource is found or the time needed to access it; that is, it does not actually assess the usability of the page itself. We could also add that, since the eMICA covers a process of gradual Internet adoption, one may find cases in which websites incorporate functionalities and elements from several of the model's stages and levels, thus making it hard at times to categorize the website analyzed. Regarding the Web Content Analysis, this research has analyzed the Internet presence of ski resorts through items obtained from examining published work, thus not considering factors such as the size of company, among others. The services of ski resort websites are in a process of constant change, which means that the results may vary depending on when the study is carried out. We would lastly like to restate that the study is of ski resorts in two specific geographical areas.

For future research, we would propose extending the study to other countries; this would provide more data and enable a wider comparison of the results. In addition, in order to produce more specific results, independent characteristics of the ski resorts, such as size, ownership, altitude, etc., could be considered. These variables could be used to check relationships with item availability. Another aspect worth studying is the availability of versions of websites suitable for mobile devices, specific ski resort apps, and their evaluation. Furthermore, personal interviews could be carried out with ski resort directors; these would firstly aim to establish which elements of a website should be assessed, and study why websites offer so little information and interactivity; secondly, they would aid in identifying the main barriers that hinder the mature use of the Internet and which may justify the scarce presence of ski resorts in the third phase of the eMICA. Future work should also focus on Internet reporting on various other sustainability issues such as actions to reduce greenhouse gas emissions, treatment of

soil and land use and biodiversity. These issues might be important for ski area choice for the so-called green consumers.

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