Facultad de Ciencias del Mar y Ambientales

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Spanish Title - Análisis del turismo costero español a nivel nacional, regional y local

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"Research is to see what others have seen and to think that no one has thought"

Albert Szent-Gyorgyi

"Tourism is much like the elephant: diverse and sometimes hard to describe, but, just like the elephant, too big to be ignored"

D. Tonazzini

CONTENT:

Abstract

Coastal tourism is a fast-growing economic driver worldwide. Spain is a bright example of a coastal country with a leading position in the global tourism market, especially with the 'sun and sea' product. Tourism plays a vital importance for Spain because it represents 14.2% of GDP (Gross Domestic Product) and 14.5% of national employment. However, for the last 69 years 'sun and sea' tourism acquired a mass character due to the fast-growing number of arriving tourists yearly. Moreover, the majority of coastal zones were heavily transformed for convenient urban and tourism services often without proper management and control. The aforementioned factors became a reason for various environmental, social, and economic issues, which compromise the potentially prosperous future for both coastal zones and their business activities.

To keep Spanish coastal tourism top ranked in the world is an essential task, which implies environmental preservation and provision of high-level services in the long term. Scientists in the field state that adoption of a sustainable management model and green practices will allow policymakers to alleviate the impact of climate change, protect fragile coastal zones, form an environmentally responsible society, and provide growing economic benefits and quality of life for seaside settlements. To design an adequate management model for the development of sustainable tourism, a diagnosis of current ecological, social and economic problems provoked by coastal tourism in the most demanded seaside destinations of Spain on national, regional and local levels has to be accomplished. Thus, a competitive assessment of the most visited Spanish seaside destination at the national and regional levels was performed to complete the main goal of this investigation.

Monitoring of issues connected with an adverse impact of coastal tourism at the local level was accomplished by questionnaires with beach-goers and restaurant holders as one of the main stakeholders of coastal tourism. This survey evaluated the awareness and attitude of the referred tourism stakeholders about sustainable development and their actions towards sustainable development and mitigation of the impact of climate change. The knowledge and attitude of people correlates with their impact, positive or negative, on the environment. Moreover, an understanding of public opinion and behaviour is an essential part of the creation of a harmonious and sustainable model of coastal tourism development.

The thesis results demonstrated that the most competitive destinations for coastal tourism are the regions of: The Canary Islands, Catalonia, Valencia, and Andalusia. Nevertheless, Catalonia, Valencia, and especially Andalusia are undergoing significant negative ecological episodes. The outcomes of questionnaires with restaurant directors demonstrated that the model of sustainable development and green practices was poorly adopted in the studied zones. Moreover, 85% of tourists who participated in the survey have a low or medium level of environmental consciousness, this in turn means that the majority of tourists, with high probability, do not behave in an environmentally friendly manner during vacations. Here, we can conclude that policymakers still have a colossal amount of work to design and adopt a proper management model of sustainable development involving all coastal stakeholders to reach sustainability and maintain the quality of coastal tourism in Spain during the long term.

Resumen

El turismo costero es un motor económico de rápido crecimiento en todo el mundo. España es un brillante ejemplo de país costero con una posición de liderazgo en el mercado turístico mundial, especialmente en el producto "sol y playa". El turismo tiene una importancia vital para España, ya que, representa el 14.2% del PIB (Producto Interior Bruto) y el 14.5% del empleo nacional (2019). Sin embargo, durante los últimos 69 años, el turismo de "sol y playa" ha adquirido un carácter masivo debido al rápido crecimiento del número de turistas que llegan anualmente. Además, la muchas de las zonas costeras se han transformado para crear infraestructuras urbanas y turísticas, a menudo sin un control de gestión adecuado. Los factores mencionados fueron la razón de problemas ambientales, sociales y económicos, que comprometen un futuro sostenible tanto para las zonas costeras como para sus actividades comerciales.

Mantener el turismo costero español en la primera posición mundial es una tarea esencial, que implica tanto la preservación del medio ambiente como la de servicios de alto nivel a largo plazo. Los científicos que trabajan en este sector, afirman que la adopción de un modelo de gestión sostenible y de prácticas ecológicas permitirá a los encargados formular políticas, mitigar el impacto del cambio climático, proteger las zonas costeras frágiles, formar una sociedad ambientalmente responsable y proporcionar beneficios económicos y una calidad de vida cada vez mayores a los asentamientos costeros. Para diseñar un modelo adecuado de gestión del desarrollo turístico sostenible, es preciso realizar un diagnóstico de los actuales problemas ecológicos, sociales y económicos que provoca el turismo costero en los destinos costeros más demandados de España a nivel nacional, regional y local. Así pues, se realizó una evaluación competitiva de los destinos costeros españoles más visitados a nivel internacional y nacional para completar el objetivo principal de esta investigación.

La vigilancia de las cuestiones relacionadas con los efectos adversos del turismo costero a nivel local se llevó a cabo mediante cuestionarios en los que los visitantes de la playa y los propietarios de restaurantes fueron los seleccionados para cumplimentarlos. Esta encuesta demostró la conciencia y la actitud de los referidos interesados en el turismo, sobre el desarrollo sostenible y sus acciones hacia el desarrollo sostenible y la mitigación de los efectos del cambio climático. El conocimiento y la actitud de las personas identifican su impacto positivo o negativo en el medio ambiente. Además, la comprensión de la opinión y el

comportamiento del público es una parte esencial de la creación de un modelo armonioso y sostenible de desarrollo del turismo costero.

Los resultados de la tesis demostraron que los destinos más competitivos del turismo costero son las regiones de las Islas Canarias, Cataluña, Valencia y Andalucía. Sin embargo, Cataluña, Valencia y, especialmente, Andalucía experimentan importantes problemas ecológicos. Los resultados de los cuestionarios con los directores de restaurantes demostraron que el modelo de desarrollo sostenible y prácticas ecológicas estaba mal adaptado en las zonas estudiadas. Además, el 85% de los turistas que participaron en la encuesta tienen un nivel bajo o medio de conciencia ambiental, lo que a su vez significa que, con alta probabilidad, la mayoría de los turistas no se comportan de forma respetuosa con el medio ambiente durante las vacaciones. Se puede concluir que los responsables de la formulación de políticas todavía tienen una cantidad enorme de trabajo para diseñar y adoptar un modelo adecuado de gestión del desarrollo sostenible en el que participen todos los interesados en el litoral para alcanzar la sostenibilidad y mantener el turismo costero de España a largo plazo.

Abbreviations and Acronyms

API: Accessibility Problem Index

BQI: Beach Quality Index

CA: Correspondence Analysis

CCI: Climate Change Impact

EA: Environmental Attitude

EC: Environmental Consciousness

EF: Environmentally-Friendly
EFB: Environmentally-Friendly
Behaviour

EP: Environmental Program/
Environmental Perception

EQ: Environmental Quality

ERB: Environmentally Responsible
Behaviour

EU: European Union

FRMs: Foreign Restaurant Managers

GDP: Gross Domestic Product

GRP: Gross Regional Product

LCA: Latent Class Analysis

LED: Light-Emitting Diode

LRMs: Local Restaurant Managers

MASEM: meta-analytic structural equation
modelling

PAPI: Paper and Pencil Interviewing

PBC: Perceived Behavioural Control

PEB: Pro-Environmental Behaviour

PIB: Producto Interior Bruto

PT: Persuasion Theory
SB: Sustainable Behaviour

SD: Sustainable Development

SEM: Structural Equation Model

SMEs: Small and Medium-Sized Enterprises

SPSS: Statistical Package for Social Science

TCI: Tourism Climate Index

TPB: Theory of Planned Behaviour

UNEP: United Nations Environmental
Programme

WTO: World Tourism Organization

WTP: Willingness to Pay Higher Price

Chapter I. Introduction

Chapter I – Introduction

1. Global tourism

International travel and tourism are one of the largest industries in the world. It has seen positive development at a relatively stable rate despite political conflicts, economic, and health crises for the past seven decades (UNWTO, 2015). This makes the tourism industry a global economic source for progress and innovation. The World Tourism Organization (WTO) divides global tourism into five main world tourism destinations, these are Europe, Asia & Pacific, The Americas, The Middle East, and Africa (Figure 1).
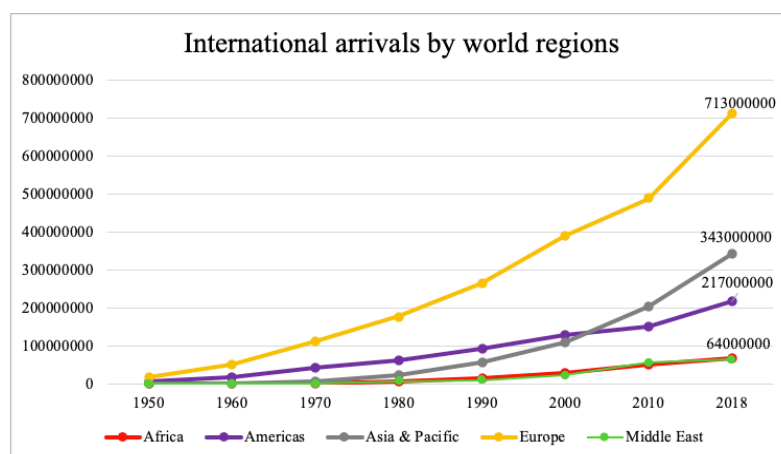
Figure 1 – International arrivals to the world destinations from 1950 till 2018 (website: Our world in data)

It is evident from figure 1 that the world tourism destination most in demand is Europe, followed by Asia & Pacific, The Americas, The Middle East, and Africa. Africa and The Middle East have had an almost equal number of tourists for the past 70 years. Here, it is important to highlight that tourism started its accelerated development period in the 50's after the Second World War and has been growing until now with only slowdowns in moments of economic, political, and health crises along with those following natural disasters. Moreover, a number of global economic recessions of the past seven decades took place (1975, 1982, 1991, and 2009). All of them affected tourism and almost stopped its turnover (Ayhan Kose et al., 2020). Unfortunately, political conflicts, terrorist attacks, and wars occur in different parts of the world very frequently and even in present times. The current pandemic of Covid-19 has

paralyzed the world economy, adversely affecting the life of international society in all aspects, and of course, suspending most of tourism and travel activities. The harshness of the present crisis is indicated by the extreme uncertainty of how or when it will end since at the moment the only implemented solutions are based on 'social distance' or 'social isolation'. The current circumstances make it difficult to elaborate on any plans or predictions about the future of the tourism industry. At the moment "How will the hospitality sector survive?", "If it pulls through in which form will it be?" are being asked. Experts in the field estimate that the European hospitality sector has lost more than 552 billion USD and that 10 million workers were at risk of job losses on 25 March 2020. It is obvious that these figures will keep increasing (Navarro Jurado et al., 2020).

Despite the current drastic crisis, previously, international tourist arrivals had increased by 5% and reached 1.4 billion in 2018 due to a stronger global economy, a well facilitated visa regime, the low-cost travels industry, technological progress, and an increasing middle-class share in developing economies. In the meantime, export revenues of the tourism industry made up 1.7 trillion USD in 2018 (WTO, 2019). Moreover, the fast-growing expansion of tourism services overtook such fundamental economic sectors as agriculture, fuels, chemicals, and automotive products combined. Business services related to tourism are the major drivers of job placement generation. In 2015, the employment rate of tourism equalled 70 million worldwide, meanwhile the forecast of "Economic Impact of Tourism" predicts that this figure will increase to 350 million jobs by 2025 (World Travel and Tourism Council, 2015).

The economic and social benefits of tourism stimulated various international communities to develop the tourism industry (Krannich & Petrzelka, 2003). Tourism adjustment creates significant implications for the local economy, society, and environment. This is particularly important when the emphasis is made only on economic growth without considering social well-being and environmental preservation. During the last 7 decades, the majority of international tourism development has prioritized economic growth (Sen, 1999). However, it was shown that economic development does not always bring absolute progress (Holden, 2008). Countries that prioritized tourism as a main economic driver are currently experience growing social problems and environmental decline (Matarrita-Cascante, 2010). Here, it is important to highlight that environmental decline is especially important for environmentally based tourism activities such as ecological tourism, 'sun and sea' tourism, wildlife tourism, and the visiting of natural parks. Since environmental deterioration jeopardizes the prosperous

future of the referred tourism activities and local settlements in the future (Tonazzini et al., 2019).

1.1 World beach destinations

Coastal and marine tourism has become one of the main economic drivers for littoral countries with mild seaside climates. The most eminent global 'sun and sea' resorts are located in the Mediterranean, the Caribbean, the North-East Atlantic, the South Pacific Ocean, and the Western Indian Ocean (Tonazzini et al., 2019). However, cruises, coastal resorts, and even ecotourism generate significant pressure on the environment and local society. Moreover, since the 19th-century coastal tourism acquired mass character with all-inclusive, low-cost resorts, and affordable transportation (Honey & Krantz, 2007). Consequently, the aforementioned beach destinations can be described as densely urbanized zones with hotels, restaurants, retail, and entertainment facilities. Over urbanization and overexploitation of the referred beach destinations of mass tourism brought substantial environmental, economic, and social issues that urgently need to be solved to ensure a prosperous future for coastal resorts.

The sustainable welfare of coastal and marine tourism strongly depends on the conservation of natural resources. However, 'sun and sea' tourism produces significant anthropogenic pressure due to poor management control; extensive water, energy, and food consumption; solid and liquid waste generation; and excessive shore-side urbanization. Consequently, mass coastal tourism leads to overexploitation of fragile seaside zones, environmental contamination, biodiversity loss, ecosystem degradation, overfishing, and other serious issues (UNWTO & UNEP, 2017). Moreover, other coastal stakeholders such as the maritime transport industry, oil, mining exploration, fishing among others create a serious anthropogenic impact on fragile coastal zones. In addition, seaside ecosystems are also affected by tourism seasonality. Oversaturation of popular coastal resorts during the summer season generates double anthropogenic pressure on vulnerable seaside areas (Corluka et al., 2016). The referred facts are the cause of litter, air contamination, soil loss, and degradation (e.g. desertification and salinification) in the coastal areas.

In addition to the impact tourism seasonality has on the environment of seaside zones, it also affects the socio-economic aspects of local communities (Corluka et al., 2016). The summer tourism season of the northern hemisphere (from June until September) produces a spike in

part-time employment within the local population and an oversaturation of public places. The majority of service businesses like restaurants, hotels, transportation, and retail operate only in the summertime. This affects the stability of the local population's employment and income. Moreover, the seasonal oversaturation of public and leisure services creates traffic congestion, parking problems, and noise pollution which often causes inconvenience for both local residents and tourists alike (Almeida-García et al., 2016). In addition, uptick in tourism induces an rise on the cost of living that complicates the life of locals employed in the service industry due to the relatively low wage prospects afforded. Furthermore, the revenue of tourism is not distributed equally among stakeholders. Big corporations benefit mostly via distributing their businesses locally (Honey & Krantz, 2007).

The aforementioned adverse impacts of coastal tourism are intensified by the threat of climate change. Consequently, coastal tourism requires the precise attention of policy makers at the destination to control environmental depletion, mitigate the impact of climate change, and satisfy the societal interests of the locals. Here, there appears an urgent necessity of new policy initiatives to provide a favourable future for both coastal tourism and local settlements (Tonazzini et al., 2019).

1.2 World coastal areas and the impact of climate change

Coastal areas represent a priceless treasure in the form of environmental, economic, and cultural values at a world scale. These are transitional areas between sea and land defined by high biodiversity and the most vulnerable ecosystems such as mangroves and coral reefs (WTO, 2014). At the same time, these territories are under high threat of anthropogenic impact and climate change (EEA, 2006). Access to the sea provides an opportunity for monetary benefits in economic spheres like navigation, coastal fisheries, tourism, and recreation, which culminates in human settlements being more often found in coastal zones than elsewhere. Currently, about 40% of the world's population lies within 100 km of a sea coast (IET, 2005). Annually increasing human encroachment on coasts and phenomena like climate change, coastal erosion, and flooding adversely influence the fragile seaside areas intensifying environmental problems each year (Marchand, 2010).

Currently and in the previous decades climate change, sea-level rise and coastal erosion has caused substantial economic loss, ecological damage, and social conflicts in coastal countries

worldwide (Roca et al., 2008; Marchand, 2010; Jiménez et al., 2012). The settlements and

stakeholders of coastal zones are affected by the direct and indirect impact of climate change, coastal erosion, and flooding. The adverse indirect impact damages is on households, roads, communications infrastructure, and relevant urban constructions. The direct impact substantiates in environmental degradation, sea-level rise, inundation, water contamination, and destruction of the coastal zones (Pendleton et al., 2011).

The average global sea-level rise was assessed as 195±20-mm between 1901 and 2010 with an average rate of 1.7±0.2-mm per year (IPCC, 2013). An estimation in rise during the past two decades, between 1993 and 2010, was an average rate of 3.2±0.4-mm per year. These figures are expected to rise throughout this century with respect to the reference period of 1986-2005. Thus, the projections of the average sea level increase range between 24-cm (scenario RCP2.6) and 30-cm (scenario RCP8.5) for the period 2046-2065, and between 40-cm (scenario RCP2.6) and 63-cm (scenario RCP8.5) for the period 2081-2100, with a likely range in the latter case up to 82-cm (IPCC, 2013). Currently, the urgent question is to assess the present and future impact of climate change, sea-level rise, and coastal erosion on coastal zones and to take mitigative actions to lessen the future risks of the stated factors (Zanuttigh et al., 2014).

Spain is a sound example among coastal countries, being surrounded almost entirely by the Mediterranean Sea and Atlantic Ocean. Here, one of the biggest environmental issues is coastal erosion due to anthropogenic intrusion and climate change. Whereas, Spanish coasts provide vital ecosystem services and represent a crucial social, economic, and environmental significance for the country (Brenner et al., 2010). The Spanish coastal zones are highly populated (one third of population lives in coastal municipalities) and host various business activities, where 'sun and sea' tourism is one of the biggest coastal stakeholders (Instituto Nacional de Estadística, 2014). Moreover, coastal tourism is highly susceptible to climate change impact and erosion, meanwhile, it is the main economic driver in coastal zones, especially Islands (The Canary and Balearic Islands).

1.3 Significance of coastal tourism for Spain

Tourism, in general, and 'sun and sea' product particularly are key economic drivers in Spain. The Spanish tourism industry represents 11.2% of the GDP and 15.1% of the total employment according to a 2016 estimation (FRONTUR, 2016). Spain took the top position

in Travel & Tourism Competitiveness Index 2017, 2018, and 2019 in the regional (Southern and Western Europe) and global ranking (Crotti & Misrahi, 2017; Calderwood & Soshkin, 2019). One of the main bases of tourism is the 'sun and sea' product, as 60% of international and domestic tourists travel to coastal areas of Spain to spend their vacations (New et al., 2002; Gomez-Martin, 2006).

Touristic trips in the Iberian Peninsula are distributed mainly among Andalusia, Comunidad Valenciana, and the Catalonia autonomous regions due to their mild sea weather conditions, transparent warm sea water, and the beach scenery is a primary attraction. The majority of foreign (55.3%) and domestic (45.6%) tourists choose Catalonia, Valencia, and Andalusia for their vacation destination (Esteban et al., 2005). The region of Andalusia is one of the most popular destinations among domestic and foreign tourists, where 80% of total tourism inbound chooses coastal resorts to spend their vacations (Garrido Cumbrera & López Lara, 2010). Moreover, tourism in Andalusia makes a input of 25% to GDP per year and represents 10% of regional employment (Martínez Bernal, 2017).

However, the European Commission considered the coastline of Andalusia, particularly the Gulf of Cadiz, as one of the most vulnerable zones to climate change, flooding, and erosion (European Commission, 2009b). Moreover, the Gulf of Cadiz is a mature beach destination, which takes the second place only to the province of Malaga among the coastal resorts in the Andalusian region (Instituto de Estadística y Cartografía de Andalucía, 2019). Thus, aside from the beneficial aspects of 'sun and sea' tourism, it is the cause of numerous environmental issues on the coast of Andalusia, especially throughout the Gulf of Cadiz, which are enhanced by the impact of climate change and anthropogenic intrusion (Garrido Cumbrera & López Lara, 2010). Undoubtedly, a survey is needed along the coast of Andalusian, especially the Gulf of Cadiz, related to mitigative actions to climate change, prevention of coastal erosion, and conservation of the 'sun and sea' product as one of the key economic drivers in the region.

1.4 Climate change impacts on Spanish coastal tourism and Andalusia

Besides increasing anthropogenic intrusion the current and most severe threat the for the Spanish coast is climate change. The adverse impacts of climate change on coastal zones are tourism displacement, inundation of low-lying coasts, alteration of coastal ecosystems, water scarcity, temperature increase, sea-level rise, beach destructions, and other relevant aftereffects.

Such cardinal changes may totally modify 'sun and sea' tourism activities in Spain (UNEP&UNWTO, 2008). According to the forecast of Hein et al. (2009), the number of foreign visitors to Spain will decrease by 5% to 14% in the next 50 years due to an increase in air temperature. Equally, an important fact to mention of the referred projection is that inbound tourism to north-western Spain might increase during summer seasons, while the total number of international summer travellers in the southern part might sharply decline. Consequently, the mentioned projections mirror the probable decrease of foreign inbound tourism in the Andalusia region.

A similar woeful forecast of the inflow of local tourists to 17 coastal provinces of Spain was made by Bujosa et al. (2015) for future summers. Bojusa et. al. (2015) predicted the highest number of local tourists loss among the south of Spain, especially for the province of Cadiz, because of climate change and a significant anticipated temperature increase during the summer season. Both investigations emphasized the need of taking mitigating actions against climate change to prevent future risks of losing coastal tourists, especially in the south of Spain.

Moreover, Fraile-Jurado et al. (2013) elaborated a projection about the inundation of coastal hotels alongside the Andalusia coast. This projection showed that the most affected areas might be along the Atlantic coast through 2100. Thus, the aforementioned studies state that climate change impacts may bring high economic, infrastructural, social, and environmental losses for both the Mediterranean and the Atlantic coasts of the Andalusian region. Another significant aspect that needs to be underlined is that the Andalusia region is the most affected and vulnerable region to erosion. Andalusia has 41% of its coast under threat of erosion, followed by Catalonia with 33% and Valencia with 26% (European Commission, 2009b).

1.5 Adoption to climate change impact in Spain and Andalusia

Climate change became a new reality, which is affecting world beach destinations, the environment, economic sectors, the life of different species, quality and lifestyle of people. There are clear shreds of evidence of these changes during the last decades showing us that climate change jeopardizes the future human well-being and can bring irreversible dramatic changes. Therefore, international scientists and policymakers worked out various strategies and adaptive actions to mitigate climate change impacts on coasts worldwide (Linham & Nicholls,

2012; Hinkel et al., 2013; Van Slobbe et al., 2013). Spain is among the top five countries in terms of coastal protection and climate adoption expenditure for the period 1998 - 2015 along the Atlantic Ocean (31%) and the Mediterranean Sea (35%) (European Commission, 2009a).

The first Spanish document designed for the adoption to climate change impact was "National Plan for Adaptation to the Climate Change" (El Plan Nacional de Adaptacíon al Cambio Climático) designed by the Ministry of Agriculture, Fish, Nutrition, and Environment in 2006 (OECC, 2006). The referred plan is followed by the next several updated additions which were issued in 2008, 2011, 2014, and 2020 (OECC, 2014; 2020). The National Plan includes projections of the climate change impacts on biodiversity, hydrological resources, coastal zones, tourism, mountain zones, and relevant important areas and economic sectors, as well as an evaluation of futures risks and schemes for adoption to these modifications.

Andalusia is one of the most vulnerable regions to climate change impacts and erosion in Spain. Andalusian Environmental Counselling designed "The Andalusian Action Plan for Climate and adoption programme" (el Plan Andaluz de Acción por el Clima y su Programa de Adaptación) (Consejería de Medio Ambiente, 2010). In the framework of this plan the project "Analysis of the Andalusian coasts' vulnerability before potential sea level rise" ("Análisis de la vulnerabilidad de la costa de Andalucía ante una potencial subida del nivel del mar") was completed. The project was performed by University of Sevilla to estimate the susceptibility of the Andalusian coast to sea level rise via using the indexes of vulnerability for physical, ecological and socio-economic components of the coast (Ojeda et al., 2009; Consejería de Medio Ambiente, 2011).

1.6 Adjustment to climate change by coastal tourism in Spain, Andalusia and the Gulf of Cadiz

Experts in the field stated that coastal tourism is one of the most exposed and vulnerable to climate change impact economic sector in Spain (OECC, 2020). To prevent social, economic, and environmental losses, it is an urgent question to prevent global warming and to take mitigative actions to climate change impact (OECC, 2020). Literature review of the latest international practices, policy frameworks, and scientific investigations in the field has proved that the only one instrument to provide a prosperous future for 'sun and sea' tourism is a sustainable development. The sustainable development of coastal tourism is the

implementation of environmentally friendly (EF) policy by the government, public and private sectors, tourists, and local citizens with an intention to minimize social and ecological impacts of 'sun and sea' tourism around vulnerable marine regions under threat of climate change impact (Tonazzini et al., 2019). United Nations General Assembly (1987) defined a general concept of sustainable development as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

According to UNWTO (2004) "Guidelines of sustainable tourism development and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability. Thus, sustainable tourism should:

- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.

- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.

- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

- Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus-building. Achieving sustainable tourism is a continuous process and it requires the constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary.

- Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them".

The adoptive actions to climate change impact in the frames of 'sun and sea' tourism need to be implemented on global, national, regional, and local levels. The Spanish government has elaborated a list of documents for the sustainable development of coastal tourism. On the national level, a "Strategy of sustainable tourism in Spain 2030" (Estrategia de Turismo Sostenible de España 2030) was worked out by the State Secretary of Tourism (Secretaría de Estado de Turismo, 2019). The main goal of the strategy is to turn a current management model of coastal tourism forward of sustainable development, which will allow policymakers to maintain a top leading position on the world scene, protect vulnerable natural sites, and increase economic benefits. The strategy is based on three pillars of socio-economic, environmental, and territorial sustainable development, which permits to resolve current problems and maintain tourism in the long term. Moreover, all Spanish regions, some provinces and municipalities have their own plans and strategies for sustainable development of coastal tourism.

For example, the Andalusia region and the Gulf of Cadiz, as mature beach resorts, have their own plans and strategies for sustainable development. Andalusia region has the General Plan of Sustainable Tourism of Andalusia, Horizon 2020 (El Plan General de Turismo Sostenible de Andalucía, Horizonte 2020) (Consejo de Turismo y Deporte, 2013). The plan has 11 main objectives, which focus is on the adoption of new technologies and innovations, supporting low carbon economy in all tourism sectors, adjustment to climate change impact and risks prevention, environmental protection and efficient usage of natural resources, promotion of sustainable transport usage, provision of stable work for locals, and increase environmental education of all tourism actors. Moreover, the Department of Development, Infrastructure, and Regional Planning developed a list of laws about sustainable development of Andalusian territories (Ley de Impulso para la Sostenibilidad del Territorio de Andalucía) such as urban, coastal, and rustic areas (Consejería de Fomento, Infraestructuras y Ordenación del Territorio, 2020). A priority of the mentioned law is the application of the principles of sustainability in territorial planning and urban activities. This will allow local authorities to develop Andalusian territories taking into account the environmental protection, and economic and social well-being of local settlements using natural resources rationally.

Some municipalities, which are included in the Gulf of Cadiz, have tourism plans and strategies elaborated by the local government of each municipality. The university of Cadiz developed a "Strategic plan of tourism for Cadiz municipality 2021-2025" (Universidad de Cádiz, 2020).

The main idea of the strategic plan is to convert the tourism of Cadiz municipality to intelligent sustainability, characterized by the integration of social, environmental, economic, and cultural tools by using innovative technologies and informative transparency of tourism management. A similar strategic plan of tourism was worked out for El Puerto Santa Maria (Álgida Soler Regli, 2017). Additionally, the environmental agency of local authority designed a plan of sustainable development for natural park Bahía of Cadiz (Plan de Desarrollo sostenible del Parque natural Bahia de Cádiz) (Consejería de Medio Ambiente, 2006). This plan includes 6 programmes of development such as improvement of the environmental conditions, conservation of cultural heritage, diversification of local productivity, qualification of human resources, refinement of infrastructure and equipment, the advancement of institutional management.

1.7 Role of coastal tourism companies and users to reach sustainable development

The tourism sector comprises a group of hospitality companies and services that interact with each other in complex and diversified networks (hotels, restaurants, transport companies, travel agencies, car renting, etc.). The referred companies consume a high quantity of energy and water resources and make significant pressure on the environment, especially in summertime. The consequences of tourism services pressure can be habitat deterioration, increasing use of non-renewable resources, scarcity of water sources, waste generation, increasing of CO_2 emissions, etc.) (OSE, 2010). Thus, the adoption of sustainable practices by the tourism companies will allow destination managers to reduce CO_2 emissions, adopt to climate change impact, protect vulnerable environment coastal sites, and to reach sustainability. The modern guidance of environmental policy is proposed via certain green practices adoption. These practices include (UNEP & UNWTO, 2008):

1) Transportation causes around 75% of CO_2 emissions generated by tourism. Technological improvements in transport vehicles, regulatory and market-based measures, as well as behaviour changes of travellers, have to be implemented to decrease the greenhouse emissions (UNEP & UNWTO, 2008).

2) Accommodation and restaurant establishments generate approximately 20% of CO_2 emissions. Using advanced green technologies and the best practices will allow reducing the emissions from the hospitality sector by 30-40%. Nowadays, many hotel

and restaurant chains or separate hospitality establishments are applying energy and water-saving programs or renewable energy sources. The energy management programs include the creation of climate funds, deployment of certification systems and eco-labels, and the promotion of international schemes, such as the International Hotels Environment Initiative (UNEP & UNWTO, 2008).

3) Tour operators and travel agencies may play a key role in the alleviation actions due to their capacity in influencing on the entire tourism supply chain, shape demand patterns, and developing of customer awareness about environmentally friendly behaviour (EFB), sustainable touristic destinations, and relevant actions related to sustainable development (UNEP & UNWTO, 2008).

Besides the adoption of green practices by the aforementioned tourism businesses, it is essential to teach tourists and local people as the main users of coastal tourism services to behave environmentally friendly in daily life and during their vacations. The environmentally responsible tourist ("green tourist") can be described as a person a with will to pay fees for carbon dioxide, chose more environmentally friendly mode of transport (railway transport, public transport, or bicycle), stay in environmentally responsible hotels, and use services which are based on the principle of ecological sustainability (European Commission, 2003). Juvan and Dolnicar (2016) defined "green tourist" as "a tourist who advocates the principle of sustainable development and who is concerned about the sustainability and economic benefits for the local population of the tourist destination".

For local citizens, tourism development may produce positive and negative impacts (Ko & Stewart, 2002; Lankford & Howard, 1994). The positive sides include new opportunities for workplaces, enhance of local business networks, increasing life quality, and protecting environmental and historical monuments (Andereck & Nyaupane, 2011; Andereck et al., 2005). The negative sides encompass the seasonality effect of the tourism industry on social, economic, and environmental spheres of the local communities. During the high tourism season public and leisure places become saturated, traffic congestion and parking problems occur, which often cause inconvenience for the local residents (Lindberg & Johnson, 1997; Sheldon & Abenoja, 2001). Environmental damage, significant increases in waste, and pollution can also take place (Andereck et al., 2005).

The aforementioned seasonality effects can be the cause of the negative attitude of the local population towards tourism development, which in turn can hamper the sustainability of coastal tourism development (Diedrich & García, 2009; Harrill, 2004). Local people's hospitality might be a factor for restraining or attracting tourists (Gursoy et al., 2002; Yoon et al., 1999).

Certain studies highlight the importance to involve the local community in the planning process of tourism development (Liu et al., 1987). Collaboration with residents will help to have feedback about their needs and expectations. Moreover, cooperation with local people will allow coastal managers to involve them in environmentally-friendly behaviour such as saving water and energy resources, recycling, and using renewable energy sources (Marien & Pizan, 2005). The mentioned cooperation will allow minimizing the negative attitude of local residents toward tourism development, to behave sustainably, and to maximize the benefits derived from the tourism business (Prayag et al., 2013; Stylidis et al., 2014).

In 1999, WTO presented a working plan "Tourism Agenda 21" and the Code of Ethics in the global aspect for responsible and sustainable development of the tourism sector (Simpson et al., 2008). The above-mentioned documents include nine articles defining essential regulations for governments, touristic operators, developers, travel agents, workers as well as local communities and tourists to achieve the main goals of sustainable tourism development. In this context, it was noticed that tourism can effectively contribute to sustainable development when "... It operates within the natural capacity for regeneration and future productivity of natural resources; recognizes the contribution that people and communities, customs and lifestyles, make to the tourism experience; acknowledges that these people should have an equal share in economic life, tourism benefits, and is guided by the wishes of local population and communities in the host areas" (Simpson et al., 2008).

Pursuant to the information described above we can conclude that the behaviour and attitude of human beings as consumers of the 'sun and sea' product identify their influence on the environmental conditions of coastal areas (López-Sánchez & Pulido-Fernández, 2016). Where, the implementation of green practices and sustainable development on the local level depends on local authorities, policymakers, local citizens, tourists (foreign, domestic), and the most relevant touristic organizations like accommodation establishments (hotels, hostels, etc.), and food services institutions (restaurants and cafes).

To work out an adequate environmental policy for sustainable development of coastal tourism in Spain, it is essential to evaluate the present conditions of 'sun and sea' tourism on national, regional, and local levels. Moreover, the green policy has to be applied urgently in the most vulnerable areas to climate change impact to prevent social, ecological, and economic losses in the nearest future. The aforementioned projections and scientists in the field debated that the Gulf of Cadiz is one of the most susceptible littorals both to climate change impact and erosion, besides intensive anthropogenic intrusion (Benavente et al., 2015; Del Río et al., 2015). Thus, within the framework of the present thesis, the analysis of coastal tourism at national, regional, and local levels was completed by the following steps:

- Diagnosis of problems provoked by coastal tourism in the most demanded beach destinations of Spain on national and regional levels.

- Evaluation of sustainable model and green practices adoption by restaurant managers in the Gulf of Cádiz.

- Estimation of a level of environmentally friendly behaviour implementation by tourists in the Gulf of Cadiz.

2. Methodology

The thesis methodology contains the best techniques to provide comprehensive scientific analysis of Spanish coastal tourism on national, regional, and local levels. To supply an analysis of 'sun and sea' tourism on the national and regional levels a competitive assessment of the most popular beach destinations was completed using an indicator approach. Moreover, the benchmarking method was used to identify the competitive positions of mature coastal tourism destinations relative to each other on the national level. The evaluation of coastal tourism at the local level was made by means of questionnaires addressed to the main groups of coastal tourism stakeholders (restaurant directors, tourists, and local citizens). The obtained data was coded and statistically examined via the Statistical Package for Social Science (IBM SPSS® software, version 23).

2.1 The methods of competitiveness and benchmarking

The methods of competitiveness and benchmarking were applied to analyse the most demanded Spanish beach destinations on national and regional levels. The methods of competitiveness are recognized as effective tools in modern investigations due to the capacity to provide a deep analysis of economic, social, and environmental conditions of areas on study and to identify which tourist destination better performs tourism activities. Ritchie and Crouch (2003) highlighted that 'the nature of competitiveness and sustainability is in constant evolution'. Classic models of destination competitiveness include steps like the election of an appropriate set of indicators, and practical implementation (Croes & Kubickova, 2013). The selected indicators set consists of nine core indicators, namely 'transport accessibility, 'degree of climate comfortability', 'recreational potential', 'infrastructure convenience', 'labour resource potential', 'tourist inflow' 'average daily cost of tourist services', 'economic data', and 'ecological conditions' (Dupeyras & MacCallum, 2013). The method of scoring, the method of primary data, and the method of expert judgment were applied to assess socio-economic and physico-geographical indicators. These methods were used due to the different formats of indicator's information. The complexity of the indicators approach lies in the aggregation of diverse information into a unique approach.

Additionally, the different geographical regions were benchmarked relative to each other. Benchmarking is a method driving towards stronger destination competitiveness (Kozak, 2004). Generally, benchmarking is searching for the best practices and adopting them to reach the highest quality of products and services. Spanish coastal tourism takes top position in the world, and consequently, it is adequate to benchmark the most demanded beach destinations relative to each other. Thus, the present study measures the competitiveness of the most popular Spanish beach destinations using core indicators, and then it benchmarks their performance relative to each other.

2.2. Analysis of sustainable practices adoption by coastal tourism stakeholders in the Gulf of Cadiz

2.2.1 Beach poll

A questionnaire was employed for data collection in studied beaches. The questionnaire was designed based on the methodological explanations of Mathers et al. (2007). The main

purposes of the survey were: 1) to assess the level of understanding and perception about coastal problems and sustainable development by local citizens, and 2) to estimate if they accomplish actions to mitigate climate change impacts.

The poll was completed on four beaches of the province of Cadiz from June until September 2018. The studied beaches are La Victoria (Cadiz municipality), Fuentebravia and Levante (El Puerto Santa Maria municipality), and La Barrosa (Chiclana de la Frontera municipality) (Figure 2). On the beaches, the survey was directed to local citizens. Officially a citizen is defined as a person who has political membership or a nation, with the rights and responsibilities to a community. Therefore, people permanently living in Cadiz province were recognized as the local citizens.

Figure 2 - Map and photos of the studied beaches: 1) Fuentebravia, 2) Levante, 3) La Victoria, and 4) La Barrosa beaches (Guía de playas, 2018)

A cross-sectional survey was applied to provide a snapshot of the beach visitors' origin, background, perception, knowledge, behaviour, and attitude relative to the sustainable development of tourism in the studied areas. The cross-sectional survey results in a descriptive or exploratory character that depicts the behaviour or attitude of people at a particular time and place, which in its turn is the most suitable approach for the current investigation (Mathers et al., 2007).

A systematic random selection of respondents was conducted by the zigzagging pathway alongside each beach covering both dry and intertidal areas. It allowed us to embrace all types of beach visitors with an equal chance to be selected for an interview (Mathers et al., 2007). The researcher approached to the beach users, introduced herself and the purpose of the investigation every 30 meters. Further, the beachgoers were asked to participate

in the survey. In case the beach visitors responded positively, the researcher had to define if it was a tourist or a local resident, thereafter a self-completion questionnaire was given with instructions. This paper-based questionnaire is called Paper and Pencil Interviewing (PAPI) (Statistics Canada's National Contact Centre, 2003). If respondents agreed to complete it by themselves the questionnaire was recovered within 10-15 min with clarifying doubts and questions. In case the beachgoers did not have the capacity to do it by themselves then a verbal interview was offered as an alternative and the researcher filled up the questionnaires on their behalf. The interview took 15-30 min per person and included people with impaired vision or occupied with children.

Table 1 – The total number of samples collected during the field work in the four beaches

Name of the beach	Number of questionnaires with local citizens	Number of rejections
La Victoria	202	138
Levante	203	99
Fuentebravia	201	89
La Barrosa	202	131
Total amount	808	457

2.2.2 Poll with restaurant directors

The questionnaires in restaurants were completed by a typical case sampling methodology (Statistics Canada's National Contact Centre, 2003). The above-mentioned approach is applied in case of limited time and resources. In this case, a researcher selects a particular group of restaurants to investigate. The poll in restaurants was completed predominantly in the morning time from Monday to Friday when managers of these establishments were in their working places.

Various restaurants, cafes, taverns, and bars are located around the studied areas of La Victoria and La Barrosa beaches. Due to the research time limitation, only restaurants were chosen as the survey objects. Restoration is an activity dedicated to the preparation and serving of food and beverages. Restaurant services are a sub-sector of the Hospitality industry (García González, 2017). Official Spanish system categorizes restaurants by a number of forks from 1 to 5 depending on services quality, gastronomic offers, the form of payment, and other conditions. Thus, the restaurants with five forks are considered as luxury establishments, whereas establishments with one fork have the lowest category.

Available data about the restaurants in Cadiz and Chiclana de la Frontera municipalities provide the information only about the total number of restaurants and their categories without their names and addresses (Instituto de Estadística y Cartografía de Andalucia website). Thus, google maps data was taken as the main source of the restaurants' location in the studied areas. Initially, directors of restaurants were asked to complete the questionnaires. In case a director was occupied or out, the questionnaires were handed out to the manager in charge to complete it out. In some cases, the questionnaires were left and collected the next day. The most awkward and frequently repeated situation was when the restaurant staff was not aware of the schedule of their managers to reach them. When this situation repeated 3-4 times during different visits to the researcher about the absence of information about their manager, it was considered as an indirect rejection to participate in the research.

Levante and Fuentebravia beaches do not have restaurants. Thus, the restaurant survey had been conducted only around the beaches of La Victoria and La Barrosa. The total number of restaurants were 68, but only 36 directors accepted participation in the poll.

Table 2 - Total number of the completed questionnaires in the restaurants around La Victoria and La Barossa beaches

	Number of completed questionnaires	Number of rejections	Total number	Closed restaurants	Total sum
La Victoria	17	17	34	2	36
La Barrosa	17	8	25	5	30
Total	34	25	59	7	66

2.2.3 Statistical methodologies

The obtained data were coded and analyzed by the Statistical Package for Social Science (IBM SPSS$^{®}$ software, version 23) and the *R* statistical computing program (Linzer and Lewis, 2011). The following statistical approaches were applied:

- Contrast of Hypotheses;
- Multivariate Analysis,
- Latent class analysis (LCA).

Contrast of Hypotheses

Chi-square test of independence was chosen to explore dependencies among categorical variables (Franke et al., 2011). This approach examines the dependence or independence of variables by two-hypotheses: a 'null hypothesis' (H_0) and an 'alternative hypothesis'(H_1) testing. The null hypothesis is usually set up forward to be discredited and demonstrates independence among two considered categorical variables. The alternative hypothesis confirms the dependence of the studied variables. The chi-square gives a measure of the difference in frequency y distribution between the sample value and the theoretical value.

The statistical significance of the variables in the present study is calculated by the contrasts of hypotheses. The calculations were verified by *p-value*, *power*, and contingency coefficients. The contingency coefficient is the indicator quantifying the level of dependency between the two variables in the range from 0 to 1, being the largest dependence 1.

Multivariate analysis

Correspondence Analysis (CA) was applied to identify the relationship of dependence between the levels of two categorical variables (Greenacre, 2008). CA condenses the total information depicted in the table of contingency in a set of points represented by rows and columns in a table. Generally, the referred information is represented in a subspace of reduced dimension called the factorial plane of correspondence analysis (usually a 2D diagram is derived). The proximity between the projected categories of both variables is a very intuitive way to reflect their dependencies between levels.

Latent class analysis (LCA)

Latent class analysis (*LCA*) is a statistical instrument to examine multivariate categorical data. This analysis is frequently employed when the obtained data take the form of a series of categorical answers like in the case of a public opinion survey, consumer behaviour, and decision making. Scholars are often interested to explore sources of confounding among observed variables, to determine and characterise clusters of analogous cases. *LCA* is a valuable technique to reach the aforementioned goals. The latent class model searches to stratify the cross-classification table of observed (or, "*manifest*") variables $Y_1, Y_2, ..Y_k$ by an unobserved ("*latent*") categorical variable X, with levels *1, 2,...,C.* that excludes all confounding among observed variables.

3. Scope and Justification

Coastal tourism plays a crucial role in Spain, because it is the most popular tourism activity, which creates a solid input into national GDP and generates work places. 'Sun and sea' tourism is the main economic driver in the coastal provinces and the Islands, meanwhile, the territory of the whole country is surrounded by the Mediterranean sea and the Atlantic ocean. Spanish coastal areas are overloaded by various business activities, and densely populated due to their richness with different resources. Meanwhile, coastal tourism is one of the biggest stakeholders, which creates a significant anthropogenic impact. The referred facts became the reason for overexploitation, extensive urbanization, ecological decline of fragile coastal areas. Besides intensive anthropogenic intrusion, there is a high threat of climate change impact and coastal erosion. Scientists in the field state that the adoption of a sustainable model of tourism management will allow destination managers to prevent future socio-economic and environmental losses, and will mitigate climate change impacts.

Government institutions need to adopt a modern management model of sustainable development involving tourism services and tourism users. The main tourism services include accommodation (hotel, hostel, apartments); food preparation (restaurants, cafes, taverns etc.); air, water, and road transportation. To implement the environmental policy it is essential to analyse the current conditions of coastal tourism and to evaluate the level of sustainable knowledge and the adoption of green practices by the aforementioned tourism services and users.

Consequently, the first part of the research was devoted to the physical-geographical and socio-economic diagnosis of the most popular beach destinations at national and regional levels. This research allowed destination managers to see a level of climate comfortability; conveniences of transport accessibility by air, road, and water; recreational potential; infrastructure convenience; the amount of inbound tourism; labour resources potential; economic benefits; and ecological conditions of the most demanded Spanish seaside regions (Andalusia, Murcia, Valencia, Catalonia, Balearic Islands, and the Canary Islands) and their coastal provinces. Additionally, this investigation demonstrated a competitive analysis of the studied regions and benchmarking of them relative to each other.

The investigation of coastal tourism at national and regional levels demonstrated that Andalusia is a mature beach destination with more ecological problems compared to the other studied regions. Moreover, previous studies state that the coast of the Gulf of Cadiz is a popular tourism destination, which is very exposed to climate change impacts. Thus, the questionnaires were completed by restaurant directors and tourists in the four studied beaches were addressed to evaluate the level of their knowledge about sustainable development and green practices adoption. The results demonstrated that the majority of restaurant directors have not adopted the model of sustainable development. Meanwhile, the majority of coastal tourists have insufficient knowledge to behave environmentally friendly during their vacations.

Here, we can conclude that coastal restaurants and beach tourists in the studied regions have only basic knowledge of sustainable development and almost do not complete green practices forward sustainable development. Destination managers need to design a management model of sustainable development considering the current level of knowledge and the behaviour of the coastal tourism services and users. Moreover, it is essential to involve all coastal tourism stakeholders

Maintaining an ecological and economic balance in Spanish coastal zones is extremely important to maintain the coastal tourism in the long term. Adoption of a sustainable management model by all coastal stakeholders will allow policymakers to avoid the jeopardous consequences of climate change impacts, prevent environmental decline, and increase economic benefits.

4. Hypothesis and objectives

General hypothesis of the thesis:

Climate change impacts, including sea-level rise, and intensive anthropogenic intrusion compromise prosperous future of Spanish 'sun and sea' tourism in the next decades. Design and adoption of a sustainable model of tourism development is a question of an urgent need to prevent economic, social, and environmental losses in the future. To design an adequate management model of environmentally-friendly development it is essential to analyze the current conditions of the most demanded coastal destinations. Moreover, the management model of sustainable development has to be designed taking into account a current

environmental knowledge and a level of green practices adoption by the main group of coastal tourism stakeholders such as coastal hospitality services (hotels, restaurants), and beach goers (tourists and local citizens).

I. The most popular Spanish beach destinations experience more ecological problems because of mass tourism and over exploration.

II. Coastal restaurants are poorly adopted to a management model of sustainable development and green practices.

III. Beach goers do not have sufficient environmental knowledge to behave sustainably during their vacations.

General Objective:

The general objective of the thesis is to analyse Spanish coastal tourism at national, regional, and local levels, and to identify the most urgent issues to be resolved by policymakers to reach sustainable development. The general objective is divided into two main sub-objectives. The first sub-objective is dedicated to the diagnosis of the current problems in the most demanded Spanish seaside destinations, caused by intensive development of coastal tourism on regional and national levels. The second sub-objective is to analyse the level of green practices adoption, and the level of environmental knowledge by restaurant managers, and beach tourists at the local level.

Specific Objectives:

1. Evaluation of problems in the most visited Spanish seaside areas, provoked by coastal tourism on national level:

- To investigate the most visited coastal destinations of Spain and identify their main problems;
- To assess the coastal tourism potential in the most demanded seaside destinations of Spain;
- To characterize strengths and weaknesses of the most visited Spanish destinations affected by 'sun and sea' tourism;
- To complete a competitive analysis of the most demanded coastal destinations of Spain assessing the ecology-economic balance;

- To perform benchmarking of the studied beach destinations relatively to each other

2. Evaluation of sustainable practices adoption by restaurant managers, local citizens and beach tourists in the Gulf of Cadiz:

- To design questionnaires for the main group of coastal tourism users like local citizens, beach tourists, and seaside restaurants;
- To examine knowledge and perception of the main group of coastal users about a concept of sustainable development, beach erosion, environmentally friendly behaviour, impact of climate change in four beaches in the Gulf of Cadiz in the high summer season 2018;
- Statistically process the obtained data;
- To design recommendations to involve beach tourists, and restaurant directors into the process of sustainable development

5. Thesis structure:

The first chapter is the introduction of the thesis. It contains general information about global tourism, the main world beach destinations, climate change impacts on tourism, significance of coastal tourism for Spain, adoption of climate change impacts in Spain and Andalusia, and by the main group of coastal tourism stakeholders. Moreover, the introduction includes a description of the applied methodologies, thesis hypotheses, and objectives.

The second chapter is devoted to the analysis of the most popular beach destinations in Spain at regional and national levels. This chapter is based on the article entitled "Analysis and comparison of tourism competitiveness in Spanish coastal areas". The chapter contains an introduction, description of study areas, literature review, methodology, calculations, results, discussion, and conclusions.

The third chapter consists of evaluation of coastal tourism at the local level in the Gulf of Cadiz. This chapter begins with introduction about tourism in the Gulf of Cadiz, erosion problems and climate change impact. Then there is description of the study areas where the polls were carried out during the high summer season. In addition, there are two sub chapters. First sub-

chapter is about analysis of sustainable model adoption by restaurant directors, which is based on the article "Sustainable Development of Coastal Food Services". The second sub-chapter contains an evaluation of the level of sustainable behaviour by beach goers. This sub-chapter is derived from the article "Environmental consciousness of Beach Tourists".

The three thesis chapters are followed by a joint discussion of the obtained results combined with antecedent researches in the field, and future perspectives of the investigation. The conclusions are presented in the last section. The last section is followed by annexes of questionnaires, certificates of participation in conferences, and the certificate of internship in the University of Aveiro, MACOMA passport of research mobility, Europass CV.

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Chapter II – Analysis of Spanish coastal tourism on regional and national levels

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1. Introduction

Spain is one of the leading countries in the tourism industry. Tourism is vital to Spain because the total contribution of Travel & Tourism industry to GDP was 158.9bn Euro in 2016. The forecast shows a 15.0% rise of GDP by 2027. In addition, the Travel & Tourism sector provided 2,652,500 jobs, which represents 14.5% of national recruitment. The referred number is expected to rise by 0.9% to 2,981,000 jobs by 2027 (World Travel & Tourism Council, 2017). Moreover, it is the third most visited country in the world, with approximately 60.6 million visitors per year (Crotti & Misrahi, 2017).

Spanish tourism is mainly based on leisure and holiday activity called ´sun and sea´ product. In 2016, the majority of tourists both domestic (63.7%) and international (87.3%) chose beach destinations to spend their vacations (Plumed Lasarte et al., 2018). Thus, the highest tourist focus is among the coastal zones of Spain.

According to historical statistics and forecasts of the report 'Travel & Tourism, Economic impact 2017', Spain's tourist inflow will increase up to 111 million people by 2027 (World Travel & Tourism Council, 2017). Annually increasing human pressures on the fragile marine and coastal ecosystems compromise favourable future development for both coastal tourism and littoral settlements in the long term.

The current severe threat for the Spanish coast is climate change impact besides enhancing anthropogenic intrusion. Adverse consequences of climate change impacts on coastal zones can be implemented by changing tourism location geographically, inundation of low-lying coasts, temperature and sea-level rise (Hein et al., 2009). Such cardinal changes may totally modify 'sun and sea' tourism activities in Spain. According to the forecast of Hein et al. (2009) made by Tourism Climate Index (TCI) over the next 50 years the number of foreign visitors in Spain will decrease between 5% and 14% due to air temperature increase. Moreover, the projection of TCI demonstrated that inbound tourism to north-western Spain might increase during summer seasons, meanwhile, the total number of international travellers to the southern

part might sharply decline. Furthermore, the Spanish coast is highly susceptible to flooding and erosion. The European Commission (2009) estimated that the coastlines of Andalusia, Catalonia, and Valencia are mostly affected by erosion.

'Sun and sea' tourism is one of the coastal stakeholders, which creates significant anthropogenic impacts on seaside zones. Undoubtedly, a survey is needed in the most popular beach destinations related to mitigation actions to climate change impact, coastal erosion, and maintenance of 'sun and sea' product as one of the key economic drivers in Spain. Consequently, here occurs the first research question such as: which coastal regions are more popular and more competitive? The coastal resorts are not equally developed along the Spanish coast. They are divided into more visited and less popular seaside destinations. As a rule, the most visited beach destinations experience stronger anthropogenic pressures, especially during summer seasons. Here occurs the second exploratory question: which management tools have to be applied in the most competitive beach destinations to prevent environmental depletion, provide well-being of local citizens and increase economic benefits?

The aforementioned environmental issues, social and economic significance of seaside tourism require continuous monitoring of socio-economic and ecological conditions of beach destinations to assure a prosperous future of 'sun and sea' product in Spain. The permanent monitoring will allow destination managers to timely and properly reorient policy actions, prevent environmental decline and to meet dynamic changes of the high-level tourism standards in the worldwide scene. Thus, the main objective of this scientific study is to analyse the most demanded coastal destinations of Spain, to compare their competitiveness in relation to each other and find benchmarking sites in studied regions.

2. Study area

Pursuant to statistical data, the most visited Spanish coastal regions and their provinces are engaged in the present investigation (Plumed Lasarte et al., 2018). Thus, selected areas include: Andalusia (Huelva, Cadiz, Malaga, Granada, and Almeria provinces); Murcia; Valencia (Alicante, Valencia, and Castellon provinces); Catalonia (Tarragona, Barcelona, and Girona provinces); the Canary Islands (Las Palmas and Santa Cruz de Tenerife provinces); the Balearic Islands (Mallorca, Menorca, and Ibiza-Formentera Islands) (Figure 1).

The largest touristic centres along the Spanish coasts are located in Barcelona and Tarragona provinces of Catalonia region (Costa Dorada); Alicante province of Valencia region (Costa Blanca); Murcia region (Costa Cálida); Malaga province of Andalusia region (Costa del Sol); the Canary and Balearic Islands (Barragán, 2004).

Figure 1. The map with the signed and highlighted studied seaside areas

(Source: author's elaboration)

Geographical characteristics of the seaside areas of study are shown in table 1. The largest coastal region is Andalusia with the longest coastline (not including the Islands) followed by Catalonia, Valencia and Murcia. Whereas, Catalonia has the highest tourists' density per km² of the coast, and Murcia has the lowest one.

Table 1. Description of the regions under study

Coastal regions of Spain	The surface area (km²)	Coastline (km)	Tourists per km of the coast
Andalusia	87,268	917	8,344
Catalonia	31,930	597	19,696
Valencia	23,305	474	10,393
Murcia	11,369	274	2,939
Canary Islands	7,273	1,545	6,436
Balearic Islands	5,014	1,342	7,072
Spain	504,781	7,883	9,147

(Adopted from: Barragán, 2004)

3 Literature background

3.1 The concept of competitiveness

The concept of competitiveness takes central attention in investigations of different industries due to economic benefits of the most competitive businesses. Specialists in the field working on the definition and description of the concept of competitiveness, however, there is still no unique definition or approach to estimate it (Medina-Muñoz et al., 2013). Ritchie and Crouch

(1999) argued that the problem in the definition of competitiveness arises because this concept is comparative (competitive to what?) and multidimensional (includes many different parameters).

Tourism competitiveness is a powerful economic source for many countries and regions (Kayar & Kozak, 2010). A specific task of tourism areas is to consistently attract a tourist inflow, whilst coping with capacity problems, especially in fragile coastal zones. The global tourism market demonstrates that the success of a tourist destination is defined by its competitiveness (Enright & Newton, 2004). Meanwhile, tourism destinations can be defined as a product of local goods, services and experiences for tourists (Perna et al., 2018).

Competitiveness of tourist destinations is intensified due to the intention to increase tourist inflow annually. Due to these circumstances, analysis of competitiveness level among competitors is in high demand to see which tourist destination better performs tourism activities (Croes & Kubickova, 2013). In 2003, Ritchie and Crouch gave a definition of destination competitiveness as the "ability to increase tourism expenditure, to increasingly attract visitors while providing them with satisfying, memorable experiences, and to do so in a profitable way, while enhancing the well-being of destination residents and preserving the natural capital of the destination for future generations".

Improving the competitiveness of tourist destinations increases the competitive position of a country (Krstić et al., 2014). Consequently, it is advantageous to enhance the competitive position of tourist destinations. Ritchie and Crouch (2003) highlighted that 'nature of competitiveness and sustainability is in constant evolution'. Furthermore, 'there is an urgent need for sustainable competitiveness. The consideration of the internal public in tourism destination development and marketing leads to the preservation of the natural environment and the cultural identity of the destination' (Vodeb, 2012). Development of sustainable competitiveness is especially important in coastal destinations due to increasing ecological issues, erosion, climate change impact, and anthropogenic intrusion (Pintassilgo et al., 2016).

To augment competitive positions, experts in the field are estimating what kind of experience tourists search for and which factors are the most important for tourists worldwide. Enright and Newton (2004) declared that the most competitive destinations identify modern world trends and adopt them. Other authors stated that the most important in successful tourism

competitiveness is proper management, creativity, and maintenance of competitive positions (Bornhorst et al., 2010). At the same time, it is crucial to provide high quality and diverse services because tourists have substantial experience and implicitly make comparisons with visited tourism places (Kozak & Rimmington, 1999).

The most recent researchers discussed that the competition between tourist destinations can be enhanced via technology-based mediators such as the Internet, mobile phones, digital cameras, or the creation of smart cities (Tussyadiah & Fesenmaier, 2009; Boes et al., 2016). Modern marketing of tourist destinations is widely formed by videos, images, podcasts, blogs and other communication technologies. Thus, the globalized media representation of tourism resorts allows people to obtain immediate, mental, and emotional experiences and stimulate them to choose a vacation place by received virtual images (Tussyadiah & Fesenmaier, 2009). Meanwhile, smart cities or smart destinations provide improved tourists experience and life quality of local communities via an adoption of technological innovations, and coherent work of all tourism stakeholders (Boes et al., 2016).

Competitiveness is challenging for management in the tourism industry and strongly depends on many factors and various stakeholders involved in organization of tourism services (Ayikoru, 2015). Consequently, measuring tourism destination competitiveness is a complex task, which requires a model adoption accordingly to specific targets of each investigation (Chien-Minn et al., 2016). In the last two decades, scientists in the field designed various interpretations, models, and methodologies to evaluate tourist destination competitiveness (e.g. Kozak & Rimmington,1999; Crouch & Ritchie,1999; Dwyer & Kim, 2003; Enright & Newton, 2004; Strachkova, 2005; Crouch, 2011; Dupeyras & MacCallum, 2013; Croes & Kubickova, 2013).

3.2 Methods to measure competitiveness

Initially, models to measure destination competitiveness were worked out by Porter (1990). Then, the most comprehensive model of destination competitiveness had been developed by

Crouch and Ritchie (1999). These authors built up a model that includes four main factors such as fundamental sources to build a successful tourism industry, core resources and attractions, destination management, and qualifying factors. In 2010, Ritchie and Crouch added the fifth factor: destination administration, planning, and improvement. The referred authors

made the main accent in their model to provide a high level of living for local residents via the development of tourism destination competitiveness. Dwyer and Kim (2003) worked out a model of competitiveness based on the comparative advantage or price competitiveness, strategy and management perspective, destination resources, historical and socio-cultural aspects.

Three main models of tourism competitiveness assessment can be underlined (Crouch, 2011). The first group of models is devoted to the analysis of competitiveness level via destination comparison. The second group is dedicated to the estimation of specific targets of destination competitiveness or management system. The third group units different theories and general models to adopt them to special targets of destination analysis. The third type of model is used the most frequently in the modern investigations based on the fundamental works of Crouch and Ritchie (1999), Dwyer and Kim (2003), Strachkova (2005), and Sánchez and Lopéz (2015).

Generally, methods to assess destination competitiveness are divided into model building or selection of adequate indicator set, corresponding critique, and empirical examinations (Zhou et al., 2015). Consequently, it is essential to encounter an appropriate set of indicators and adopt to special targets of research. In 2015 Sánchez and López designed a model of competitiveness for the Spanish Mediterranean coast based on the core indicators such as tourist inflow, tourist satisfaction, and average tourist expenditures. Accordingly, the highest values of indicators are supposed to provide local people with employment and economic benefits, and to increase the prosperity of a country. Meanwhile, Dupeyras and MacCallum (2013) defined another set of core indicators to measure tourism destination competitiveness, which are a degree of climate comfortability, labour potential, natural resources and biodiversity, cultural resources, infrastructure convenience, number of tourist inflow, tourism direct impact into GDP, ecological condition, and visitor satisfaction.

It is important to mention that the approaches of competitiveness measurements are subdivided into qualitative and quantitative or mixed methods (Dwyer & Kim, 2003; Tseng & Chen, 2013). Evaluation complexity of tourist destinations' competitiveness lies in comparing

different parameters (geographic, climatic, environmental, political, social and economic) in one unique way.

3.3 Benchmarking method

Kozak (2004) stated that benchmarking is a method driving towards stronger destination competitiveness. The Webster dictionary determines benchmark as 'a standard by which something can be measured or judged' (Camp, 1989). Meanwhile, Camp (1989) stated that benchmarking is 'the continuous process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders'. Watson (1993) outlined three main principles of benchmarking, which are maintaining quality, customer satisfaction, and permanent betterment. Generally, benchmarking is searching for the best practices and adopting them to reach the highest quality of products or services.

The concepts of benchmarking and competitiveness have many common features. 'The concept of destination benchmarking aims to provide international tourist destinations with an opportunity to increase their economic prosperity, protect environmental resources, preserve cultural values and increase the local residents' quality of life on the supply side' (Kozak, 2004). The success in benchmarking provides higher competitiveness due to increasing destination quality. Benchmarking can be used on micro and macro levels. The micro-level is related to benchmarking of an organization and macro-level corresponds to destination benchmarking.

The benchmarking theory is constructed on comparing performance, determining disadvantages and management process changes (Watson, 1993). Literature review of benchmarking methodologies demonstrates that the majority of approaches use performance gap analysis (e.g. Camp, 1989; Watson, 1993; Karlöf & Östblom, 1994). Initially, researchers identify performance gaps with respect to production and consumption, and then managers develop strategies to cover the identified gaps.

Destination benchmarking includes three main types of models, they are internal, external, and generic (Kozak, 2004):

- Internal benchmarking is aimed at analysing the work performance of different departments of the same organization.

- External (comparative) benchmarking is the most frequently used methodology to identify performance gaps of different tourist destinations on national or international levels to find out the best practices (Young & Ambrose, 1999). 'General performance of tourist destinations or their specific areas could be benchmarked against the same or other countries' (Kozak, 2004).

- Generic (or functional) benchmarking is applied to estimate and advance a destination performance engaging national or international standards of best practices, eco-standards, and quality.

In frames of the present study the external benchmarking model is employed to identify competitive positions of mature Spanish coastal tourism destinations relative to each other on the national level.

4. Methodology

Spain took the top position in the Travel & Tourism Competitiveness Index in the last four years from 2015 till 2019 in the regional (Southern and Western Europe) and global ranking. Due to the leading position in the international tourism market, Spain can be considered as a benchmarking country to perform successful tourism development (World Travel & Tourism Council, 2017). Thus, the present study measures the competitiveness of the most popular Spanish beach destinations by core indicators and benchmarks their performance relative to each other. The analysis performed by comparison of physico-geographic and socio-economic indicators of the studied areas (Strachkova, 2005; Dupeyras & MacCallum, 2013; Sánchez & López, 2015). Since physico-geographic and socio-economic indicators contain different formats of information, it is appropriate to evaluate each group of indicators by one of the following methods: method of scoring, method of primary data, and method of expert judgment (Strachkova, 2005).

The method of scoring was implemented to assess the level of climate comfort. The parameter measurements of climate conditions and their scoring values are shown in table 2 (Strachkova, 2005). The climate comfortability of coastal regions was evaluated by an averaging data of relevant meteorological parameters throughout the year and the corresponding scores to this data, which are presented in table 2. Score 10 was assigned to the studied areas, where the climate conditions are very comfortable and vice versa, score 1 mirrors uncomfortable weather conditions.

Table 2. Scoring values of meteorological parameters

Air temperature		Water temperature		Relative air humidity	
°C	score	°C	score	%	score
12-14	1	8-10	1	40-45	7
14 -16	2	10.1-12	2	45-50	8
16.1-18	4	12.1-14	3	50-55	9
18.1-20	5	14.1-16	4	55-60	10
20.1-22	8	16.1-18	5	60-65	6
22.1-24	10	18.1-20	6	65-70	5
24.1-26	9	20.1-22	7	70-75	4
26.1-28	7	22.1-24	8	75-80	3
28.1-30	6	24.1-26	9	80-85	2
$\geq 30,1$	3	$\geq 26,1$	10	85-90	1

(Adopted from: Strachkova, 2005)

The method of primary data was applied to socio-economic and physico-geographic parameters. This method assumes creating an individual scale of intervals for each parameter. To construct the individual scale, maximum (Φmax) and minimum (Φmin) values were chosen among the obtained data for all observed provinces. Here, Φmin should be subtracted from Φmax and divided by 10 yielding a 10-point score scale.

The method of expert judgment was employed for parameters, which were not measurable according to the approaches described above. The expert judgment evaluations are based on a structured process. Primarily, data is collected for the studied areas. Then, several experts consider the obtained information, make their conclusions, and give scores for parameters according to their own scientific experience and knowledge (Crouch, 2008; 2011).

4.1 Assessment of the parameters

Initially, nine indicators have been selected to reach the study's purpose. These indicators cover key aspects of competitiveness of tourism destinations on national level: *Transport accessibility*, *Degree of climate comfortability*, *Recreational potential*, *Infrastructure convenience*, *Labour resource potential*, *Tourist inflow*, *Average daily cost of tourist services*, *Economic data, and Ecological condition* (Table 3) (Dupeyras & MacCallum, 2013). Each indicator has been broken down into a number of parameters (the total number is 22). The aforementioned parameters supplement the indicators in detail and allow a comprehensive assessment of social, economic and ecological spheres of the seaside areas of study (Table 3).

Table 3. Distribution of 22 parameters into 9 indicators

Indicators	Parameters
1. *Transport accessibility*	'Transport accessibility'
2. *Degree of climate comfortability*	'Yearly thermal regime', 'Yearly solar regime' 'Sea temperature', 'Air humidity'
3. *Recreational potential*	'Curative centres and mineral resources', 'Protected territories and landscape diversity', 'Beaches description', 'Number of beaches with blue flag status'
4. *Infrastructure convenience*	'Health care', 'Catering and gastronomic tourism', 'Accommodation facilities', 'Travel agencies', 'Infrastructure convenience'
5. *Labour potential*	'Labour potential', 'Educational institutions in tourism field'
6. *Tourist inflow*	'Inbound tourism', 'Tourists per km² of province'
7. *Average daily cost of tourist services*	'Average daily expenditure of tourist for services'
8. *Economic data*	'Economic contribution of each province in formation GRP', 'Main types of economic activities of provinces'
9. *Ecological condition*	'Ecological condition'

The aforementioned twenty two parameters were selected due to their measurability, analytical soundness, comparability, availability of reliable statistic data and relevance to analysis of touristic destinations on a national level (Strachkova, 2005; Dupeyras & MacCallum, 2013). Equally significant criteria was applied to choose the parameters to complete the survey, which were split out into two conditionally divided groups of indicators:

(i) The first group of indicators is devoted to an analysis of ecological, economic and tourism infrastructure facilities of the observed areas. The analysis of social, economic, and ecological parameters forms the main base and attraction to the 'sun and sea' product in the studied areas (Dupeyras & MacCallum, 2013). Consequently, this group includes the following indicators: *Recreational potential*, *Infrastructure convenience*, *Labour potential*, *Economic data* and *Ecological condition* (Table 3);

(ii) The second group of indicators is supporting the competitive analysis of the studied areas via analytical surveys of the tourists' preferences for choosing their vacation spots. The tourist destination choice is a complex behavioural process, which depends on internal and external factors (Um & Crompton, 1990). Rutty and Scott (2016) justified the importance of the weather and climate comfort as one of the main factors impacting on the tourists' decision to select their areas of vacation. The second important factor is transport accessibility, which determines the time period of travel and comfortability to reach a holiday place (Crouch, 2011). The third decisive factor is the cost of recreational services. Travel budget plays one of the key roles in choosing resort destination (Dwyer et al., 2002). Thus, the second group includes the following

indicators: *Degree of climate comfortability*, *Transport accessibility*, and *Average daily cost of tourists' services* (Table 3) (Medeiros Barbosa et al., 2010).

4.2 Calculation of parameters

Every parameter was calculated with one of the above considered methods. A method to calculate each parameter was selected according to logic and possibility to estimate it by the chosen approach (Table 4). Estimation of the parameters was accomplished by a scale from 1 to 10, whereas score 10 mirrors the best tourist circumstances and 1 is the worst (Strachkova, 2005).

Table 4. Description of the parameters' estimations

Methodology	Name of parameters	Explanation of calculation
The method of scoring	'Sea temperature'	Evaluation of the parameter 'Sea temperature' was made according to table 2 and average data of sea temperature during summer periods in the studied provinces.
The method of primary data	'Yearly solar regime', 'Curative centres and mineral resources', 'Protected territories and landscape diversity', 'Beaches description', 'Number of beaches with blue flag status', 'Health care', 'Catering and gastronomic tourism', 'Accommodation facilities', 'Travel agencies', 'Inbound tourism', 'Tourists per km^2 in a province' 'Average daily expenditure of tourist for services', 'Economic contribution of each province in formation GRP', 'Main types of economic activities of provinces'	This group of parameters was evaluated pursuant to the fact that the seaside resorts with the highest number of restaurants, tourists' inflows per year, hotels, beaches, and relevant tourism facilities are more competitive and have higher tourism potential. Consequently, the coastal provinces with the highest number of the tourism capacity were evaluated with score 10 and vice versa.
The method of expert judgment	(I) 'Infrastructure convenience ', (II) 'Educational institutions in tourism field'	*This group of parameters were calculated by the methods of expert judgement.
The mixed methods	1. 'Yearly thermal regime and Air humidity', 2. 'Transport accessibility', 3. 'Ecological condition'	**Initial evaluations of these parameters were calculated by the methodologies described above. However, they provided ambiguous results. Consequently, the mixed methods were applied to obtain precise outcomes.

*Description of the parameters' calculations by the method of expert judgment:

I.   Supporting infrastructure such as transportation system, government services, health care arrangement, reliable water supply, financial system and likewise elements are an essential base to provide economic and social needs for both the local population and tourists. The indicator 'Infrastructure convenience' was assessed by score 10 for all

analysed areas as the Spanish tourist destinations. Recent researchers in the field discussed the problem of overdevelopment of Spanish coastal regions and a high need for adopting sustainable practices to control environmental depletion (Piñeira Mantiñán & Santos Solla, 2010; Crouch, 2011).

II.   The parameter 'Educational institutions in tourism field' was assessed by score 10 to all observed areas. Since each province has its own universities with curriculum and degrees in the tourism field. Universities of the studied seaside zones provide an opportunity to obtain an education for the locals without moving to nearby provinces. As a result, such a system provides each coastal destination with high-level specialists locally (Crouch, 2011; Delgado, 2014).

**Explanations of the parameters' evaluations calculated by the mixed methods:

1. Parameters 'Yearly thermal regime' and 'Air humidity' were evaluated by the method of primary data on the basis of monthly/annual absolute datum of air temperature and air humidity in the observed coastal areas. Consequently, the summarized monthly/annual absolute data of air temperature and air humidity were calculated, taking into account that the ideal mean monthly air temperature is +23.5 0°C and air humidity is 55% (Matzarakis, 2006).

2. Parameter 'Transport accessibility' was evaluated from two points of view, where from one side it is a presence of airports, railway stations, seaports and their passenger's turnover per year and from another side, it is potential time spent to reach a destination. The stated data reflects the core information about transport availability of the studied areas (Crouch, 2011).

Air transport accessibility in the analysed destinations was calculated by the ratio of the total annual air passenger turnover of a province to the sum of local population plus the number of tourists per year in a province. The scores for each province were assigned on the basis of the obtained ratio and the method of primary data. The higher ratio of air passenger flows relative to the local population and tourist inflow means the higher the ratio the better the air transport accessibility of a province.

Sea transport accessibility in the observed regions was assessed by annual passenger turnover in seaports of the coastal provinces. Higher passenger traffic in a seaport provides greater

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opportunity for a direct journey and consequently cuts travel time. Subsequently, provinces with higher annual passenger turnovers were given score 10; those provinces which do not have a seaport were given significantly lower scores due to the necessity of using a seaport or another mode of transport in nearby areas.

Railway and road links to the seaside zones were evaluated by Accessibility Problem Index (API) from both national and European perspectives (ECORYS Nederland BV., 2006). The provinces with better connections to other parts of Spain and Europe were assigned score 10 and vice versa.

3. To get a comprehensive picture of environmental conditions in the analysed destinations, the following reports were considered: "Quality of bathing waters in Spain 2016", "Black flags 2016", and "The quality of water in Spain. Study by basins 2005" (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2017; Banderas Negras, 2016; Greenpeace, 2005).

Environmental assessment of the studied regions was made based on three above listed reports with application of the Beach Quality Index (BQI) method (Semeoshenkova et al., 2016). The BQI is a single summarized index, which contains the Environmental Quality (EQ) component formed by three indicators ('Quality of bathing waters', 'State of inland water bodies', and 'Cleanness of beaches'). The indicators were assessed on 1-10 scale, whereas, the estimations approaching score 10 represented excellent environmental quality and the evaluations close to 1 reflected the poor ecological conditions (Strachkova, 2005).

5. Results

Primarily, all regions and their provinces were estimated by 22 parameters. Secondly, arithmetic averages were calculated for each coastal region among its provinces. Finally, the average scores of the parameters were computed according to their indicators division for each coastal region (Table 3). The rating of the coastal regions as competitors is shown in table 5, where the indicators with scores equal to 10 reflect the highest coastal tourism competitiveness and the ideal conditions of 'sun and sea' tourism. The indicators with lower scores approaching 1 reflects existing problems and the lowest competitiveness.

Table 5. Average scores of indicators for the six studied coastal regions

Indicator	Andalusia	Murcia	Valencia	Catalonia	Balearic Islands	Canary Islands
1. Transport accessibility	3.1	3.3	3.6	5.6	2.2	2.7
2. Degree of climate comfortability	7	5.8	7.4	4.6	6.2	7.5
3. Recreational potential	4	4	3.6	5.6	3.5	7.4
4. Infrastructure convenience	4.3	4.2	4.3	5.7	4.6	6.8
5. Labour potential	6.9	7	7.2	7.3	6.2	6.8
6. Tourist inflow	1.4	1.5	2.8	4.8	4.7	3.5
7. Average daily cost of tourist services	7	7	6	3.3	2.7	1
8. Economic data	2.6	2.5	2.5	3.7	4.7	4.3
9. Ecological condition	6.9	7.3	7.3	7.4	8	8.3
Final average scores	**4.8**	**4.7**	**5**	**5.3**	**4.75**	**5.4**

According to the final average scores of the indicators in table 5, the most competitive coastal destination is the Canary Islands, followed by Catalonia, Valencia, Andalusia, the Balearic Islands, and Murcia.

Catalonia and Valencia's regions got the highest scores of the indicator 'Transport Accessibility' because they have the most favourable geographical position and the most convenient transport accessibility by air, land, and sea. Consequently, these regions can be considered as benchmarking sites. Andalusia region has a lower score due to its lowest assessment of railway and road accessibility in comparison to Catalonia, Valencia, and Murcia regions. The Islands have the smallest scores due to remote locations from mainland Spain and the impossibility to reach them by car or train.

The most advantageous level of climate comfort around the year were the Canary Islands, acceptable as a benchmarking spot. The Canary Islands are followed by Valencia, Andalusia, The Balearic Islands, and Murcia. Catalonia has the smallest score due to the coldest weather conditions relative to its competitors.

The Canary Islands and Catalonia have the highest recreational potential and can serve as benchmarking regions. The mentioned touristic areas have the highest number of recreational capacity to make various tourism activities around the year, richer cultural and natural heritage,

more beaches with blue flag status, and a prevailing number of curative centres compared to the other studied regions.

Touristic infrastructure is the most convenient in the Canary Islands and Catalonia. These destinations have the highest number of accommodation facilities, restaurants, hospitals, and travel agencies in comparison to the other seaside destinations and can serve as benchmarks.

The indicator 'Labour resource' of Catalonia takes the first position, followed by Valencia, Murcia, Andalusia, the Canaries, and the Balearics. Catalonia has the highest population employed in the tourism sector and the highest number of educational institutions connected with tourism education. Thus, Catalonia is a benchmark to develop labour potential in the tourism sector.

The highest tourist inflow per year is in Catalonia, followed by the Balearic Islands, the Canary Islands, Valencia, Murcia, and Andalusia. The indicator 'Tourist inflow' contains data about tourists per km^2 in the studied seaside destinations. The highest tourist pressure per km^2 is in the Islands, where the maximum value was found in Ibiza-Formentera, (3,531.9 tourists per km^2). The minimum number of tourists per km^2 is in Huelva and Almeria provinces, which is 148.86 tourists per km^2.

The cheapest destinations are Andalusia and Murcia, as a result, they have the highest scores. Meanwhile, the highest daily expenses for tourist services are in the Canary Islands, the Balearic Islands, and Catalonia. Here, we can conclude that authorities and commercial organizations with the highest profit are located in the Islands and Catalonia region.

The Balearic Islands and the Canary Islands have the highest scores of the indicator 'Economic data', because the economy of these Islands strongly depends on the service sector (commerce, transportation, accommodation, catering, tourism) in comparison to the other studied destinations. The monetary contribution to the Gross Regional Product (GRP) is the highest in Catalonia, while the Balearics have the lowest.

The cleanest environment is the Canary Islands followed by the Balearic Islands, Catalonia, Valencia, and Murcia. Andalusia got the lowest scores due to the highest number of contaminated beaches with illegal constructions. Murcia has the worst state of inland waters.

The worst quality of bathing water is in the Balearic Islands due to the highest number of samples exceeding the pollution threshold.

The Canary Islands take the leading position among the studied regions and can serve as benchmarking sites by almost all indicators. This coastal destination has the most favourable climate conditions, recreational potential, convenient infrastructure, economic benefits and very important these Islands maintained the best environmental conditions beside its popularity among tourists.

6. Discussion

Modern researches debate that tourism is dynamic and multivariate discipline, which requires the permanent searching of new methodologies and tools to obtain advanced knowledge and frameworks to analyse and enrich it (Song et al., 2012). Main researches in tourism stated that modern methodologies have to be flexible and intersectoral to evaluate a market structure, tourism demand, economic impact, tourism policies and destination competitiveness (Song et al., 2012). The present study uses indicator analysis to evaluate the impact of tourism on social, environmental and economic areas of the Spanish coastal destinations and compare their competitiveness relative to each other.

Destination competitiveness is an actual topic in tourism research, which is based on fundamental models worked out by Porter (1990), Crouch and Ritchie (1999), Ritchie and Crouch (2010), and Dwyer and Kim (2003). The referred models embrace core elements to evaluate comparative and competitive benefits, micro and macro environments, and fundamental resources. Studies in the field are dedicated to economic, management, ecological evaluations of destination competitiveness (Mangion et al., 2005; Ribes et al., 2011). Meanwhile, one of the main focuses of the present research is the evaluation of ecological conditions and climate comfort in the studied regions. Maintained decline in environmental conditions of tourist destinations is an essential and complex challenge because tourism is not just a stressor (e.g. use of water and energy), but also it depends crucially on the environmental conditions in beaches and parks (Razumova et al., 2009). Consequently, sustainable development of tourism is considered as the main strategy to mitigate climate change impact, protect environmental depletion and enhance competitive positions of tourist destinations (Song et al., 2012).

Environmental conditions impact on tourist demand. The tourism demand is assessed as a factor of the overloading of tourism destinations (Santana-Jiménez & Hernández, 2011), the influence of weather comfort (Rutty & Scott, 2016) and environmental conditions (Huybers & Bennett, 2000) on tourist choice of beach destinations. The referred studies employ models of tourism demand with the inclusion of environmental factors as interpretative variables in a demand function (Song et al., 2012). Whilst, in the frames of the present study, we evaluate tourism demand by indicators 'Inbound tourism', and 'Tourists per km^2 of province'. Meanwhile, ecological conditions and the degree of climate comfortability were estimated by elaborated composite indexes.

Competitiveness is a multidimensional and complex concept with various interpretations and focuses (Mazanec et al., 2007; Medina-Muñoz et al., 2013). Consequently, measurement of competitiveness combines different approaches, where indicator analysis is a widely used technique. Set of indicator depends on targets of concrete investigation, whereas the most common indicators include the following topics:

- economic competitive benefits (Enright & Newton, 2004; Hong, 2009);
- tourism management (Enright & Newton, 2004; Hong, 2009);
- ecological conditions (Hong, 2009);
- contribution to local employment (Enright & Newton, 2004; Hong, 2009);
- tourist satisfaction (Enright & Newton, 2004);
- tourist attractions (Enright & Newton, 2004);
- cultural and natural assets (Lee & King, 2009);
- accommodation, transport and food services (Lee & King, 2009).

The present study engages the most common indicators to measure the competitiveness of tourist destinations, except indicators of tourism management and tourist satisfaction. Moreover, this research applies mixed methodologies to calculate indicators and provides new theoretical and practical findings to make a solid input to the field of the modern investigations of tourism competitiveness. The theoretical findings of the research are related to elaboration and application of an indicator framework to evaluate the competitiveness of coastal destinations. Moreover, the composite indexes were worked out to calculate transport accessibility, environmental conditions, and climate comfort indicators. The practical input is

the provision of the competitive analysis of the observed coastal destinations, which can serve for destination managers to see advantageous and disadvantageous sides and design perspective strategies to cover the gaps. Additionally, this research outlined the benchmarking sites of the studied regions.

The study outcome provides the complete analysis of tourism competitiveness in the observed areas, however, to support a permanent control of economic, social and environmental conditions of Spanish coastal tourism it is adequate to apply the Markov regime (Song et al., 2012). The Markov regime implies changing a management model of tourism to the examination of lifestyle concept, which includes the following six stages: exploration, involvement, development, consolidation, stagnation, and decline or rejuvenation. The referred concept implies permanent analysis, control and upgrading of tourism performance accordingly to the latest trends, technologies, and innovations in the world tourism market. Additionally, the application of generic benchmarking will allow Spanish destination managers to compare the performance of domestic tourism management with international standards, the best practices, eco-standards, and quality (Kozak, 2004). The referred benchmarking approach allows destination managers to identify new market opportunities and enhance competitiveness.

7. Conclusions

The research provides a comprehensive description of climate comfortability, transport accessibility, recreational potential, infrastructure convenience, numbers of inbound tourism, labour resources potential, economic features, and ecological conditions of the most popular Spanish seaside areas. Moreover, the outcome of the current work allowed us to answer the first research question about the most competitive beach destinations, which are the Canary Islands and Catalonia. These tourist destinations acquired their own world-famous images. The Canary Islands are revered due to their favourable weather conditions throughout the year. The centre of tourist attraction of Catalonia regions is Barcelona with its worldwide famous historical and architectural sites.

The second research question is related to finding equilibrium between the most popular and less visited coastal provinces. Reorientation of tourists into nearby and less visited tourist provinces/Islands by policymakers would prevent overexploitation of the most visited beach

resorts and would increase socio-economic benefits in less popular seaside areas. This balanced development of coastal provinces/Islands as tourist centres alongside the Spanish coast will preserve economic-ecological balance. Moreover, provision of the coastal tourism progress based on the main principles of sustainability will prevent future depletion of coastal, marine, natural, historical resources and will guarantee a high competitive position of Spain on the global tourism market in the long term (United Nations Environmental Programme (UNEP) and World Tourism Organization (WTO), 2005).

The present study can be a base for future investigations connected with the estimation of tourists' satisfaction and frustration about provided services and willingness to return back (Kozak, 2004; Medina-Muñoz et al., 2013). Tourist destination is recognized as the main factor in tourism structure. Each destination has its particular features, various services, and products to attract tourists. Nevertheless, tourists have freedom in choosing a place of vacation, therefore it is important to know their attitude according to provided services (Song et al., 2012). Moreover, tourists' feedback will allow destination managers to betterment services and products quality.

Future investigations should be connected with the evaluation of environmental management, the introduction of taxation and regulatory policy in tourist destinations due to increasing of ecological issues and climate change impact (Sinclair, 1998; Pintassilgo et al., 2016). The referred studies have to monitor the current environmental situation constantly and to adopt the precaution actions to maintain tourism activities and protect natural sites. Sustainable development of tourism destinations is recognized as the most proper way of development (Blanco et al., 2009). The principles of sustainability include the adoption of green practices and the introduction of environmentally friendly management in key tourism sectors such as transportation, accommodation, and food service organization (UNEP&WTO, 2005).

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Chapter III – Analysis of coastal tourism in the Gulf of Cadiz on local level

Chapter III – Analysis of coastal tourism in the Gulf of Cadiz on local level

1. Introduction

Tourism development in Spain and particularly in Andalusia had started at the beginning of the XIX century during the monarchy of Alfonso XIII. A successful example of tourism development in Switzerland and Italy made the Spanish government think forward a formation of the tourism industry, but the infrastructure of roads and hotels did not allow them to attract a high number of tourists at that moment. However, this was an important trigger for tourism development in the country. Since 1909, tourism institutions were formed and had been revolutionizing significantly until nowadays. In 1950, Spain visited 749.544 tourists, it was the highest number of tourists' inflow to Spain since the start of its development. Additionally, in the 50's, coastal tourism acquired its popularity among tourists (Martínez, 2006).

Since the 50's tourism and 'sun and sea' product became one of the main economic drivers and job creators. Consequently, convenient coastal tourism infrastructure was built up for the last 65 years. Rampant urbanization of Spanish coastal areas had been going on extremely fast simultaneously with an increasing number of arriving tourists yearly. Many coastal zones were heavily transformed for convenient urban and touristic infrastructure. Unfortunately, coastal urbanization often was going on under poor management control because of a political strategy to attract as many tourists as possible. The consequence of this policy line had led to various environmental and social issues.

Here we can conclude that coastal tourism creates positive and negative impacts on the environment and local population. The positive sides of 'sun and sea' tourism include economic benefits, increasing life quality, and generation of job places. Meanwhile, the negative sides relate to overcrowding of popular coastal resorts and public places, noise pollution, rubbish generation, and excessive water and energy consumption, contamination, biodiversity loss, erosion and relevant issues. Thus, coastal tourism is a very powerful tool for the development of coastal areas, but insufficient management control can lead to dramatic consequences for the environment as for local communities. (Miller et al., 2002).

1.2. Development of 'sun and sea' tourism in province of Cadiz

The province of Cadiz is located in the most southern part of the Iberian Peninsula (Figure 1). The province is related to the Andalusian region. It is the second most populated coastal province in the region, with 1,240,020 inhabitants (City population, 2019). The main economic activities are tourism, agriculture, fishing, and construction (Instituto de Estadística y Cartografía de Andalucía, 2017).

Figure 1 – Map of Andalusian region with its provinces' division (source – website "andalucia.com")

Since the 1960' the development of 'sun and sea' tourism activities became the main trigger of tremendous changes in the economy, lifestyle, and coast's morphology in Cadiz province. Cadiz province is one of the most popular coastal provinces among tourists after Malaga in the Andalusian region. Tourist numbers have multiplied tenfold in the province in the last 69 years, from 480,000 in 1966 till 4,742,991 in 2018 (Instituto de Estadística y Cartografía de Andalucía, 2019) (Figure 2).
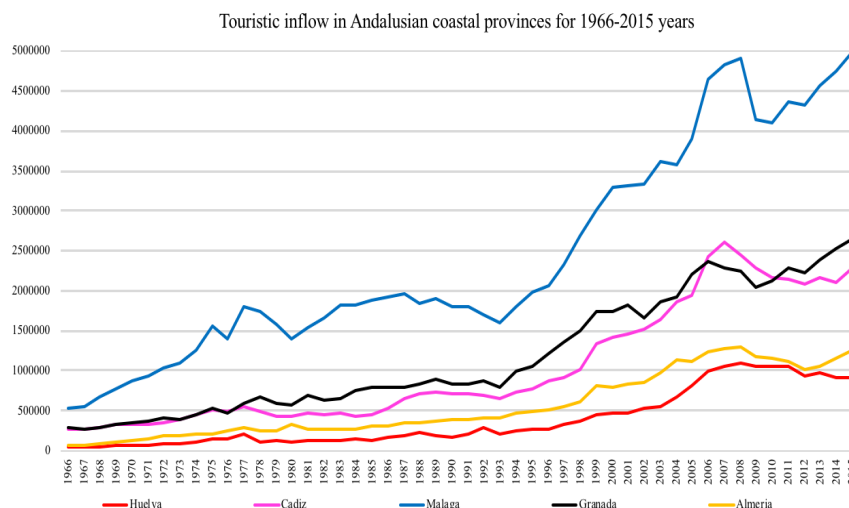
Figure 2 – Total inbound tourism to the coastal provinces of Andalusian region since 1966 till 2015 years (Source: Instituto de Estadística y Cartografía de Andalucía)

Figure 2 demonstrates tourist inflows to the coastal provinces of the Andalusian region from 1966 till 2015 years. Here, we can see that the leading position takes Malaga province followed by Cadiz, Granada, Almeria, and Huelva provinces. Generally, inbound tourism has increased substantially for the last 49 years, however, there are sharp slowdowns in 1973-1976, 1980, 1992-1993, and 2008-2009 years. The reason for tourists' number decreasing in 1973-1976 and 1980 was international economic crisis. In 1993, there was one of the hardest economic crisis in Spain, the disemployment rate had increased from 16% to 24%. In 2008-2009 another international economic crisis came, which affected all economic sectors where the tourism industry was not an exception (Martínez, 2006). Nowadays we experience an international sanitary crisis of virus Covid-19, which embraced all world economic sectors. The hospitality industry was paralyzed during April, May, and June of 2020 due to isolation measures to stop the virus expanses.
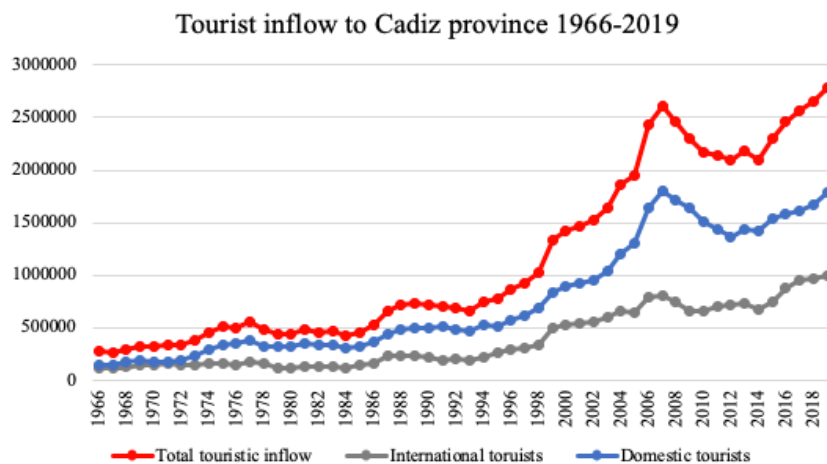
Figure 3 – The total number of arriving tourists to Cadiz province since 1966 till 2019 (Source: Instituto de Estadística y Cartografía de Andalucía)

The graphic of figure 3 mirrors that the total tourism inbound to Cadiz province has increased by 10% for the last 53 years. Domestic tourism predominates over international one.

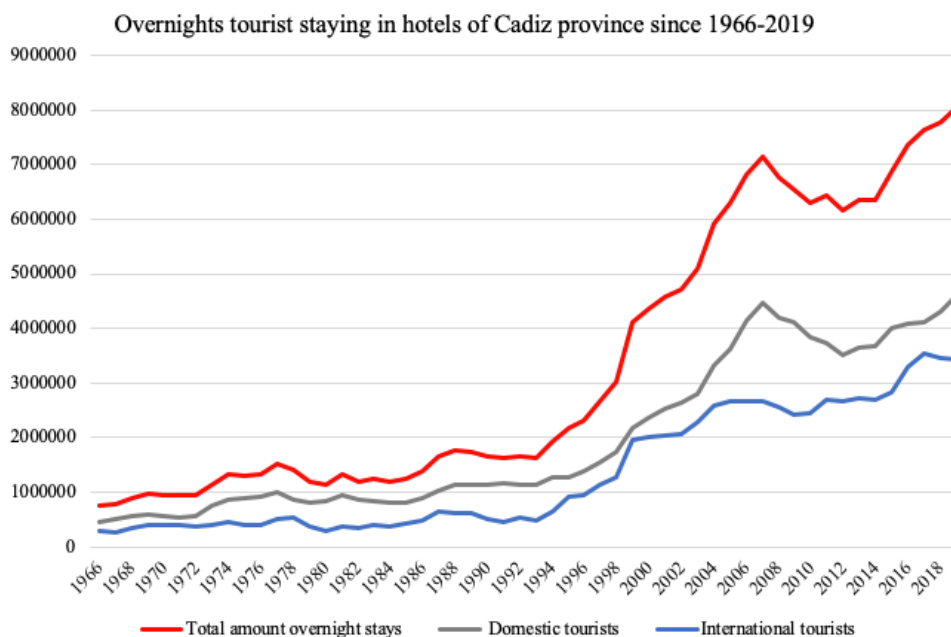Figure 4 – The total number of touristic overnight staying in Cadiz province since 1966 till 2019 (Source: Instituto de Estadística y Cartografía de Andalucía)

Figure 4 shows that the number of tourists overnights in Cadiz province also significantly increased for the last 53 years from less than 1 ml nights to 8 ml.

Concurrently with the growing tourism inbound, it was estimated that 50% of the littoral was

employed for urban construction, ports, and mainly for tourists' use (Secretaría General de Turismo, 1994). For example, coastal urbanization in the municipality of Cadiz reached 60.4% (Chica & Barragán, 2011). The coast of the province of Cadiz from Trafalgar to Sanlúcar of Barrameda was subject to intensive modifications. However, the process of littoral urbanization was not coordinated properly and characterized as chaotic (Pollard & Domínguez Rodríguez, 1995; Paneque et al., 2009). Moreover, some offshore areas and parks of the province of Cadiz were built up by illegal constructions, which have severely changed landscapes, and created significant environmental issues (Martínez Bernal, 2017).

Moreover, in the '50s the majority of tourist trade was controlled by foreign tour companies, which were interested in keeping prices low and attracting the maximum number of tourists. This led to over-development with low-quality standards of environmentally friendly development (Gaviria, 1974). The referred facts of coastal urbanization, mass tourism, and climate change became one of the main reasons of present environmental issues of coastal erosion (Del Rio et al., 2015). Moreover, Barragán Muñoz and Andrés García (2020) have considered that a model of coastal management in the Gulf of Cadiz was not worked efficiently for the last 60 years and brought to unsustainable development and significant losses of ecosystem services. This research demonstrated that the territory of the Gulf of Cadiz was converted more to urban, industrial, and technical areas with growing consumption of water and energetic resources. Consequently, the coastal zones of the province of Cadiz and the Gulf of Cadiz are appropriate mature 'sun and sea' destinations to accomplish the survey to adopt the current management model forward sustainable tourism development.

1.3. Erosion problems in the coast of Cadiz province

From one side, Cadiz province is a mature beach destination. From another side, the coastal line of the province of Cadiz is a highly exposed area to flooding and erosion due to strong anthropogenic intrusion and climate change impacts. The coast of Cadiz province represents a complex dynamic area with diverse environmental sides such as barrier islands, saltmarshes, and sandy cliffs (Ojeda, 2003) (Figure 5). The shore from Tarifa to the mouth of the Guadiana river is a low, mostly sandy coastline (Estaban et al., 2005).
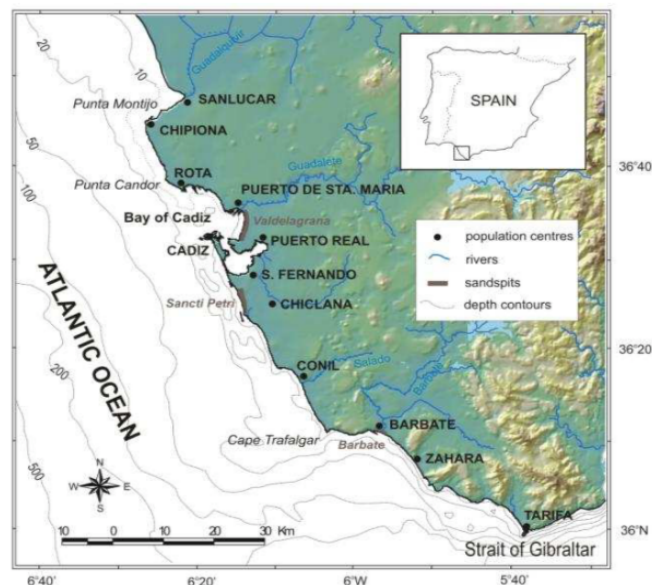
Figure 5 - Map of Cadiz province' coast with its population centres, rivers, and sand spits (Del Rio et al., 2013)

The main reason for the Cadiz coast's erosion is dams and reservoirs constructed in the fluvial basins, which in turn became a trap for sediments and a cause of its reduction (Del Río et al., 2002). Spanish authorities built up tens of dams in the major fluvial catchments zones of Guadiana, Guadalquivir, and Guadalete rivers in the 1960s–1970s. Consequently, the 1970's was the initial point of the coastal dynamic changes. In 1980, the coastal erosion and retreat of the beaches were ubiquitous. Another significant aspect of the coastal degradation in the province of Cadiz is human interventions (jetties, groins, harbours), and storm, which affected the dynamic of coastal sediments (Muñoz & Enríquez, 1998; Benavente et al., 2005).

Several investigations state that the next century may bring new challenges for the management of coastal erosion in the province of Cadiz. According to the estimations of Del Rio et al. (2015), the tendency of coastal recession can be saved due to the aforementioned reasons. Climate change impact might bring additional threats to the vulnerable offshore of the province. Certain studies elaborated projections, which declare about extension of coastal erosion (Ribera et al., 2011) and the rise of an average sea level by 7 cm till 2040 (IH Cantabria, 2014). The referred investigations foresaw erosion expansion and inundation of low-lying coastal areas such as the Gulf of Cadiz and estuary of the river Barbate (Del Rio et al., 2015).

1.4. Criteria to choose the study beaches

The high season for coastal tourism in the northern hemisphere is officially accepted in the following four summer months: June, July, August, and September. Therefore 4 beaches were chosen to accomplish the survey, where one month was dedicated to each beach under study. The main criteria to choose four study beaches were transport reachability, mature touristic centres, highly populated areas, and susceptibility to erosion processes. The referred characteristics describe coastal areas with priority to implement the main principles of sustainable development of coastal tourism to prevent future possible risks of socio-economic and environmental losses due to climate change impact and environmental deterioration.

Description of each criterion for the Cadiz coast:

1) *Transport reachability* is the ability to reach study areas and relevant business enterprises by public transport or bicycle.

2) *Mature 'sun and sea' destinations* are considered as touristic centres with diverse infrastructure and touristic facilities (accommodation establishments, catering institutions, and beaches) alongside the Cadiz coast.

   a) Total number of hotels and their spaciousness along the northern and central coasts of the province of Cadiz
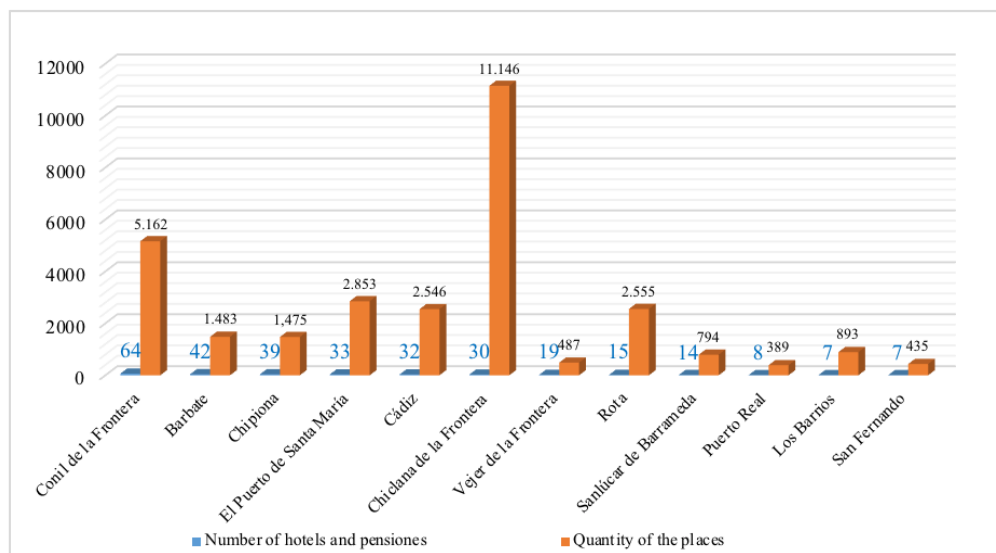
Figure 6 – Total number of hotels, pensions and hotels-apartments and their space capabilities in 12 coastal municipalities of the province of Cadiz for 2018 (Source: Instituto de Estadística y Cartografía de Andalucía)

Figure 6 shows that the highest number of hotels is located in the municipality Conil de la Frontera (64), which is followed by Barbate (42), Chipiona (39), El Puerto Santa Maria (33), Cadiz (32), and Chiclana de la Frontera (30). Meanwhile, the spaciousness of these accommodation establishments vary, the highest number of places are in the hotels of Chiclana de la Frontera, Conil de la Frontera, El Puerto Santa Maria, Cadiz, and Rota.

a) Total number of foodservice establishments alongside of the Cadiz' offshore
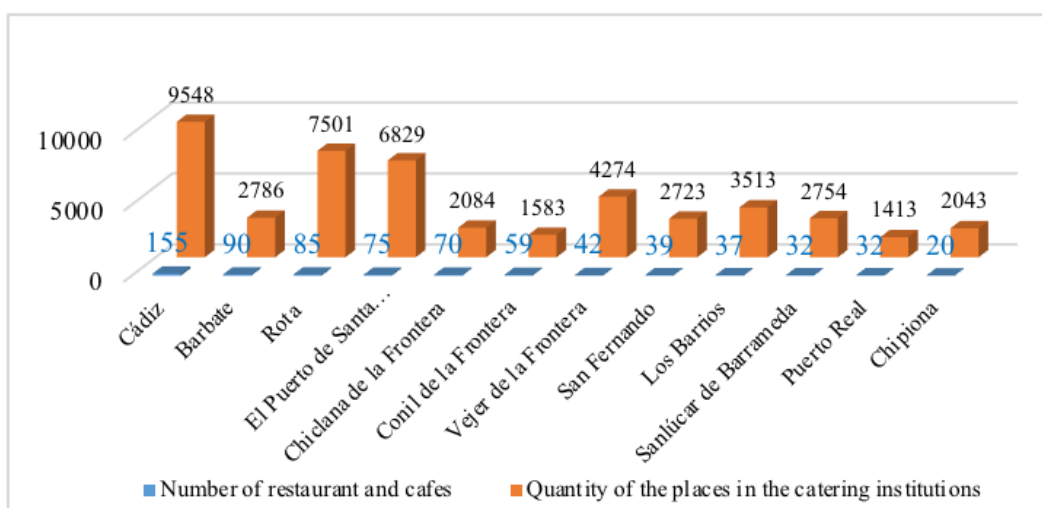
Figure 7 – Total number of the restaurants and cafes and their spaciousness in 12 coastal municipalities for 2018 (Source: Instituto de Estadística y Cartografía de Andalucía)

The biggest number of restaurants and cafeterias has Cadiz (155), Barbate (90), Rota (85), El Puerto Santa Maria (75), Chiclana de la Frontera (70), Conil de la Frontera (42), and Vejer de la Frontera municipalities (42) (Figure 7). Meanwhile, places' capacity is the highest in Cadiz, Rota, El Puerto Santa Maria, Vejer de la Frontera, Los Barrios, Barbate, and San Fernando.

3) *Population number of coastal municipalities in the northern and central part of the province of Cadiz*
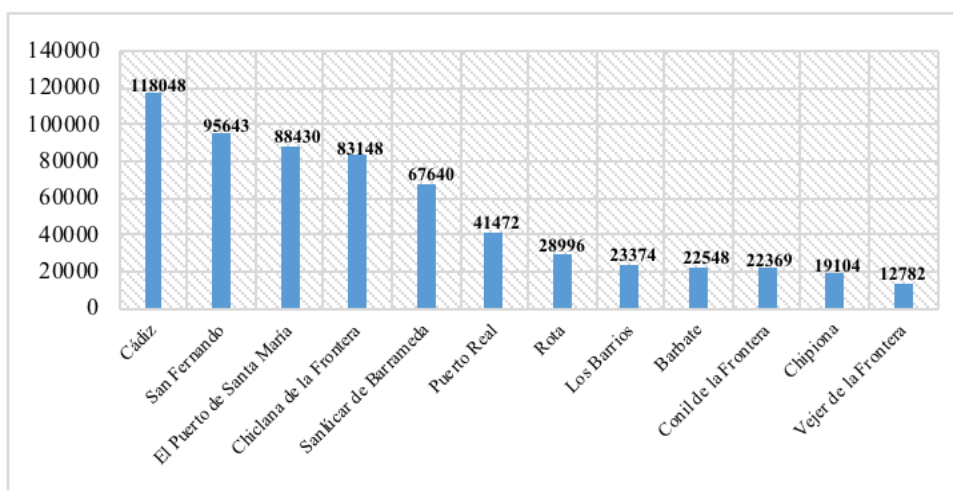
Figure 8 – Total number of population in 12 coastal municipalities of the province of Cadiz in for 2018 (Source: Instituto de Estadística y Cartografía de Andalucía)

The highest number of population has Cadiz, which is followed by San Fernando, El Puerto Santa María, Chiclana de la Frontera, Sanlúcar de Barrameda, and Puerto Real among the considered towns (Figure 8).

4) *Susceptibility to erosion processes of the Cadiz coast*

Certain studies state that the most exposed shores to erosion are located in the northern and central zones and prevailing stability or even accretion are in southern parts of the coast of the province of Cadiz (Benavente et al., 2015; Del Río et al., 2015). According to the investigation of Del Río et al. (2015), the northern coast between Sanlucar de Barrameda and Rota municipalities represents the most erosive beaches Aguadulce, Montijo - Grajuela (Chipiona), and Punta Candor (Rota) with an average retreat pace from 0.7 till 1,5 m per year (Anfuso et al., 2008).

In the Bay of Cadiz, serious erosive processes are observed in the beaches Fuentebravia and Levante (El Puerto Santa Maria). The southern part of Levante beach has a pace of retreat

from 6,2 m to 12 m per year (Del Rio et al., 2013). Shore erosion of Fuentabravia beach may reach 0,7 m per year, despite periodical nourishment works since 1990 (Benavente et al., 2006; Cooper et al., 2009). Further destructive hot spots are located in the beach Camposoto (San Fernando) and the area between Sancti Petri and the northern part of La Barrosa (Chiclana de la Frontera), where erosion may range from 0,5 to 1,4 m per year (Del Rio et al., 2013).

In the south of the province regression of the beach, Canos de Meca (Barbate) reaches 1-1,8 m per year (Del Rio et al., 2013). Serious destructive processes are observed in El Carmen and El Retin (Barbate) beaches with retreat rate of 1,1 m per year. Offshore of Bolonia (Tarifa) has erosion rhythm of 0,9 m per year. On the Mediterranean coast, erosion of the beach Sotogrande may reach 3,1 m per year (Del Rio et al., 2015).

To protect the coastal beaches various defensive constructions (groins, breakwater walls, and relevant systems) have been constructed, and nourishment works have been accomplished along the coast of the province of Cadiz. Sound examples of the mentioned above engineering structures and nourishment works were performed in La Victoria (Cadiz), El Plamar (Conil), and El Carmen (Barbate) beaches, meanwhile the erosion pace of these beaches may reach 0,75 m per year (Del Rio et al., 2015; Muñoz-Perez et al., 2001; 2014).

1.5. The four chosen beaches to accomplish field works

According to the criteria listed above La Victoria (Cadiz), Fuentebravia and Levante (El Puerto Santa Maria), and La Barrosa (Chiclana de la Frontera) beaches were chosen to carry out questionnaires during the high summer season (June - September) 2018 (Figure 9).

1) *La Victoria* is an urban beach of Cadiz municipality (Figure 10). This beach is subjected to periodical washing out because of winter storms. In 1991, 2004 and 2010 regular works were completed to nourish the beach (Muñoz-Perez et al. 2001, 2014). The number of beachgoers varies from 20.000 to 60.000 people per day in the high summer season (Alves et al., 2015). The length of the beach is 2800m and the width is 45m. Victoria was awarded a blue flag status and "Q" touristic quality (Guía de playas, 2018). Victoria has services like showers, toilets, renting of hammock and umbrellas, cafes, and relevant amenities.

Figure 9 –Map of location of the four studied beaches (the source: elaborated by authors)

2) *Fuentebravia* is a semi-urban beach of El Puerto Santa Maria municipality (Figure 10). Length of the beach is 700m and the width is 40m. Fuentebravia has a blue flag status and various amenities (Guía de playas, 2018).

Figure 10 – Pictures of La Victoria (left photo) and Fuentebravia (right photo) beaches (source: google.com)

3) *Levante* is a beach of Natural Park 'Los Toruños'. This beach is related to El Puerto Santa Maria municipality (Figure 11). Length of the beach is 4.300m and width is 55 m. It is backed up by a forest of the park. This beach has the only cleaning service (Guía de playas, 2018).

Figure 11 – Pictures of Levante (left photo) and La Barrosa (right photo) beaches (source: google.com)

4) La Barrosa is an urban beach, which is located in Chiclana de la Frontera municipality (Figure 11). The beach has diverse touristic amenities and blue flag status. The length of La Barrosa is 4000 m and width is 50 m (Guía de playas, 2018).

Schedule of the field works were designed arbitrarily. Thus, in the beginning, the questionnaires were completed on the beach La Victoria in June. Then, the survey was carried out on the beaches of Fuentebravia (July) and Levante (August). In the end, La Barossa (September) was examined.

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2. Sustainable development of Coastal Food Services

1. Introduction

Restoration sector plays an essential economic role in the tourism industry of Spain (Cabiedes & Miret-Pastor, 2019). The food services sector contribution to the GDP reached 93.000 million euros in 2016. This figure represents 5% of GDP and more than 1.2 million employees (Figuerola et al., 2017). Besides the aforementioned advantages, the restoration sector generates a direct adverse impact on local ecosystems, soil, water, and atmosphere via producing gas emissions, solid and liquid waste, intensive consumption of energy and water resources (Notarnicola et al., 2017; Han et al., 2018). Wang et al. (2013) stated that the restaurant industry is perceived as one of the least environmentally friendly economic sectors in comparison to its economic benefits and contribution to greenhouse emissions. Moreover, the restaurants are considered as one of the biggest generators of daily rubbish worldwide (Horovitz, 2019).

The environmental impact of food services, especially critical in the fragile coastal zones of Spain due to the territory overloading, the seasonal effect of the 'sun and sea' tourism, and absence of a uniform environmentally friendly model of development. The coastal food services operate in the areas overloaded by population and various business activities (Brenner, et al., 2010). Moreover, during the high summer seasons (from June till September), the anthropogenic pressure is intensified significantly by tourist congestion, local people, and increased work load of coastal service organizations (Corluka, 2016). More importantly, coastal food services are represented by numerous small-sized enterprises, which operate without sustainable model of development. The listed circumstances are the reason of various environmental, economic and social issues.

The aforementioned adverse influence on the Spanish coast is aggravated by the severe threat of climate change impact and erosion (Weatherdon et al., 2016; Ciscar et al., 2018). The hazardous consequences of climate change affect include destruction of seaside infrastructure, sea level rise, inundation of low-lying zones or areas under erosion processes and relevant after effects (Weatherdon et al., 2016; Ciscar et al., 2018).

Due to increasing environmental concerns, the world scientific community stated that adoption of green practices by the coastal stakeholders and propagation of sustainable tourism

development will prevent future risks of high economic, infrastructural, social and environmental losses (United Nations, 2019; UNWTO, 2019). Thus, the restoration industry requires a sustainable model and green practices adoption to provide environmental protection and to meet social needs in the future (Wang et al., 2013). Consequently, many recent studies are devoted to the analysis of the green practice adoption in the restoration sector (Wang et al., 2013; Gössling et al., 2011; Chou et al., 2016; Horng et al., 2016; Pan et al., 2018).

Buckley (2011) argued that the progress of the green practice adoption is restricted by insufficient implementation. Meanwhile, Chou et al. (2016) highlighted that setting up of a restaurant strategy as adoption of the sustainable development model will be allowed to reach sustainability. Thus, the goals of the study are 1) to propose the restaurant model of sustainable development; 2) to analyse the level of its adoption by restaurant owners around two mature touristic beaches of the Cadiz province; 3) to study factors which determine level of the sustainable model adoption.

To achieve the study goals, we are considering the impact of the restaurant owners nationality and how long the restaurants have been opened on the success of the adoption of the sustainable development model. The literature review did not show us analogous investigations. Consequently, the present study challenges to examine unstudied factors influencing on sustainable development of food services.

As a rule, the restaurants are small-sized businesses with simple structure and their operation strategy depends exclusively on one or two persons (Walker et al., 2019; Klewitz & Hansen, 2013; Jacobs & Klosse, 2016). These factors are supposed to simplify the transition to go green. However, Oxborrow and Brindley (Oxborrow & Brindley, 2013) discussed that restaurant directors have deficit of environmental knowledge and lack of financial sources. These circumstances do not allow them to adopt a sustainable model of development and the green practices sufficiently to reach sustainability (Klewitz & Hansen, 2013). Wu et al. (2015) investigated that the restaurant directors' attitude plays a crucial role in the progress of sustainable development. In addition, Choi and Parsa (2007), Jacobs and Klosse (2016) stated that the most significant psychological factor of restaurant directors to implement green

practices is preferences and willingness to be involved in this process. However, the period of the samples collection allowed us to notice that the foreign owners of restaurants from China,

Italy, and Argentina refused to participate in the survey more frequently, than local ones. Thus, the first article hypothesis was formed as:

H1. The local entrepreneurs of the food service organizations have more concerns about environmental issues and adoption of the sustainable model. They acknowledge the coastal areas more as a natural heritage in comparison with the foreign businessman.

The second article hypothesis was formed as:

H2. The new established restaurants are less oriented to adjust to the sustainable model.

Restaurant model of sustainable development

Gilg et al. (2005) defined an ecological or green restaurant as operation in an environmentally friendly manner with three Rs (reduce, reuse, and recycle) and two Es (energy and efficiency). Sustainable restoration encompasses the following green practices accomplishment: efficient energy and water usage, recycling, utilization of the local, ecological, and seasonal products, fair stable labour relations, and participation in the environmental programs (Figure 1) (Wang et al., 2013; Pan et al., 2018; Suga & Key Value, 2017).
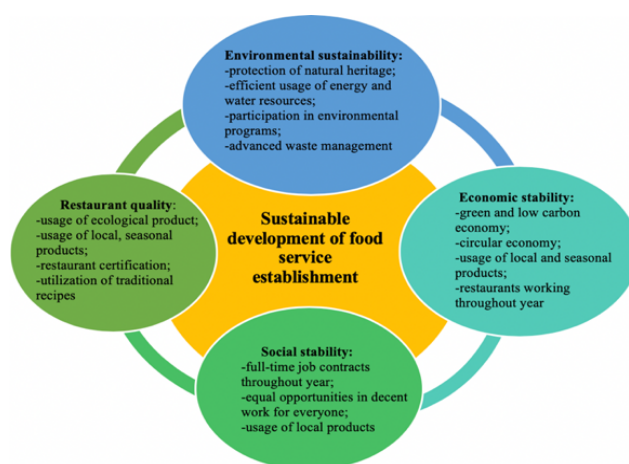
Figure 1 – The restaurant model of sustainable development on the local level (authors' elaboration)

Figure 1 illustrates the designed restaurant model of the sustainable development based on the European Union (EU) and Spanish environmental strategies, plans and frameworks, where the principles of sustainable development and the adoption policy to the climate change are interpreted (Ciscar et al., 2018; UNWTO, 2019; Consejo de Turismo y Deporte, 2013; OECC, 2019). The model includes economic and social stabilities, restaurant quality and environmental sustainability.

Economic stability of the sustainable food institutions implies the adoption of green, low carbon and circular economies (UNWTO, 2019; Pan, 2018; European Commission, 2019). The green and low carbon economies propagate environmental conservation with low ecological impact simultaneously with sustainable economic growth by strengthening eco-innovations for efficient usage of water and energy resources. The low circular economy highlights the need for the residual waste to move forward that is close to zero by investing in modern technologies (European Commission, 2019).

Another important aspect of the food services economic stability is the usage of local products. The methodology of '0 kilometres' ascertains consumption of the local production by small and medium-sized enterprises (SMEs) (Chen & Yeap, 2012). It supports procurement of local businesses (farming and fishing) and reduces of greenhouse gases emission by smaller distances of food transportation (Gössling et al., 2011; Pérez Neira et al., 2019).

Social stability is concluded in provision of decent employment without gender, race discriminations and green job establishment in green entrepreneurship (UNWTO, 2019; European Commission, 2019). The green job establishment implies equal opportunities of full time and permanent work (Chernyshev, 2018).

Environmental sustainability is to value and treat the coastal zones as a natural heritage via efficient usage of resources, environmental protection, reduction of ecological impact, and waste elimination (UNWTO, 2019; European Commission, 2019). Elaboration of the own environmental programs, participation in the ecological programs, adoption of recommendations to mitigate the climate change impact will allow to conserve nature and to run environmentally friendly businesses.

Restaurant quality is evaluated by certification (ISO, Ecovidrion, etc.) (DiPietro, 2013) and number of forks: from 1 to 5 depending on the services merits, gastronomic offers, the form of payment and relevant indicators (García González, 2017). Restaurants with five forks are considered as luxury establishments, whereas one fork characterizes the lowest category (Figuerola, 2010).

The usage of ecological and local products is a fundamental aspect of restaurant quality (Jacobs, 2016; Sims, 2009). Organic or ecological goods guarantee high-quality products grow without pesticides, antibiotics, synthetic materials and other harmful components (UNWTO, 2019). Moreover, usage of local seasonal products, preparation of national traditional recipes will allow to support local traditions, cultural authenticity and economy with a lower ecological footprint (Sims, 2009).

The referred four fields of the model are strongly interconnected with each other. They have to be engaged in the integrated work process to achieve the sustainable development of coastal restaurants (Jang et al., 2017).

2. Materials and Methods

2.1 Case study

Cadiz province was chosen as the study area due to its coastal erosion problems; low lying areas, which are the most vulnerable to climate change impact (Del Río et al., 2015). From one side, the coastal line of Cadiz province is highly exposed to the flooding and erosion due to climate change impact and strong anthropogenic intrusion. From the other side, this province is the second most visited beach destination in the Andalusia region (Instituto de Estadística y Cartografía de Andalucia). Touristic inflow to Cadiz province since 1966 has increased by 5 times and reached 2,5 million in 2017 (Consejería de Turismo y Deporte, 2017).

The chosen study zones are La Victoria and La Barrosa beaches. These are two urban beaches, which are located in highly populated areas and are under threat of coastal erosion. These characteristics correspond to the coastal areas with high priority to adopt the sustainable model of restaurants development to prevent future risks of socio-economic and environmental losses due to climate change and anthropogenic impacts. The survey in the food service establishments of these beaches took place during the high summer season (June-September) 2018 (Figure 2).
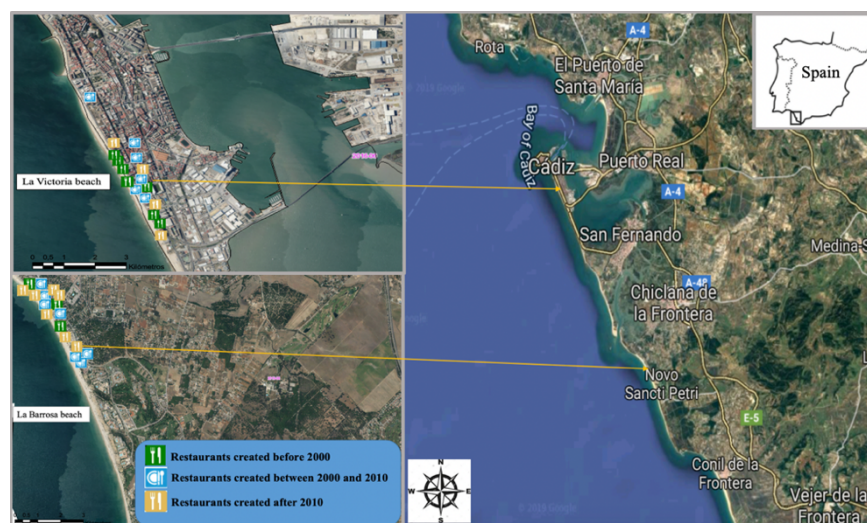
Figure 2 - The map of La Victoria and La Barrosa beaches (authors' elaboration)

Figure 2 shows the location of those restaurants around the beaches La Victoria (Cadiz municipality) and La Barrosa (Chiclana de la Frontera municipality), which participated in the survey. The total number of the completed questionnaires was 34, 17 in La Victoria and 17 in La Barrosa.

2.2 Questionnaire design

The questionnaire approach was used to obtain the required data. It was designed based on the above-described concept of sustainable development of food service establishment (Mathers, 2007).

The questionnaire was divided into four subsections: 'restaurant profile', 'stability of personnel employment', 'questions of sustainability', and 'questions of climate change impact' (Annex A). The first section 'restaurant profile' contains general questions characterizing restaurants' capacity, category, and period of work. The second section 'stability of personnel employment' is devoted to describe the origin of restaurant workers, the type of employment contracts and permanent restaurant work during the year. The third section 'questions of sustainability' includes questions about familiarity with the concept of sustainable development, usage of local and ecological products and presence of restaurant certification. The fourth section 'questions of climate change impact' characterizes acquaintance with climate change impact and measures to mitigate it.

The whole questionnaire contains 18 questions. The structure, quality and clearness of the questionnaire were tested in one restaurant of Aveiro municipality (Portugal) in May 2018.

2.3 Data collection

The stratified random sampling was applied to complete the survey (Statistics Canada's National Contact Centre, 2018). The target population were the coastal restaurants around the study areas. Only restaurants were chosen as the target population due to the limited implementation of the sustainable practices in other food service establishments like cafes and taverns (Orfila-Sintes et al., 2005). The poll was carried out in two phases:

1. First, the target population was stratified geographically in two groups. The first stratum was the area around the beach La Victoria and the second one is territory around La Barrosa beach. The target restaurants were within 10 min walking distance from any point of the corresponding beaches.

2. Second, the questionnaires were brought by an investigator to each restaurant. Initially, an owner/manager of the restaurant was asked to complete the questionnaire. In case the director was absent, the questionnaire was handed out to the manager who was entitled to complete it out.

2.4 Samples and margin of errors

The total number of restaurants in the study areas is 66 (N=66), whereas 7 restaurants stayed out of the survey as they were likely closed. Thus, 59 restaurant managers were invited to participate in the survey, and 34 (n=34) of them explicitly accepted it.

The samples error has been calculated using the formula provided by Montesinos López et al. (Montesinos López et al., 2009). Such formula is engaged to identify the precision (d) of the sample size (n), where the population is definite or relatively small:

$$n = \frac{N \times z_\alpha^2 \times p \times q}{d^2 \times (N-1) + z_\alpha^2 \times p \times q} \tag{1}$$

Where:
- n is sample size (34)
- N is target population size (66)
- p is expected proportion of population in a categorical scale (if there is no such information, 50% = 0.5 is used to maximize the sample size in a conservative case)
- q = 1- p
- z_α^2 = 1.65 is statistical constant associated with the confidence interval of 90%

Based on the above-described values the precision of 10% (d=0.1) was obtained for the sample set.

2.5 Statistic methodologies of data analysis

The obtained data was coded and analysed using the Statistical Package for Social Sciences (IBM SPSS® software, version 23). Analysis was performed according to the four subdivisions of the sustainable development model: 'restaurant profile', 'economic stability', 'social stability', 'restaurant quality' and 'environmental sustainability'. The statistical methods of Contrast of hypotheses and Multivariate analysis were applied to run the analysis.

2.5.1 Contrast of hypotheses

The Chi-square test examines dependence or independence of variables by two-hypotheses: a 'null hypothesis' (H_0) and an 'alternative hypothesis' (H_1) testing (Hyper Stat Online Statistics Textbook website, 2019). The null hypothesis is usually set up to be discredited and demonstrates independence among two considered categorical variables. The alternative hypothesis confirms the dependence of the studied variables. The chi-square test statistic is a measure of error, which is calculated like the difference of frequencies between the obtained sample value and the theoretical value. Thus, the chi-square test statistic is calculated by the following formula:

$$x^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

(2)

where *n* is the number of cells in the table, O_i and E_i are the observed and expected frequencies respectively.

Statistical significance of variables in the study is calculated by the contrasts of hypotheses. The calculations were verified by *p-value, power*, and contingency coefficient. The contingency coefficient is the indicator which quantifies the level of dependency between the two variables

in the range from 0 to 1, whereas the greater dependence is closer to 1 (Hyper Stat Online Statistics Textbook website, 2019).

2.5.2. Multivariate analysis

Correspondence Analysis (CA) was applied to identify the relationship of dependence between the levels of two categorical variables (Greenacre, 2008). CA condenses the total information depicted in the table of contingency in a set of points, which are representing rows and columns of the table. Generally, the referred information is represented in a subspace of reduced dimension called the factorial plane of correspondence analysis (usually the 2D diagram is derived). The proximity between the projected categories of both variables is a very intuitive way to reflect their dependencies between levels.

3. Results

3.1. *Restaurant profile*

The restaurants general description, where the survey was carried out is located in table 1. Table 1 shows that 61.8% of the studied restaurants operated for more than 10 years. The most frequent characteristics are the restaurants without a category followed by restaurants with 2 and 3 forks, with 50-100 places capacity and with less than a 10 person staff.

Table 1 – General description of the restaurants participated in the survey (n=34)

Variables		Frequency	Percentage (%)
Years of restaurant work	Less than 1 year	4	11.8
	1-5	4	11.8
	6-9	5	14.7
	10-20	11	32.4
	More than 20 years	10	29.4
Restaurant category	Other: no category	14	41.2
	1 Fork	2	5.9
	2 Forks	9	26.5
	3 Forks	7	20.6
	4 Forks	2	5.9
Restaurant capacity	Less than 50 places	7	20.6
	50-100	19	55.9
	101-150	3	8.8
	151-200	1	2.9
	More than 250	4	11.8
Employees number	Less than 10 persons	23	67.6
	10-50	11	32.4

3.2. Economic stability

3.2.1. Chi-square test

As null hypothesis for the chi-square test, we assume that the variable 'local or foreign owner of restaurant' does not have dependence on the variables 'measures to save energy', 'measures to save water', and 'if restaurant is closed'. The alternative hypothesis is the existence of dependence among the aforementioned variables (Table 2). The H_0 and H_1 hypotheses were constructed by the same analogy in the sections of 'social stability', 'environmental sustainability', and 'restaurant quality'.

Table 2 – The chi-square test of the variable 'local or foreign owner of restaurant' versus the group of the variables of economic stability

Name of variables	Chi-square value (χ^2)	df	p - value	Power	Contingency coefficient
If restaurant is closed	1.383	1	0.240		
Measures to save energy	0.288	2	0.866		
Measures to save water	1.252	2	0.535		

Table 2 demonstrates that three variables do not have statistical dependence and were analyzed by the crosstab calculations. The crosstab of the variable 'if restaurant is closed' displays that 19 restaurants out 34 (which is 55.8%) are closed during the low tourist seasons. Whereas, 80% of foreign and 51.7% of local restaurants do not work during the winter period.

Light-emitting diode bulbs (LED) are used by 80% of foreign restaurant managers (FRMs) and 82.8% of local restaurant managers (LRMs). The LED bulbs and solar energy are applied by only 20% of FRMs and 13.8% of LRMs. Measures to save water resources are utilized by 40% of FRMs and 62.1% of LRMs.

3.3. Social stability

3.3.1. Chi-square test

Table 3 – The chi-square test of the variable 'local or foreign owner of restaurant' versus the group of the variables of social stability

Name of variables	Chi-square value (χ^2)	df	p - value	Power	Contingency coefficient
Origin of personnel	19.331	3	0.000	0.99	0.602
Part-time job contract	10.159	3	0.017	0.99	0.480
Full-time job contract	8.843	3	0.031	0.99	0.454

Table 3 contains the column with *power* values, where the variables equal to 0.99. This means that the variables were calculated precisely with a low probability of error. The *p-value* of the three variables demonstrates statistical significance denying the H_0. Consequently, the origin of personnel and the type of job contract depends on the nationality of the restaurant owner. According to the crosstab, the FRMs confirmed that 60% of their staff are international people and the LRMs answered that 79.3% of their personnel are from the municipality. Part-time job contracts throughout the year have 40% of staff in the international restaurants and 69% in the local ones. The full-time job contracts have 20% of personnel in the foreign restaurants and 72.4% in the local food organizations.

3.3.2. Correspondence analysis

Correspondence analysis (CA) was applied to consider the correlation between the variable 'years of the restaurant work' with the variables 'part-time job contract', 'full-time job contract' and to visualize their factorial plane of the correspondence (Figure 3).

(a) (b)
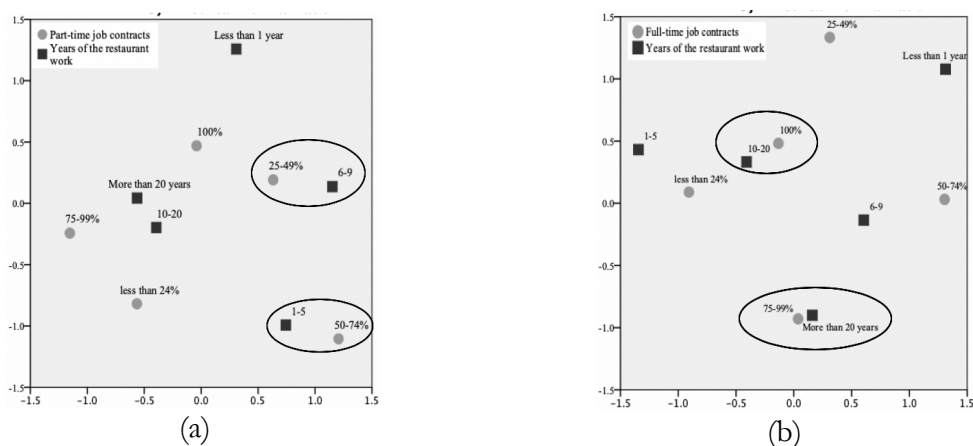
Figure 3 – CA of the variable 'years of the restaurant work' with the variables 'part-time job contract' (a) and 'full-time job contract'(b) from left to the right respectively.

Figure 3 demonstrates the maps of relationships between the studied variables. Variables that are most closely located to each other show their correlation and they are encircled. The left diagram reflects that the restaurants working between 1-5 and 6-9 years supply 25-74% of their staff with part-time job contracts. The interesting fact about the diagram is that the restaurants working more than 5 years reduced the amount of their personnel with part-time jobs to 25-49%. The right diagram shows that the restaurants working from 10-20 or more than 20 years provide 75-100% of their employees with full-time job contracts. Here, we can conclude that the restaurants with more work experience provide their staff with more stable full-time employment in comparison with newly established.

3.4. Environmental sustainability

3.4.1. Chi-square test

Table 4 – The chi-square test of the variable 'local or foreign owner of restaurant' versus the group of the variables of environmental sustainability

Variables name	Chi-square value (χ^2)	df	p - value	Power	Contingency coefficient
Familiarity with SD concept	1.351	1	0.245		
Familiarity with CCI	6.081	1	0.014	0.86	0.390
Participation in EP	1.085	1	0.298		
Creation own EP	1.194	2	0.550		

Table 4 shows that the variables 'familiarity with sustainable development (SD) concept', 'participation in environmental programs (EP)', 'creation own EP' do not have statistical significance and confirm H_0. Thus, these variables were examined by the crosstab calculations. The variable 'familiarity with SD concept' shows that 60% of FRMs and 82.8% of LRMs are familiar with the SD concept. The variable of participation in the EP demonstrates that 20% of FRMs and 44.8% of LRMs recycle solid rubbish. The own EP created 20% of FRMs and 6.9% of LRMs.

The *p-value* of the variable 'familiarity with climate change impact (CCI)' equals to 0.014 and confirmed H_1, where 20% of FRMs and 75.9% of LRMs proved their familiarity with climate change impact and measures to mitigate it. In addition, the *power* value of 'familiarity with CCI' amounts to 0.86. This means that the probability of containing an error is 14%.

3.5 Restaurant quality

3.5.1. Chi-square test

Table 5 – The chi-square test of the variable 'local or foreign owner of restaurant' versus the group of variables of restaurant quality

Variables name	Chi-square value (χ^2)	df	p - value	Power	Contingency coefficient
Restaurant certification	1.085	1	0.298		
Ecological products	0.250	1	0.617		
Origin of products	6.595	2	0.037	0.99	0.403
Usage of local products	4.806	3	0.187		

Table 5 shows that the variables 'restaurant certification', 'ecological products', 'usage of local products' do not have statistical significance and were explored by the crosstabs. The variable 'restaurant certification' demonstrates that 20% of foreign restaurants and 44.8% of Spanish ones have certifications like ISO, Ecovidrio, and Q quality. Usage of the ecological products

confirmed 80% of FRMs and 69% of LRMs. The variable 'usage of local products' displays that 50-100% of locally produced goods are utilized by only 1 foreign and 13 Spanish restaurants. The variable 'origin of products' has statistical significance and equals to 0.037, where 14.7 % of LRMs confirmed the usage of only local products, and 100% of FRMs said that they use local, regional, national but predominantly international products.

3.5.2. Correspondence analysis

The CA was applied to examine the relationships among the variable 'years of the restaurant work' with the variables 'origin of products' and 'usage of local products' (Figure 4).

(a)   (b)
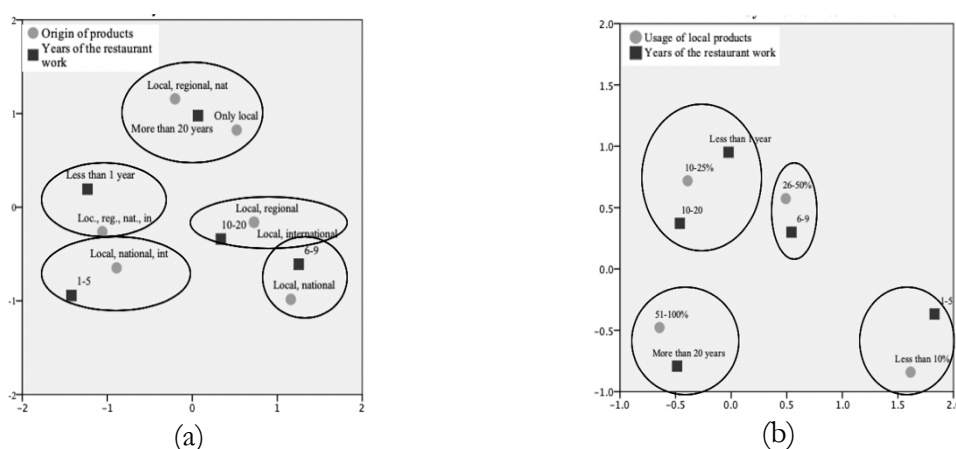
Figure 4 – CA of the variable 'years of the restaurant work' with the variables 'origin of products'(a) and 'usage of local products' (b) from the left to the right respectively

The left diagram of the figure shows that the restaurants working between 6-20 or more than 20 years have the tendency to use local, regional and national products. The important fact is that one part of the restaurants with work experience of more than 20 years uses only local products. Another part of such restaurants utilizes local, regional and national goods. The restaurants operating between 1-5 years use mixed products like local, regional, national and international. The right diagram illustrates that the restaurants working for more than 20 years utilize 51-100 % of local products. The remaining restaurants functioning less than 20 years utilize significantly less locally produced goods.

4. Discussion

Touristic sectors of food services play an important social and economic role in Cadiz province. The total number of the population employed in touristic services equals to 321,000, it is 25.9% of the total population of Cadiz province (Instituto de Estadística y Cartografía de Andalucía website, 2019). According to the report of the annual touristic balance in the

Andalusia region, among the niches of touristic services the leading position occupies the restaurant sector, which equals to 55.4%, followed by 18.2% of the accommodation sector, 17.3% of other touristic activities and 9.1% of the transportation sector (Consejería de Turismo y Deporte, 2017).

Thus, based on the above described environmental concerns and the socio-economic importance, adoption of the sustainable restaurant model is an important and urgent matter. However, the statistical analysis of the obtained data has showed that the sustainable model and green practices have been poorly adopted by the studied restaurants. Issues in each field of the sustainable model were identified and discussed further.

4.1. Issues of economic stability

The outcomes demonstrated that 55% of the studied restaurants are closed during the low tourist season. The seasonal impact undermines the stable work of the restaurants and their chains of food supply throughout the year. Creation of culinary festivals and decreasing the prices for touristic services during the low season have proved its effectiveness (Duro & Turrión-Prats, 2019).

The measures to save water and energy resources have been scarcely adopted. The majority of the respondents in the written or oral form declared about drawbacks of knowledge or finances to install innovative techniques to use resources rationally Wang et al. (2013) stated, that reducing water and energy consumption can be achieved by the betterment of environmental management, and increasing awareness amongst employees about environmentally responsible behaviour. Meanwhile, Chou et al. (2016; 2018) discussed that the introduction of obligatory regulation to install innovative techniques serves as an effective instrument to adopt these green practices.

Waste recycling is partially completed in the studied restaurants. Meanwhile, recycling is considered as one of the most effective approaches to recover resources by collecting and reusing waste (Singh et al., 2014). Management tools like minimalization of waste generation, rubbish composition and provision of continued audits have to be applied by restaurant directors to reach zero waste. The imperial research of hotels with recycling installations received financial benefits, environmental protection and recognition among green consumers (Singh et al., 2014).

4.2. Issues of social stability

The study's outcome showed that 55.9% of the restaurant employees are provided with part-time job contracts and 44.1% with full-time job contracts. Consequently, the major part of restaurant staff has partial employment throughout the year. Work with seasonal issues of coastal tourism described above will contribute to more stable employment in coastal food services. In addition, reorientation of food service organizations to use local seasonal products will supply stable employment for local farms and domestic manufacturers (Chernyshev, 2018). Installation of innovative techniques by coastal food services will contribute to new job openings in the field of renewable energy, recycling discards and relevant areas.

4.3. Issues of environmental sustainability

Elaboration of own environmental programs was confirmed by 8.8% of the respondents. The environmental programs like plastic free, replacement newspapers by informative electronic stands will allow a reduction in solid waste (Singh et al., 2014). Such programs are essential to protecting coastal zones because wind transits beach litter to the sea (Bellas et al., 2016).

41.2% of the studied restaurants participated in environmental programs. The environmental programs referred to is waste recycling. The majority of the examined restaurants do not recycle. Singh et al. (2014) stated that the introduction of obligatory regulation will allow restaurants to reach 100% recycling.

4.4 Issues of restaurant quality

The majority of respondents answered that they use partially ecological and local products. Meanwhile, Lang and Lemmerer (2019) highlighted that utilization of the local ecological products by food services will decrease the carbon footprint and will stimulate the local ecological farms.

The process of the sustainable model and green practices adoption will stimulate cultural perceptions of workers and customers towards greater environmental consciousness. The results of the expert survey showed that restaurant personnel provided with regular environmental training have adopted to sustainable practices more successfully (Wang et al., 2013). The referred fact was confirmed by Horng et al. (2013). In addition, Horng et al. (2013) proved an increase of economic benefits of such restaurants. Consequently, the improved environmental management, increasing of employees environmental awareness will allow them

to reach sustainable development, grow economic benefits, conserve nature and form environmentally responsible society (Wang et al., 2013).

5. Conclusions

The calculations of the chi-square test have proved that the first article hypothesis is truthful because the foreign restaurant owners adopt the sustainable model and green practices significantly less in comparison to the local owners. The period of the samples collection allowed us to notice that the foreign owners of restaurants refused to participate in the survey more frequently, than local ones. The total participation rate of the international holders of restaurants equals to 25%, and by the locals amounts to 58.6%. The attitude of the foreign restaurant owners gave us an idea that they are less concerned about environmental problems. Whereas, the attitude of restaurant holders determines their intention to transit to sustainable development (Wu et al., 2015).

One suggestion regarding such differences is that the local entrepreneurs consider the coastal zones as natural heritage and have more willingness to preserve it for future generations. Meanwhile, foreigners perceive the seaside areas to be a source of economic benefits and a temporary place of living. Consequently, they have less concerns about environmental issues and natural protection. Due to the absence of reliable statistical data and analogous investigations, the actual reason cannot be proved. However, newspapers like El Pais, El Mundo stated that the number of food service organizations from different countries like Italy, China, Argentina, and India has been significantly increased for the last 30 years. In time of globalization, it is important to run a separate deep investigation and find out actual reasons for less participation of the international restaurant holders in the transition to sustainable development.

The application of the correspondence analysis confirmed the correctness of the second hypothesis of the article. The restaurants working for 10-20 years predominantly provide full-time job contracts for their employees in comparison with newly established. In addition, the restaurants with longer period of work like 10 or 20 years mainly utilize local or regional products. Thus, restaurants with multiannual experience provide more environmentally friendly methods of business operation and support local producers with a smaller ecological footprint.

Main inputs to the field of the present study are statistical affirmation of the correlation between levels of sustainable model adoption with the nationality of restaurant owners and periods of restaurant work. These dependencies have not been investigated previously.

In addition, this investigation provides a clear message that the sustainable model and green practices have been poorly adopted by the restaurant directors. Participants in the survey are more familiar with the concept of sustainable development, than climate change impact. The studied coastal restaurants are strongly affected by seasonal impact, which is reflected on their unstable work throughout the year. Certification is predominantly absent in the studied food services. The concept of '0 kilometres' is weakly reflected, since 14.7% of the respondents use only local products (Pérez Neira et al., 2019). The majority of restaurants utilizing mixed production brought from other Spanish regions or abroad, which in turn increases the ecological footprint due to higher transport emissions. Practical application of innovative measures to save water and energy resources, creation of the own environmental programs, usage of renewable energy, waste recycling are sparsely presented in the studied restaurants. Thus, to move sustainability forward, recommendations and efficient practices have to be applied by restaurant managers and policymakers, which are described in the discussion part.

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3. Environmental Consciousness of beach tourists

1. Introduction

Spain holds a leading position in the tourism industry worldwide, especially in 'sun and sea' product area. The amount of tourists inflow reached 83.7 million in 2019. Elaborated forecasts demonstrate that tourism inflow to Spain will increase to 111 million people by 2027 (World Travel & Tourism Council, 2019). Meanwhile, the prosperity of 'sun and sea' tourism strongly depends on the maintaining of environmental conditions (Su & Swanson, 2017). However, over time the environmental conditions of travel destinations have been deteriorating to some extent as the result of tourist activities. Thus, tourist behaviour can not only sustain but also degrade natural sites whereby harmful behaviour includes production of hazardous emissions from recreation based activities, destruction of natural habitats, overcrowding of fragile coastal areas, intensive rubbish generation, and excessive water and energy consumption (Han et al., 2018). Thus, to handle the environmental costs from yearly growing tourist numbers, a management model of beach destinations has to be developed with the main target of reducing unsustainable behaviours of tourists (Weeden, 2013; Su & Swanson, 2017; Han et al., 2018).

Extensive research in the area of environmental management shows an increasing of focus on study of human behaviour change to champion sustainable development (Okumah et al., 2020). Sustainable development in tourism is "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (UNEP & UNWTO, 2005). Moreover, in time of environmental challenges such as climate change and resources deterioration, international scientists agree that sustainable development of 'sun and sea' tourism is the only way to protect seaside ecosystems and maintain the coastal tourism industry in the long term. Moreover, López-Sánchez and Pulido-Fernández (2016) stated that environmentally friendly behaviour of tourists plays a key role in reaching sustainable development in mature and overdeveloped beach destinations. From this, the first research question comes: 1) which management tools have to be applied to encourage tourists to behave in an environmentally friendly way in order to reach sustainability?

Environmental behaviour has been termed as environmentally-friendly behaviour (EFB)/environmentally responsible behaviour (ERB)/ pro-environmental behaviour (PEB)/sustainable behaviour (SB) (Lee et al., 2013; López-Sánchez & Pulido-Fernández,

2016). Lee et al. (2013) defined EFB of tourists as "actions which strive to lessen environmental impacts, promote environmental preservation or conservation and do not harm the ecosystem and biosphere of destination during travelling". An example of such actions for tourists include conservation of energy and water resources, recycling, usage of ecological transport and accommodation.

Since, the establishment process of sustainable development is costly in terms of time and money, it is crucial to identify how tourists behave during their vacations at present time (López-Sánchez & Pulido-Fernández, 2016). The referred knowledge will allow destination managers to develop a management model taking into account the main derived tourists profiles (Weeden, 2013). However, studies of pro-environmental behaviour showed that it is a challenging task because it embraces different social, economic, and psychological determinants. Nevertheless, it is essential to examine factors which inhibit or foster tourists to behave in a sustainable manner. From here the second research question is rooted - which theories and variables should be employed to examine the EFB of tourists?

Since 1980, environmental psychology has developed significantly and offered different theories and determinants, which test and predict EFB. Nonetheless, both theoretical and practical studies lead to variety of models and variables, which in its turn makes it difficult to choose the best theory and variables to analyse PEB. Moreover, there are some gaps in understanding of the role of each variable, which of them are central, or which variables have direct or intermediate impact to behaviour. However, scientists statistically proved efficiency of some theoretical models and their determinants. The referred theories include Theories of Planned Behaviour, Persuasion Theory, and Norm Activation Theory (Okumah et al., 2020). These theories predominantly employ the following variables: environmental awareness, attitude to the environment, environmental perception, and perceived behavioural control (Cottrell, 2003; Ranguel-Buitrago, 2018).

Consequently, in the frameworks of the present study we have chosen the most recognized theoretical models of the theory of planned behaviour and persuasion theory to analyse the level of EFB of tourists by such variables as environmental awareness, environmental attitude,

environmental perception, and perceived behaviour control (Wang et al., 2019; Okumah et al., 2020). Moreover, preceding studies named the aforementioned determinants such as "environmental consciousness" (EC) (Jiménez Sánchez & Lafuente, 2010) or "sustainable

intelligence" of tourists (López-Sánchez & Pulido-Fernández, 2016). Generally, a person with environmental consciousness is "an individual or pro-environmentalist who engages in a wide range of pro-environmental behaviours as well as holding certain values, beliefs, attitudes, perception, and awareness associated with natural conservation" (Jiménez Sánchez & Lafuente, 2010). Thus, the main objective of the present study is to analyze beach tourists' EC in four mature beaches of the province of Cadiz under threat of climate change and significant beach erosion (Del Río et al., 2015).

The present investigation makes theoretical input by using a particular combination of the two aforementioned theories and four variables, which have not been used before. Additionally, this study makes practical input for improvement of environmental management forward sustainable development of coastal tourism, analyzing beach tourists EC and segmenting them into three main groups of tourists with high, medium, and low EC. This knowledge will allow destination policymakers to develop a management model of sustainable development oriented on tourists with obtained levels of EC.

The article is a hypothesis that tourists with medium EC are the largest group among beachgoers followed by high and low ones. Consequently, the majority of tourists, with high probability, behave only partly or entirely not environmentally-friendly during vacations.

The article structure contains six parts, where the first part is an introduction including research questions, objectives, and the study hypothesis. The second part is the theoretical framework of the two applied theories and their manifest variables. The third part contains materials used during the fieldworks, description of study areas, and applied statistical methods. The third part is followed by results, discussion, and conclusions.

2. Theoretical framework

Over the last several decades, sustainable tourism development has been studied to find a balance between economic benefits and environmental protection (Handriana & Ambara, 2016; Su & Swanson, 2017; Han et al., 2018). In the frame of sustainable tourism development,

tourist behaviour is one of the main topics, especially tourists' EFB (Weeden, 2013; Handriana & Ambara, 2016). However, scientists still intensely debate the limitations of theories and determinants to examine SB. Thus, a review of the most frequently used theories and variables

in literature was completed to answer the second research question. The results demonstrated that the theory of planned behaviour (TPB) (Shaw et al., 2011; Ajzen, 1991), and persuasion theory (PT) (Petty & Cacioppo, 1986) are predominantly used by researches with an intention to understand and explain EFB (Okumah et al., 2020). Consequently, the theories of TPB and PT were used to analyse tourists' EC (Han, 2015). Okumah et al. (2020) has proved statistical significance of TPB and PT using MASEM methodology. Moreover, Okumah et al. (2020) provided empirical evidence of correlation among the following pro-environmental determinants: environmental awareness and perceived behaviour control; perceived behaviour control and environmental attitude; environmental awareness and pro-environmental behaviour.

2.1. Theory of Planned Behaviour

In the context of TPB, two determinants of attitude and perceived behaviour control directly affect people's intention to act environmentally-friendly. Environmental attitude (EA) includes personal beliefs, verbal commitment, motivation and intention to behave toward environmental preservation. Meanwhile, perceived behavioural control (PBC) is related to individual self-discipline in behaving in a particular way. PBC generates two types of impact on behaviour. The first type is the motivation of behavioural intentions. The second type is the prediction of behaviour (Ajzen, 1991).

Thus, the determinants of EA and PBC demonstrate strong intention forward PEB. However, this model fails in determination of cognitive and affective aspects of human behaviour (Jackson, 2005). Moreover, positive intention cannot guarantee environmentally friendly behaviour, it also depends on other factors (Kollmuss & Agyeman, 2002). The complexity of the referred factors make it difficult to foretell behaviour reliant only on intentions. Nevertheless, behavioural intention formed by EA and PBC play crucial rule in examination of pro-environmental behaviour (Bamberg & Möser, 2007).

2.2 Persuasion Theory

Persuasion Theory is based on the linear progression model, it is the easiest model in behavioural studies. Supporters of this model discuss that behaviour change is accomplished by provision of absent information to the targeted group of people. In the frames of environmentally friendly behaviour this theory supposes that people behave irresponsibly due to lack of environmental awareness (Kollmuss & Agyeman, 2002).

Another supposition of the theory that attitude and behaviour can be changed by receiving and assimilating of required information. Based on the listed suggestions provision of the decent information increases EA, which changes attitude and behaviour. However, the theory has been criticized that providing of information can change behaviour (Jackson, 2005; Kollmuss & Agyeman, 2002). Behavioural changes are complex process, which depends on many social, economic and cultural factors. As a result, the only informative provision will struggle to make change in behaviour and attitude. The linear changing via information-attitude-behaviour pathways turns out reasonable. However, individuals can study information without assimilation, and behaviour can be changed without attitude's impact (Petty & Cacioppo, 1986). Besides, the aforementioned critiques, Bamberg and Möser (2007) using meta-analytic structural equation modelling (MASEM) proved that EA indeed alter attitude to responsible behaviour (via intention to behave in certain way).

2.3 Environmental perception

Since, the scientists are still in debates about theoretical frameworks, exact variables, and definition of responsible behaviour, we have included an additional variable named environmental perception to overcome a limitation of standard investigations in the field (Dolnicar, et al., 2010). Environmental perception (EP) is an emotional variable, it is widely defined as a feeling or awareness about the environment as comprehended by the senses (Su & Swanson, 2017).

Environmental psychologists consider behaviour to be regulated by feelings and emotions. Thus, as a rule, well protected and clean natural sites foster positive emotions and stimulate tourists behave EF, and vice versa (Su & Swanson, 2017). Accordingly, if tourists perceive the surrounding environment as well protected it will psychologically stimulate them to behave EF. Meanwhile, a deteriorated environment can cause of negative emotions and provoke

people to behave destructively in relationship to the environment (Wang et al., 2019). Moreover, Rajapaksa et al. (2018) using a structural equation model (SEM) proved statistical significance between environmental perception and PEB. Consequently, environmental

perception is an important determinant in study of pro-environmental behaviour, however, very little has been done to study this parameter. To cover the gap in existing investigations, we have included this determinant into the investigation to describe the emotional perception of the environment.

Consequently, the aforementioned theories and four variables were employed for the present study to identify the level of tourists' EC in the mature beaches under pressure of climate change and erosion (3.2.2 Data description).

2.4 Theoretical background of latent class analysis

Latent class analysis (LCA) is a frequently used statistic methodology in scientific literature to identify significant groups from categorical variables. In the last decade, tourism scholars recognized LCA as a powerful technique for segmenting markets, which overwhelmed classic approaches of cluster analysis (Koutra & Diaz, 2013; Richards & van der Ark, 2013). Therefore, LCA was chosen to analyze tourists' EC. This method is capable of obtaining one variable, which represents tourists EC and distinguishes it among different tourist profiles (Linzer & Lewis, 2011). This analysis is frequently employed when the obtained data takes the form of a series of categorical answers like public opinion, consumer behaviour, and decision making. Scholars are often interested in exploring sources of confounding among observed variables, to determine and characterize clusters of analogous cases, and to approximately allocate observations through many variables of interest. LCA is a valuable technique in reaching the aforementioned goals.

The latent class model searches to stratify the cross-classification table of observed (or, "*manifest*") variables Y1, Y2, ..Yk by an unobserved ("*latent*") categorical variable X, with levels 1, 2,..., C. that excludes all confounding among observed variables (3.2.2 Data description).

Classic *LCA* model assesses two sets of parameters:
- Item-reply possibilities $P(Y_k=y_k / X=x)$: is the probability to observe a reply, y_k, to each manifest variable, Y_k, conditional on membership in latent class, x.

- Class membership possibility or latent class prevalence, *P(X=x)*, are the proportions of observations in each latent class suggesting that each individual be categorized into the best-fitting class.

When parameters of the model are determined, LCA can foretell the class of each individual with a reply pattern *y*, as the class that maximizes the conditional probability $P(X=x / Y = y)$, it can be derived from *LCA* model parameters applying *Bayes's* role (Linzer & Lewis, 2011).

$$P(X = x|y) = \frac{P(X = x)P(y|X = x)}{P(y)}$$

(1)

Thus, observations with analogous patterns of replies on the manifest variables tend to cluster within the same latent classes. This characteristic makes *LCA* a useful method to find joint characteristics or behaviour patterns in the tourist population of the present study.

3. Materials and methods

3.1 Study area

Cadiz province is located in the southernmost part of Spain (Figure 1). The main economic drivers in the province are tourism, agriculture, fishing, and construction.

Figure 1: The map and photos of the studied beaches: 1) Fuentebravia, 2) Levante, 3) La Victoria, and 4) La Barrosa beaches (authors' elaboration).

Since the 1960's the development of 'sun and sea' tourism activities has become the main trigger of the tremendous changes in the economy, lifestyle and coast's morphology in Cadiz province. Tourist numbers have multiplied tenfold in the province in the last 69 years, from 480,000 in 1966 to 4,742,991 in 2018 (World Travel & Tourism Council, 2019).

Concurrently with the growing tourism inbound, it was estimated that 50% of the littoral was employed for urban construction, ports and tourists' land use. However, the process of littoral urbanization was not coordinated properly and characterized as chaotic. This led to over-development with low-quality standards of environmentally friendly development. The

referred facts, mass tourism became one of the main reasons of present environmental issues, with coastal erosion and climate change impact among the strongest threats (Del Río et al., 2015).

Consequently, the Cadiz coast is an appropriate mature 'sun and sea' destination to complete present research, which needs to adopt a management model of sustainable development-oriented to tourists. The survey was completed in the four beaches of Cadiz province, which are mature touristic centres, highly populated areas, and susceptible to erosion processes. Pursuant to the above-mentioned criteria Fuentebravia (semi-urban), Levante (isolated natural park), La Victoria (urban), and La Barrosa (urban) beaches were chosen to complete the questionnaire during the peak summer season (June -September) 2018 (Figure 1).

3.2 Methodology

3.2.1 Questionnaire design

The questionnaire was based on 26 questions. It includes 4 sections titled: "tourists' profile", "questions of sustainability", "questions of beach erosion", "questions about climate impact" (Annex B).

3.2.2 Data description

The present study aims to evaluate beach tourists' EC by six variables grouped into the following four blocks:

I.   *Environmental awareness*: (1) sustainable development (SD) concept, (2) beach erosion;
II. *Environmental perception*: (3) protection of natural sites;
III. *Environmental attitude*: (4) importance of EFB, (5) willingness to pay higher price to spend vacations in ecological tourist destinations (WTP);
IV. *Perceived behavioural control:* (6) evaluation of ERB.

The six variables were selected from the questionnaire used during the survey with tourists in the studied beaches. Based on antecedent studies, these variables were conditionally divided

into four groups, which are related and partially characterize tourists' environmental awareness, environmental perception, environmental attitude, and perceived behavioural control (Alves et al., 2015; López-Sánchez & Pulido-Fernández, 2016; Guerreiro et al., 2016; Su & Swanson, 2017; Lee & Kim, 2018). Tourists' *environmental awareness* was opened by asking beach tourists

about their familiarity with SD concept (López-Sánchez & Pulido-Fernández, 2016; Guerreiro et al., 2016). The SD concept is a very capacious and includes comprehensive knowledge about environmental problems and the main principles of sustainable development (UNEP & UNWTO, 2005).

In addition, tourists' environmental awareness was disclosed by the question of their familiarity with beach erosion. Serious erosive processes are observed in the four beaches of study (Del Río et al., 2015). Since the beach erosion issue is visible and the most common problem, the tourists' environmental awareness was measured by this variable (Alves et al., 2015).

Tourists' *environmental perception* was revealed by asking them to agree or disagree if the environmental sites are well protected beside developed touristic infrastructure. Travelers' behaviour is indirectly affected by the formulation of their individual perception of environmental quality (Ranguel-Buitrago, 2018; Su & Swanson, 2017). As a rule, scarcely protected or contaminated environments create negative perceptions of visitors and are prone to not beave ERB.

Tourists' *environmental attitude* was opened through their agreement or disagreement about the importance to behave EF during vacations and willingness to participate in natural preservation by paying a higher price for ecological touristic destinations (Alves et al., 2015; Guerreiro et al., 2016).

Perceived behavioural control was opened by tourists' evaluation of their own behaviour during vacation time. PBC consists of personal beliefs and individuals' self-discipline to behave in a certain way (Ajzen, 1991; Lee & Kim, 2018; Shan et al., 2020). Moreover, Cottrell (2003) proved that oral commitment and environmental knowledge have a correlation with ERB. Thus, there is a high probability that tourists who estimate their behaviour as environmentally-friendly actually do complete ERB.

Additionally, the main socio-geographic variables of tourists such as gender, age, level of education, occupation status, nationality, name of beach, and daily average expenditures were considered (Table 3). The referred variables were applied to explore the relationship of dependency with the variables, which define tourists EC.

3.2.3 Data collection

Fieldworks were accomplished by the corresponding author in the four studied beaches during the high summer season (June-September) 2018. A paper-based survey with beach tourists was chosen as the most favorable method to obtain the required data (Moser & Kalton, 2017). A cross-sectional survey was applied to provide a snapshot of the beach tourists' origin, background, perception, and knowledge. The field work was completed in the morning, day and evening times circulating among different parts of the studied beaches to cover all types of beachgoers. In total, 620 tourists participated in the survey.

3.2.4 Sample size

Precision of results measures how accurately the collected samples characterize the entire population. The precision for the obtained data was calculated by formula (1) (Montesinos López et al., 2009).

$$n = \frac{z_\alpha^2 \times p \times (1-p)}{d^2} \qquad (1)$$

Where:
- n is sample size (620 tourists)
- $p = 0.5$ is expected proportion of population
- $Z_\alpha^2 = 1.65$ is statistical constant associated with a confidence interval of 95%
- d is precision

Based on the above values, the precision of 4% (d=0.04) was obtained for the present sample set.

4. Results

4.1. The latent model to analyze of tourists EC

To analyze the obtained data by *LCA* models, the package *LCA* implemented in the *R* statistical computing program was used (Linzer & Lewis, 2011).

Primarily, 6 candidate models were selected with 1 to 6 latent classes respectively. *BIC,* and *AIC* were evaluated for each model (Table 1).

Table 1: Summary of model results used for model selection

Model number	AIC	BIC
1-class	4418.3	4467.0
2-class	4199.0	4387.2
3-class	**4179.0**	**4338.1**
4-class	4183.1	4387.2
5-class	4187.7	4449.1
6-class	4196.8	4511.3

Generally, to choose a model, which fits the best to the data has to have the lowest values of BIC and AIC. Table 1 demonstrates that the lowest values of *BIC* (4338.1) has *3-class* model indicating three different patterns of tourists' responses. In addition, using the AIC (4179.0) indicator, *3-class* model was selected as an ideal one. Consequently, *3-class* model with three tourists profiles was chosen as the most suitable to interpret the calculated data.

4.2 The derived tourists profiles

The derived results showed three different profiles of tourists with low, medium and high EC (Table 2). The scores close to 1 on each question demonstrate that this option was chosen by the majority of tourists of each group and vice versa. In addition, the socio-geographic profiles of these three tourists profiles are represented in table 3.

Table 2: The 3-class model of the six manifest variables characterizing the level of tourists EC

	Low EC	Medium EC	High EC
Size of the group	236 (38%)	291 (47%)	93 (15%)
I. Environmental awareness			
Y_1 – *SD concept*			
Absent of the knowledge	**0.76**	0.10	0.01
General knowledge of the concept	0.13	0.09	0.01
Complete knowledge of the concept	0.11	**0.81**	**0.98**
Y_2 – *Beach erosion*			
Absent of the knowledge	**0.83**	**0.96**	**0.94**
Well informed	0.17	0.04	0.06
II. Environmental perception			
Y_3 – *Protection of natural sites*			
Totally disagree	**0.98**	0.23	0.00
Agree until certain point	0.01	**0.42**	0.01
Totally agree	0.01	0.35	**0.99**
III. Environmental attitude			
Y_4 – *Importance of EFB*			
Totally disagree	**0.80**	0.35	0.07
Agree until certain point	0.11	**0.36**	0.17

Totally agree	0.09	0.29	**0.76**
$Y_5 - WTP$			
No additional payments	**0.78**	0.33	0.01
Depending on money amount	0.12	**0.37**	0.01
Agree to pay more	0.10	0.30	**0.98**
IV. Perceived behavioural control			
$Y_6 - Evaluation\ of\ EFB$			
Not environmentally friendly	**0.96**	0.33	0.06
Partly environmentally friendly	0.02	**0.37**	0.14
Environmentally friendly	0.02	0.30	**0.80**

Table 2 demonstrates that the largest group is tourists with medium EC of 291 persons, followed by low EC of 236, and high EC of 93. Here, we can conclude that the majority of beach goers have insufficient levels of EC to behave environmentally responsible during vacations.

4.2.1 Tourists with high EC

This group was made up of tourists with the highest level of EC according to their response ratings. This group was named "High EC" and represents 15% of the total participants in the survey. The third column of table 3 shows the highest frequency of responses associated with advantageous environmental knowledge, perception, attitude and perceived behavioural control of manifest variables. This means that tourists with high EC have the most complete awareness about the SD concept, they totally agree that it is very important to behave environmentally friendly during vacations, they are willing to pay higher prices to spend vacations in ecologically developed destinations. This type of tourist evaluates their behaviour as environmentally friendly during their vacations, because they save water and energy resources, recycle and complete relevant actions to protect local natural sites.

Socio geographic characteristics of tourists with high EC are located in the third column of table 3. The majority of this group are Spanish women, aged predominantly between 25-30, with university degrees, employed and with average daily expenditures of between 50 and 400 euros per day. This group of tourists contains the highest percentage of foreign tourists in comparison to another groups.

Table 3: The 3-class model of seven socio-geographic variables employed to characterize the tourists EC

Name variables	Low EC 236 (38%)	Medium EC 291 (47%)	High EC 93 (15%)
Sex	Men (40%) Women (60%)	Men (40%) Women (60%)	Men (40%) Women (60%)
Age	16-24 (25.9%) 25-34 (18.5%) 35-44 (18.5%) 45-54 (22.2%) 55-64 (9.2%) 65+ (5.7%)	16-24 (20%) 25-34 (20%) 35-44 (20%) 45-54 (20%) 55-64 (10%) 65+ (10%)	16-24 (20%) 25-34 (30%) 35-44 (10%) 45-54 (20%) 55-64 (20%) 65+ (0%)
Level of education	No studies (2%) Primary school (9.3%) High school (22.2%) Prof. educ. (42.5%) University (24%)	No studies (1.4%) Primary school (4.6%) High school (17.2%) Prof. educ. (32.2%) University (44.6%)	No studies (16%) Primary school (16%) High school (20%) Prof. educ. (16%) University (32%)
Occupation status	Self-employed (20%) Employed (40%) Unemployed (10%) Pensioner (10%) Student (20%)	Self-employed (20%) Employed (50%) Unemployed (10%) Pensioner (10%) Student (10%)	Self-employed (12%) Employed (60%) Unemployed (4%) Pensioner (4%) Student (20%)
Nationality	Spanish (70%) Foreign (30%)	Spanish (80%) Foreign (20%)	Spanish (60%) Foreign (40%)
Beach	La Victoria (40%) Levante (20%) Fuentebravia (10%) La Barrosa (30%)	La Victoria (30%) Levante (20%) Fuentebravia (20%) La Barrosa (30%)	La Victoria (30%) Levante (30%) Fuentebravia (10%) La Barrosa (30%)
Daily expenditure	<50 € (40%) 50-100 € (40%) 101-200 € (14%) 201-300 € (3.7%) >400 € (2.3%)	<50 € (37.7%) 50-100 € (45%) 101-200 € (13.7%) 201-300 € (2.6%) >400 € (1%)	<50 € (40%) 50-100 € (20%) 101-200 € (0%) 201-300 € (0%) >400 € (40%)

4.2.2 Tourists with medium EC

This group was named "Medium EC". It is the largest class because it represents 47% of the total number of participants. This group is characterized by the predominance of the medium level of responses to the options of manifest variables. However, there is a notable fact to mention that such tourists believe that they have complete knowledge about the SD concept

(p=0.81). However, the answers to further questions show that they have insufficient levels of environmental awareness, perception, attitude, and PBC.

Socio geographic profiles of these tourists are not significantly different from the tourists with high EC. This group is predominantly Spanish nationals with university degrees. Their average daily expenditures are between 50 - 100 euros per day.

4.2.3 Tourists with low EC

This group makes up 38% of the total samples number. These tourists are distinguished by having high percentages of responses at the lowest level of EC to all manifest variables. Consequently, this group was named "Low EC" because these tourists neither know, nor are concerned about sustainable development, ecological problems, and EFB.

Socio geographic features of such tourists demonstrate that they are mainly employed, Spanish women aged 16-24 years old. The samples of this group were collected predominately in La Victoria beach. These tourists spend on average less than 50 euro or more than 100 euro per day.

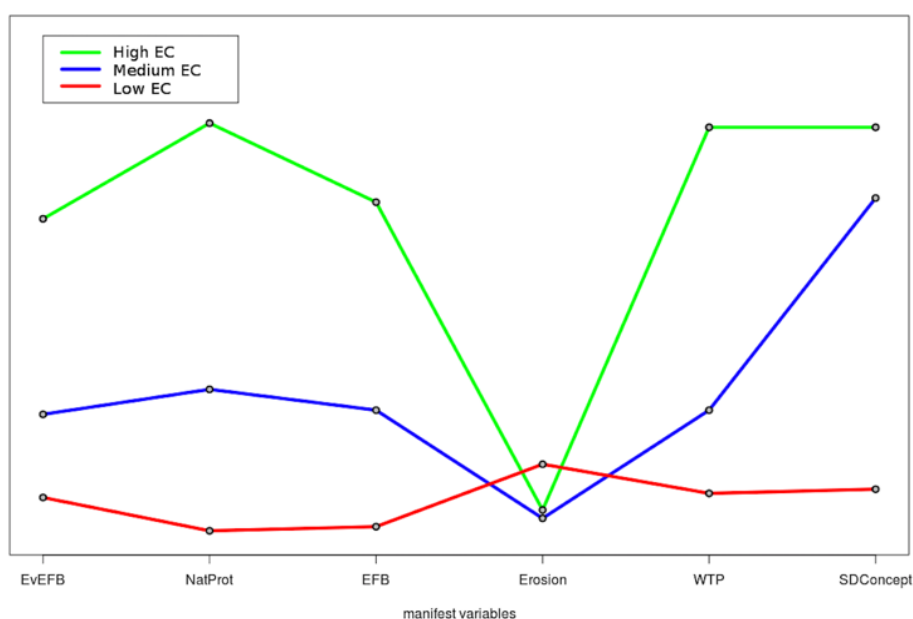**4.3 Graphical representation of the 3 class model**

Figure 2: Graphical illustration of 3-class model of the six manifest variables: EvEBF - evaluation of EFB, NatProt- protection of natural sites, EFB - importance of EFB, Erosion – beach erosion, WTP, SD concept.

Figure 2 illustrates the three obtained tourists profiles in the studied areas. They are graphically stratified according to the level of their awareness, perception, attitude, and behaviour related to the environment. Consequently, the group with high EC (green color) has the highest position in the graphic, followed by a group of medium EC (blue color) and low ones (red color). The graphic demonstrates that the majority of tourists have complete knowledge of the SD concept, but do not put it into practice. Additionally, the incline of beach erosion demonstrates common unawareness of this phenomena by all designated tourists groups.

5. Discussion

The contemporary situation of overdeveloped beach destinations under threat of climate change and erosion clearly demand reorganization towards sustainability. However, redevelopment of popular seaside resorts is a time-consuming process with substantial financial and management work required. Tourists' behaviour has a large impact in being the main customers of 'sun and sea' tourism. Despite the importance of tourists' engaging in EFB in reaching sustainability targets, they are infrequently studied by scientists. Scholars of tourism predominantly examine other coastal stakeholders such as seaside hotels and restaurants, transport companies, and retail organizations (Sarmiento & Hanandeh, 2018).

The investigations of tourist participation in sustainable development are mainly devoted to the examination of their willingness to pay for environmental conservation (Alves et al., 2015), theoretical studies to examine factors, which predict and test EFB (Cottrell 2003; Wang et al., 2019; Okumah et al., 2020), and determinants which impact tourists to choose green restaurants and ecological hotels (Wang et al., 2013; Horng et al., 2016). Obviously, there is absence of empirical studies, which explore current EFB to elaborate particular environmental policy on inducing behavioural changes. Practical studies are extremely important to protect seaside environmental conservation, mitigate the impact of climate change, and maintain coastal tourism of high ecological quality.

The present study provides novel input into the field by presenting empirical investigation by way of a relatively innovative approach in testing the EC of beachgoers. The method employs a multidimensional model which embraces environmental awareness, perception, attitude, and perceived behaviour control ("environmental consciousness"). Moreover, this research

conveys a clear message - aside from the complexity of studying tourists' behaviour, it is possible to distinguish different groups of people, where each group evaluates, perceives and behaves differently in relation to the environment and sustainable development. Consequently, examination of "environmental consciousness" in tourists is needed to identify gaps in their environmental knowledge, attitude, perception and perceived behaviour control to stimulate them to behave EF for the betterment of sustainable coastal tourism.

The results of the present research demonstrate that 85% of tourists can be classified into the groups of low or medium level EC. Similar results were obtained by López-Sánchez and Pulido-Fernández (2016), where they analysed "sustainable intelligence" of tourists in the 'Costa del Sol' of the province of Malaga. The derived results of the aforementioned research determined that 75% of the polled tourists lie in the groups of reflective tourists and unconcerned tourists. It is important to mention that the province of Cadiz is predominately frequented by national tourists while the province of Malaga sees mainly international tourists. We might conclude that national tourists have a slightly lower level of intention in regards to EFB. Consequently, the results of both investigations demonstrate that unfortunately the majority of tourists do not have sufficient EC or "sustainable intelligence" to behave EF during vacations.

The results of the investigation demonstrated that there are gaps in environmental awareness, perception, attitude, and perceived behavioural control of tourists in the studied beaches. To answer the second research question - the most successful management green practices are described to prompt tourists behave EF and to cover identified gaps of their EC. Environmental awareness and attitudes of tourists can be strengthened via pro-environmental activities like excursions to natural protected parks showing animals, plants, herbs, and trees. Such excursions increase the ecological knowledge of tourists and encourage them to behave more EF (Guerreiro et al., 2016; Handriana & Ambara, 2016). Moreover, tourist awareness can be expanded by informative posters and videos in planes, buses, hotels, restaurants, beaches, where the importance of efficient usage of water, energetic resources, recycling, and environmentally friendly behaviour are explained (Wang et al., 2013; Horng et al., 2016).

Environmental perception about beach destinations can be enhanced by improving the eco-friendly reputation of coastal resorts, which is formed via the adoption of green practices by all tourism stakeholders (Su et al., 2020). Additionally, the progress of adoption of environmentally friendly practices should be published in freely accessible mass media sources such as webpages, newspapers, and magazines.

Improvement of tourists' perceived behavioural control can be realized by requesting them to leave beaches clean, the introduction penalties when they do not, providing rubbish baskets around beaches, and stimulating local producers to use less plastic packaging (Schultz et al., 2013; Chen, 2015). For instance, verbally requesting tourists to not leave garbage reduced beach litter by 35% (Cingolani et al., 2016).

Thus, the accomplishment of the aforementioned methods and practices permit the discovery and adopting innovative techniques that will allow destination managers to reach sustainability and involve all the stakeholders of tourism to participate in the process of sustainable development and encouraging EFB.

6. Conclusions

This research makes theoretical input to the field of EFB of tourists by combining two theories those of planned behaviour (TPB), persuasion theory (PT), and determinant of environmental perception, which complement each other. TPB includes two determinants of EA and PBC, which characterise strong intention promoting EFB. However, TPB was criticised by the absence of analysis into the cognitive and affective aspects of human behaviour (Jackson, 2005). Thus, to make the current research scientifically sound and innovative, persuasion theory and determination of environmental perception were incorporated to cover gaps in application only TPB. Where PT responds to the cognitive ability of tourists because it describes tourists' environmental awareness, environmental perception is related to the affective factors of PEB. Thus, the research strived to classify tourists' EC by studying their intention, cognitive, and emotional factors encouraging them to behave EF. Meanwhile, the majority of scholars apply only the theory of planned behaviour in empirical studies to examine EFB (Lee & Kim, 2018; Shan et al., 2020).

Unfortunately, the obtained results showed that the majority (85%) of beachgoers do not have a sufficient level of EC to behave EF during vacations. This outcome confirms the article hypothesis, in that indeed, the majority of studied tourists have a medium level of EC, which is followed by the low and high groups. These results should push policymakers to consider how to improve environmental management by encouraging tourists to behave EF during their vacations. Consequently, the practical input of the research describes the three obtained profiles, which can be practically applied by local policymakers as supplementary materials to develop a management model for sustainable development taking into account the derived three tourist profiles and their socio-geographic characteristics. The main focus has to be on

the young generation without an university degrees, who demonstrated the absence of environmental awareness and interest for EFB. Moreover, it is important to accomplish green management practices described in the discussion paragraph to encourage tourists to behave EF.

The limitation of the research is the relatively small scale of investigation. Such study on a larger scale, for example provincial, regional, or national, would provide policymakers a clearer picture of tourists' EC and will allow them to develop an appropriate management model for sustainable development.

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Discussion and conclusions

Discussion

Tourism is a dynamic industry, where quality standards of tourism services are changing quickly. Spain takes a leading position in coastal tourism worldwide. Consequently, it is important to monitor permanently the social, economic, and environmental sites of Spanish coastal tourism and adopt innovative ecological and digital techniques to maintain tourism services of high standards in the long term.

Scientists in the field stated that methodologies to monitor social, economic, and environmental sites of coastal tourism require permanent searching of new techniques and tools to attain a comprehensive examination approach (Song et al., 2012). The literature review demonstrated that the competitive approach can provide the most comprehensive analysis of coastal tourism in areas on the study. The essence of competitiveness is constant evolution and improvements based on standards of the most competitive resorts or benchmarks (Ritchie & Crouch, 2003; Kozak, 2004). The benchmark is "a standard by which something can be measured or judged" (Camp, 1989). Consequently, the concepts of competitiveness and benchmarking have common features, which are searching for the best practices and tourism performances.

Spain topped the Travel & Tourism Competitiveness Index in the last four years from 2015 till 2019 in the regional (Southern and Western Europe) and global ranking. Consequently, Spain can be considered as a benchmark country in the provision of tourism services (World Travel & Tourism Council, 2019). Thus, this investigation provided not only a competitive analysis of the most demanded beach destinations in Spain but also identified benchmarks among the studied regions. Measuring the competitiveness of tourism destinations is a complex task because it embraces social, economic, and environmental data, which needs to be evaluated in one unique way.

One of the most commonly used techniques to accomplish tourism analysis is an indicator approach. However, there is no ideal unique set of indicators to perform an examination (Dwyer & Kim, 2003). Sánchez and López (2015) stated that a model of destination competitiveness needs to be developed in order to provide destination managers with decent information to make proper decisions and support sustainable development of tourism

activities in the long term. Antecedent studies demonstrated new insight into existing indicator models. For instance, Mazanec and Ring (2011) discussed issues of the composed meteorological, and ecological indexes, their accuracy, and their validity. The same ambivalent results of the listed indicators were obtained in the first round of calculations in our investigation.

The first results of the calculation of the indicator 'climate comfort' showed that the most favourable climate conditions around the year were in Andalusia and Murcia regions where summers are very hot and winters are relatively cold, which on average gives the most advantageous scores. Meanwhile, it is a well-known fact that the most comfortable climate conditions around the year are in the Canary Islands. To find an error in the applied methodology, a decision was taken to calculate the monthly/annual absolute values of air temperature and air humidity in the observed areas, supposing that the ideal average annual air temperature is +23.5°C and air humidity is 55% (Matzarakis, 2006). Consequently, the elaborated approach allowed us to obtain adequate results.

Initial calculations of the indicator 'environmental conditions' were estimated by the annual sanitary reports of the studied regions (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2017). This calculation showed that the cleanest coastal waters had Murcia and the most contaminated were found in the Balearic Islands and Catalonia. These results raised doubts because the Mar Menor of Murcia experiences ecological collapse in the last decades.

To resolve the uncertainty of the obtained results, we have added to the Ministry annual sanitary reports such papers as "Black flags 2016" (Banderas Negras, 2016) and "The quality of the water in Spain. The study by basins 2005" (Greenpeace, 2005). Consequently, the environmental assessment of the studied regions was accomplished by the above-listed three reports with an application of the Beach Quality Index (BQI) (Semeoshenkova et al., 2016). The final developed approach allowed us to obtain a comprehensive ecological picture of the studied regions.

Thus, the applied indicator methodology allowed us to make theoretical and practical inputs to the field. The theoretical findings of the research are related to the elaboration and application of an indicator framework to evaluate the competitiveness of coastal destinations. Moreover, the composed indexes were worked out for the following three indicators: 'transport

accessibility', 'environmental conditions', and 'climate comfort'. The practical input is the provision of the competitive analysis of the observed coastal destinations, which can serve for destination managers as additional tools to see advantageous and disadvantageous sides and design perspective strategies to cover the derived gaps. Additionally, this research outlined the benchmarking sides of the studied regions.

The study outcome provides the complete analysis of tourism competitiveness in the observed areas, where the Andalusia region was identified as a popular beach destination, which experiences strong erosion issues due to anthropogenic and climate change impacts. Moreover, the Gulf of Cadiz is a mature tourism destination, which is most susceptible to climate change impact due to low lying areas.

Sustainable development is the only way to prevent future possible social, environmental and economic losses. Sustainable development assumes the adoption of a model of environmentally friendly management and green practices implementation by tourism companies such as hotels, restaurants, transportation, and travel agencies. Moreover, sustainable development requires the environmentally friendly behaviour of tourists and local citizens. Since the aforementioned service companies of coastal tourism and users embrace a wide range of firms and customers, the investigation was carried out only with directors of seaside restaurants and tourists. The main target of this research was to identify a level of ecological knowledge and sustainable practices adoption by restaurant directors and beachgoers in the most vulnerable coastal zones to climate change in the Gulf of Cadiz.

Foodservice establishments play an important role in the hospitality sector of coastal resorts. This tourism sector makes significant input into GDP and provides working places for the local population. Besides its crucial economic role and positive social effects, the restoration sector generates also direct adverse impacts via producing greenhouse gases emissions, solid and liquid waste, intensive consumption of energy and water resources (Notarnicola et al., 2017; Han et al., 2018). The restaurants are considered as one of the biggest generators of daily rubbish worldwide (Horovitz, 2019). Thus, it is an urgent question to adopt a unique model of sustainable development to protect the local environment, meet future social needs, and mitigate climate change impacts (Wang et al., 2013).

The literature review showed that there is an absence of scientific and empirical investigations in the field. Thus, this investigation was challenged to examine factors affecting green practices

adoption by restaurant directors in the studied areas. Moreover, the level of sustainable management model achieved by restaurant management was analysed. The model embraces four main pillars, which are economic stability, social stability, restaurant quality, and environmental sustainability, which were addressed by a specially designed questionnaire.

The statistical analysis of the obtained data showed that the model of sustainable development and green practices have been hardly implemented by the interviewed restaurant managers. In order to understand this result, opposite to the successful sustainable practices adoption revealed by international investigations in the restaurant sector (Wang et al., 2013), a targeted discussion is constructed according to the structure of the worked-out model of sustainable development with four main pillars: economic stability, social stability, environmental sustainability, and restaurant quality.
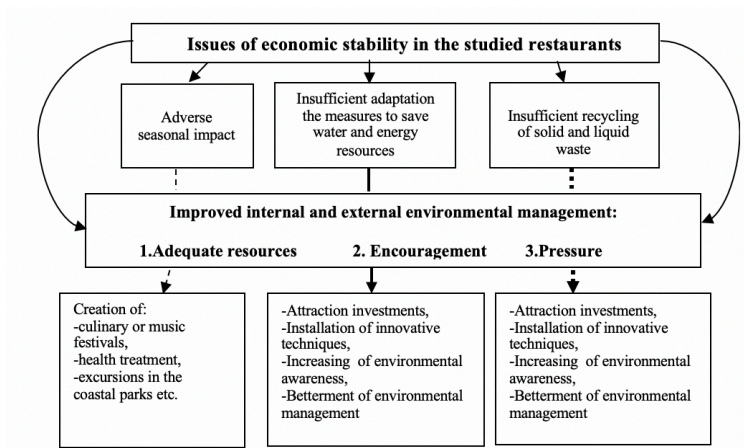
Figure 1– Identified issues of economic stability in the studied restaurants and management guidelines to resolve them

Figure 1 illustrates the identified issues of economic stability in the studied restaurants and the tools of environmental management with recommendations to resolve them. An analogous approach in the social, environmental, restaurant-quality sectors is described further.

Management tools

An important step for the adoption of the sustainable concept is to organize a cultural basis of green restaurant development by improving environmental management (Horng et al., 2016; Sigala, 2013). The key factors to stimulate the implementation of innovative practices are

adequate resources, encouragement, and pressure (Figure 1): (Karakaya et al., 2014; Chou et al., 2018).

- The resources include attraction of investments to install the innovative techniques, increasing customers and personnel's environmental awareness (Chou et al., 2018).

- The organizational encouragement of restaurant staff and increment of management commitment to be creative, environmentally responsible and to use innovative techniques (Chou et al., 2018).

- External and internal pressures provide effective management tools to adopt the green practices (Popp et al., 2011; Chou et al., 2018). The external pressure of governmental mandatory regulations to accomplish innovative initiatives is recognized as one of the most effective tools, especially for smaller-sized restaurants (Liu et al., 2018). The internal management of employees with a proper amount of pressure stimulates them to work more successfully (Colwell & Joshi, 2013; Chou et al., 2018).

Issues of economic stability

1) Adverse seasonal impact. The study demonstrated that 55% of the studied restaurants are closed during the low touristic season. Thus, the economic stability of the examined restaurants and chain of product and technical suppliers is undermined by the seasonal impact of coastal tourism. Creation of new year-round recreational activities like boating, golf, polo games, music, intellectual, culinary festivals, health and wellness, trekking in the coastal natural sites will allow supporting the economic stability of the coastal food services establishments. In addition, decreasing the prices for the services during low season has proved its effectiveness (Duro & Turrión-Prats, 2019).

2) There is an insufficient adoption of measures to save water and energy resources. The majority of respondents stated about the drawbacks of the lack of knowledge or finances to install innovative technologies in their restaurants to use water and energy efficiently (Klewitz & Hansen, 2013; Jacobs & Klosse, 2016). Thus, the policymakers can promote the establishment of sustainable businesses run via increasing environmental awareness and via the introduction of obligatory regulation to adopt the sustainable concept and green practices for restaurant managers (Chou et al., 2018).

Wang et al. (2013) stated, that reducing water and energy consumption and decreasing greenhouse emissions can be achieved by the betterment of environmental management, restaurant design, and increasing awareness of diners and employees about environmentally responsible behaviour. Ríos Fernández & Roqueñí (2018) worked out the list of recommendations for the conservation of the energy resources by installing of innovative technologies of lightening, cooling systems, air conditioning, and bakery ovens. Meanwhile, Chou et al. (2018) highlighted that the installation of innovative devices in restaurants is the key factor in the achievement of sustainable development.

3) The research outcomes showed that there is an insufficient recycling by the studied restaurants. Meanwhile, recycling is considered as one of the most effective approaches to recover resources by collecting and reusing of waste (Singh et al., 2014). The environmental management tools like minimalization of waste generation, rubbish composing and realization of continuous audit have to be applied by restaurant directors to reach the zero waste target. Additionally, informative encouragement to recycle for personnel, local citizens, and clients will serve to create an environmentally responsible society. The empirical research of the hotels with recycling installations got financial benefits, environmental protection, and recognition among green consumers (Singh et al., 2014).

Certain studies, including the output of the present investigation, demonstrated that the majority of the restaurants' managers do not have sufficient financial resources to buy, install and use the innovative technologies (Klewitz & Hansen, 2013; Singh et al., 2014; Jacobs & Klosse, 2016). There are some steps to take to solve this problem. First, the creation of a business plan with an extensive description of the sustainable concept of a restaurant, ecological goals, prices, and relevant details. Secondly, is to search for investors: 1) participating in the relevant environmental business events, 2) applying for governmental support; 3) organizing crowdfunding campaigns on the internet platform and other approaches (Lelo de Larrea et al., 2019).

Issues of social stability

The outputs of the study showed that 55.9% of the restaurant employees have part-time job contracts and 44.1% full-time job contracts. Consequently, the major part of the restaurants' staff has partial employment throughout the year. Moreover, 60% of the restaurants are closed for 4 or 7 months during the low touristic season. Clearly, the employment in the studied

restaurants is not stable.. Addressing the seasonal issues of coastal tourism as described above will contribute to a more stable employment in the coastal food service establishments.

In addition, the reorientation of the foodservice organizations for using local seasonal products will contribute to support stable employment in local farms and domestic manufactures (Note & Chernyshev, 2018). Installation of innovative technologies by the SMEs of the coastal food services will boost new job openings and work in the renewable energy, waste recycling and other innovative sectors.

Issues of environmental sustainability

1) 8.8% of the respondents confirmed the elaboration of their own green programs or their participation in environmental programs. The elaboration of own environmental programs like plastic-free approach, replacement of paper by informative electronic stands and other systems will allow mangers to reduce solid waste and protect environmental sites (Singh et al., 2014). The aforementioned practices are especially important for coastal zones, due to litter contamination of beaches, which is transferred to the seas by wind and currents (Bellas et al., 2016).

2) 41.2% of the studied restaurants confirmed their participation in environmental programs. The environmental programs are referred as waste recycling because recycling has a recommendatory character in Spain. Consequently, policymakers need to encourage restaurant managers via increasing environmental awareness or obligatory regulations to complete 100% waste recycling to protect fragile coastal and marine zones (Singh et al., 2014).

Issues of restaurant quality

1) The majority of the respondents confirmed a lack of local, seasonal, and ecological product usage. Managers of food institutions need to be reoriented to utilize the local and ecological products from nearby producers to decrease carbon footprint and to meet the needs of green customers (Lang & Lemmerer, 2019). The usage of local ecological products decreases the environmental impact via less transportation of products to foodservice organizations. Moreover, it will stimulate the formation of local ecological farms and manufacturers (Lang & Lemmerer, 2019). At present, diners have become aware of the harmful impact of

industrialized food and prefer to eat ecological, local, and sustainable food (Feldmann & Hamm, 2015).

Generally, the adoption of the sustainable model and green practices will stimulate the change in cultural perception of workers and customers in foodservice organizations towards a greater environmental consciousness. The results of the expert survey showed that the restaurants where the staff was trained with environmental programs have adopted sustainable practices more successfully due to changing the employees' perception (Wang et al., 2013). The referred fact was confirmed by the investigation of Horng et al. (2013). Besides, Horng et al. (2013) proved the increasing economic benefits of these restaurants. Consequently, improved internal and external environmental management of food services establishments will allow managers to adopt the sustainable model and green practices, increase profitability, and to protect nature by generating a smaller footprint of restaurants' operation.

Moreover, the level of environmental consciousness of tourists can determine how sustainably they behave during vacation time. Environmental conditions can be deteriorated because of tourists' activities. Consequently, conservation or decline of natural sites also depends on tourists' behaviour (Su et al., 2019). Thus, it is an essential and complex task for destination managers to increase the level of environmentally friendly behaviour to protect environmental areas. Sustainable behaviour for tourists is related to saving of water and energy resources, recycling, usage of environmentally-friendly transport and accommodation, among others (Craig & Allen, 2015). Peér et al. (2007) stated that environmental behaviour is a reflection of environmental knowledge, and learned practices to conserve the natural sites.

In the frames of this survey, we identified the level of tourists' environmental consciousness by their environmental awareness, perception, attitude, and perceived behaviour control. These factors can show how sustainable tourists behave during their vacations. The derived results demonstrated that tourists can be divided into three groups with low, medium, and high levels of environmental consciousness. Consequently, the tourists with low and medium levels of environmental consciousness with high probability would not behave environmentally friendly during their vacations due to the absence of environmental knowledge about ecological problems, climate change impacts, and harmful consequences without sustainable behaviour.

The results of the present research demonstrated that 85% of interviewed tourists are related to groups with a low or medium level of environmental consciousness. Similar results were

obtained by López-Sánchez and Pulido-Fernández (2016), where they analysed "sustainable intelligence" of tourists in the Western coast 'Costa del Sol' of Malaga province. They included 75% of tourists in the groups of reflective and unconcerned tourists. It is important to mention that Cadiz province predominately has national tourists, meanwhile the Malaga province mainly has international tourists. Thus, we can conclude that national tourists have a lower level of environmental knowledge and ecological concerns. Nevertheless, the general picture of environmental consciousness is relatively deplorable, because the majority of tourists behave unsustainably or partly sustainable in the studied beaches.

The results of the investigation demonstrated that there are many gaps in environmental awareness, environmental perception, environmental attitude, perceived behavioural control of tourists in the studied beaches. Environmental awareness and attitudes of tourists can be increased via pro-environmental activities such as excursions to naturally protected areas showing animals, plants, and trees under threats of disappearances (Roberts, 1995). Such excursions could increase the ecological knowledge of tourists and encourage them to behave more environmentally friendly (Ballantyne & Packer, 2009). Moreover, tourist awareness can be enhanced by informative posters and videos in planes, buses, hotels, restaurants, beaches about the importance of efficient usage of water, energetic resources, recycling, and environmentally friendly behaviour (Instituto Balear de la Vivienda, 1996).

Environmental perception about beach destinations can be enhanced by the provision of an eco-friendly reputation of coastal resorts, which is formed via the adoption of green practices by all tourism stakeholders (Su et al., 2019). Additionally, the progress of the adoption of environmentally friendly practices is supposed to be published in freely accessible mass media sources such as webpages, newspapers, and magazines.

Improvement of tourists' perceived behavioural control can be realized by requesting them to leave beaches clean, introduction of penalties, placing a larger amount of rubbish baskets around beaches, and stimulating local producers to use less plastic packaging (Cingolani et al., 2016; Schultz et al., 2013). For instance, verbal requesting of tourists not to leave garbage reduced beach litter by 35% (Cingolani et al., 2016).

Thus, the accomplishment of the aforementioned methods and practices and adopting innovative techniques will allow destination managers to reach sustainability and involve all tourism stakeholders in the process of sustainable development and environmentally friendly behaviour.

Conclusions

Previous studies in the field showed that Spain takes a leading position in coastal tourism activities worldwide and can serve as a benchmark by various indicators. Nevertheless, the derived results of the investigation demonstrated that there are different environmental, social, and economic issues to be resolved to reach sustainable development and adopt to climate change.

The results of the competitive analysis of the most popular beach destinations in Spain showed that the Canary Islands are the most competitive coastal resort, followed by Catalonia, Valencia, Andalusia, the Balearic Islands, and Murcia. The Canary Islands have the most favourable climate conditions around the year, the highest recreational potential and economic benefits from tourism activities, the most convenient touristic infrastructure, and the cleanest environmental conditions. The referred indicators are benchmarks for both national and international levels.

Catalonian coastal provinces have the most favourable transport accessibility by air, land, and sea, high recreational potential, advantageous infrastructure, the highest labour resource potential, the highest tourist inflow, and the highest input into GDP per year. Besides, the listed strong competitive sides, this beach destination has some ecological issues due to the relatively high number of seawater samples exceeding the pollution threshold.

The coast of the Valencia region has convenient transport accessibility, comfortable climate conditions, and high labour potential. The Balearic Islands and Murcia have the lowest scores almost by all studied indicators. Meanwhile, Andalusia region is one of the most competitive beach destinations, but has relatively less convenient transport accessibility, and experience significant ecological problems because of the highest number of contaminated beaches by illegal constructions. Moreover, experts in the field stated that this region experiences serious erosion problems and substantially exposed to climate change impact (Del Río et al., 2015).

The Gulf of Cadiz is a low-lying area of the Andalusia region, which is mostly exposed to climate change impact (Del Río et al., 2015). Consequently, these fragile coastal areas have a priority to adopt principles of sustainable development to prevent possible social, economic, and environmental losses in the long term. However, the results of questionnaires with

restaurant directors demonstrated that the model of sustainably developed and green practices was poorly adopted by restaurant directors in the studied zones. Moreover, 85% of tourists who participated in the survey have a low or medium level of environmental consciousness, which in its turn means that majority of tourists with high probability do not behave environmentally friendly during vacations.

The statistical analysis determined that adoption of sustainable development and green practices by foreign restaurant owners is significantly less than by local owners. One possible reason for such difference is that directors of the local restaurants are more concerned about ecological problems and have more willingness to preserve the environment. Meanwhile, foreign restaurant owners perceive coastal zones as a source of monetary benefits and a temporary place of living.

The correspondence analysis showed that restaurants working for more than 10-20 years run their businesses more environmentally friendly in comparison to newly established ones. The restaurants with multiannual experience use predominantly local or regional products and provide mainly full-time job contracts for their employees.

Additionally, statistical analysis demonstrated that restaurant directors are more familiar with the concept of sustainable development than with climate change impacts. The employment stability of restaurants is strongly affected by the seasonality of 'sun and sea' tourism. The concept of '0 kilometre' is weekly adopted, only 14.7% of respondents use only local products.

The green practices such as using renewable energy, recycling, measurements to safe water, and energy resources are sparsely presented in the studied restaurants.

The survey with tourists showed that 47% of beachgoers have medium level environmental consciousness (EC). According to their answers, they have complete knowledge about the concept of sustainable development but do not think that it is important to behave environmentally friendly during vacations.

The number of tourists with low EC equals 38%. This group of tourists evaluates their own behaviour as not environmentally friendly, moreover, they perceive that natural sides are not well protected and do not consider that it is important to behave environmentally friendly during vacations. Consequently, these tourists neither know about sustainable development nor behave environmentally friendly.

Tourists with high EC equals 15%, these tourists responded the most advantageously to all manifest variables. This is the only group, which with high probability behave environmentally friendly during vacations due to complete familiarity with the concept of sustainable development, and their assertion that they behave environmentally friendly during vacations. This group predominantly represents women aged 24-34 with a university degree and high income.

The typical characteristic of tourists with low and medium EC is that they are younger, have a lower level of education, and income relative group with high EC. Consequently, the destination managers can use the obtained results to design an adequate management model with special attention for the young generation and without university education to increase their environmental awareness, perception, attitude and motivate them to behave environmentally friendly.

The thesis results demonstrated that the most competitive destinations of coastal tourism are the Canary Islands, Catalonia, Valencia, and Andalusia regions. Nevertheless, Catalonia, Valencia, and especially Andalusia experience significant ecological problems. Here, we can conclude that majority of beach destinations require the adoption of a management model of sustainable development and green practices to prevent environmental deterioration, adopt to climate change impact, and maintain coastal tourism of Spain in a leading position in the long term.

In the discussion part, we have considered the obtained gaps and problems in the studied areas. Application of international successful green practices and adoption of environmental model of management will allow destination managers to resolve current issues, and to reach sustainable development of 'sun and sea' tourism involving all coastal stakeholders.

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Annexes

Annex A: Questionnaire with restaurant owners

Questionnaire
This research is completing within the Erasmus Mundus Joint Doctorate Programme in Marine and Coastal Management of Cadiz University. The purpose of the project is to access the level of understanding and implementing the actions aimed to sustainable environmentally friendly development by the managers of the local restaurants. Your participation is highly appreciated and highly essential. We guarantee the anonymity and confidentiality of your responses. Your answers on these questions will take between 10-15 min.

Restaurant profile

1. Which year was the restaurant opened?:

2. What category does the restaurant have? (one option):
a) 1 fork ☐ **b)** 2 ☐ **c)** 3 forks ☐ **d)** 4 ☐ **e)** 5 forks ☐
forks forks
Other, please, specify:

3. What is the maximum capacity of the restaurant? (one option):
a) Less than 50 places ☐ **c)** 101-150 ☐ **e)** 201-250 ☐
b) 50-100 ☐ **d)** 151-200 ☐ **f)** More than 250 ☐

Stability of personnel employment

4. How many employees do you have? (one option):
a) Less than 10 persons ☐ **b)** 10-50 ☐ **c)** 51-100 ☐ **d)** More than 100 ☐

5. Please, indicate the approximate percentage of the origin of your staff (the total sum of the percentages must give 100%):

a) From municipality	%	b) From the province	%	c) From rest of Andalusia	%
d) From rest of Spain	%	e) Foreigners	%		

6. Please, indicate the approximate percentage of employees who have part-time job contacts throughout the year (one option):
a) 100% ☐ **c)** 50 - 74% ☐ **e)** Less than 24% ☐
b) 75 - 99% ☐ **d)** 25 - 49% ☐

7. Please, indicate the approximate percentage of employees who have full-time job contracts throughout the (one option):
a) 100% ☐ **c)** 50 - 74% ☐ **e)** Less than 24% ☐
b) 75 - 99% ☐ **d)** 25 - 49% ☐

8. Please, indicate the months when you have more employees (various options):
a) January ☐ **c)** March ☐ **e)** May ☐ **g)** July ☐ **i)** September ☐ **l)** November ☐
b) February ☐ **d)** April ☐ **f)** June ☐ **h)** August ☐ **k)** October ☐ **m)** December ☐

9. Is the restaurant closed throughout the year? (one option): **a)** No ☐ **b)** Yes ☐
c) If yes, please, indicate, for how long and in which months:

Adaptation of the sustainable practices

10. Are you familiar with the concept of 'Sustainable Development'? (one option): **a)** Yes ☐ **b)** No ☐

11. Does the restaurant have some environmental or sustainable certification? (e.g. ISO 14.001, EMAS, tourism Ecolabel, etc.) (one option):
a) Yes ☐ **b)** No ☐
c) If yes, please, list them:

12. Do you use the ecological products (food, beverages etc.)? (one option): **a)** Yes ☐ **b)** No ☐

13. From where do you buy the products to consume? (various options):

a) Only local ☐

b) We use local plus	1) Regional ☐ 2) National ☐ 3) International ☐	**c)** We use only	1) Regional ☐ 2) National ☐ 3)International ☐

14. What percentage of the goods do you use is produced locally? (one option):

a) <10% ☐   **b)** 10-25% ☐   **c)** 26-50% ☐   **d)** 51-100% ☐

15. Do you participate in environmental programs to support the local biodiversity, protection of beaches, natural parks and relevant? (one option):

a) Yes ☐   **b)** No ☐

c) If yes, please, list them:

Adaptation to the climate change impact

16. Are you familiar with the measures to mitigate the climate change impact like to reduce CO_2 emissions, low energy system and relevant? (one option):

a) Yes ☐   **b)** No ☐

17. Which measures to save water and energy resources do you use? (various options):

a.1) To save energy		**a.2) To save water**	
1) Solar energy	☐	**1)** Recycling of waste water	☐
2) Wind energy	☐	**2)** Measures to save water	☐
3) Energy of biomass	☐	**3)** Collection of rainwater	☐
4) Bulbs of low energy consumption (LEDs)	☐		

a.3) Others, please, specify:

18. Does the restaurant have the own elaborated environmental regulation? (one option):   **a)** Yes ☐   **b)** No ☐

c) If yes, please, list them:

If you have any other comments concerning sustainable tourism development, please, write them here:

Thank you very much for your time and collaboration!

Cuestionario

Esta investigación se realiza dentro del Programa Europeo de Doctorado Conjunto Erasmus Mundus en Gestión Marina y Costera de la Universidad de Cádiz. El objetivo del proyecto es conocer el nivel de comprensión y de aplicación de las acciones encaminadas a un desarrollo sostenible a través de los directores de los restaurantes. Su participación es muy apreciada y esencial. Le garantizamos el anonimato y la confidencialidad de sus respuestas. Responder a estas preguntas le tomará entre 10 y 15 minutos.

Perfil del restaurante

1. ¿En que año se inauguró el restaurante?:

2. ¿Que categoría tiene su restaurante? (una opción):
a) 1 tenedor   ☐   **b)** 2 tenedores   ☐   **c)** 3 tenedores   ☐   **d)** 4 tenedores   ☐   **e)** 5 tenedores   ☐
Otros. Por favor, especifique:

3. ¿Qué capacidad máxima tiene el restaurante? (una opción):
a) Menos de 50 plazas   ☐   **c)** 101-150   ☐   **e)** 201-250   ☐
b) 50-100   ☐   **d)** 151-200   ☐   **f)** Más de 250   ☐

4. ¿Cuántos empleados tiene? (una opción):
a) Menos de 10 personas   ☐   **b)** 10-50   ☐   **c)** 51-100   ☐   **d)** Más de 100   ☐

5. Por favor, indique el porcentaje aproximado de la procedencia de su personal (La suma total de los porcentajes debe dar 100%):

a) Del municipio	**%**	**b)** Del resto de la provincia	**%**	**c)** Del resto del Andalucía	**%**
d) Del resto de España	**%**	**e)** Del extranjero	**%**		

6. Por favor, indique que porcentaje aproximada de empleados tiene contratado durante todo el año (una opción):
a) El 100%   ☐   **c)** Entre 50 y 74%   ☐   **e)** Menos del 24%   ☐
b) Entre 75 y 99%   ☐   **d)** Entere 25 y 49%   ☐

7. Por favor, indique que porcentaje de empleados esta en jornada completa durante todo el año (una opción):
a) El 100%   ☐   **c)** Entre 50 y 74%   ☐   **e)** Menos del 24%   ☐
b) Entre 75 y 99%   ☐   **d)** Entere 25 y 49%   ☐

8. Por favor, indique los meses en el que hay concentrado mas personal (varias opciones):
a) Enero   ☐   **c)** Marzo   ☐   **e)** Mayo   ☐   **g)** Julio   ☐   **i)** Septiembre   ☐   **l)** Noviembre   ☐
b) Febrero   ☐   **d)** Abril   ☐   **f)** Junio   ☐   **h)** Agosto   ☐   **k)** Octubre   ☐   **m)** Diciembre   ☐

9. ¿El restaurante se cierra durante el año? (una opción):   **a)** No   ☐   **b)** Sí   ☐
c) Si ha respondido que sí, por favor, escriba durante cuánto tiempo y en que meses el restaurante se cierra al año:

Preguntas de la sostenibilidad

10. ¿Está usted familiarizado con el concepto de "Desarrollo Sostenible"? (una opción):   **a)** Sí   ☐   **b)** No   ☐

11. ¿El restaurante tiene alguna certificación ambiental o de sostenibilidad (por ejemplo, ISO 9.001, EFQM, la etiqueta ecológica de turismo y etc.)? (una opción):
a) Sí   ☐   **b)** No   ☐
c) Si ha respondido que sí, por favor, escriba cual:

12. ¿Usted usa los productos ecológicos (alimentos, bebidas, etc.?) (una opción):   **a)** Sí   ☐   **b)** No   ☐

13. ¿De donde procede los productos que consume? (varias opciones):

a) Sólo local ☐				
b) Usamos local más	1) Regional ☐ 2) Nacional ☐ 3) Internacional ☐	**c)** Usamos sólo	1) Regional ☐ 2) Nacional ☐ 3)Internacional ☐	

14. ¿Qué porcentaje de total de productos que consume son producidos en el municipio? (una opción):

        a) ☐   **b)** 10-25% ☐   **c)** 26-50% ☐   **d)** 51-100% ☐
<10%

15. ¿Usted participa en los programas ambientales para apoyar la biodiversidad local, protección de las playas, los parques naturales y etc.? (una opción):

        a) ☐   **b)** No ☐
Sí

c) Si ha respondido que sí, por favor, escriba cual:

Preguntas sobre el impacto del cambio climático

16. ¿Está usted familiarizado con las medidas de la mitigación el impacto del cambio climático (por ejemplo: disminución de las emisiones de CO_2, sistemas de ahorro energético, etc.?) (una opción):

        a) Sí ☐   **b)** No ☐

17. ¿Qué medidas de ahorro energética y de agua usa? (varias opciones):

a.1) Ahorro de energía		**a.2) Ahorro de agua**	
1) Solar	☐	**1)** Uso de agua reciclada	☐
2) Eólica	☐	**2)** Medidas de ahorro en consumo	☐
3) De biomasa	☐	**3)** Recogida de agua de lluvia	☐
4) Bombilla de bajo consumo	☐		

a.3) Otros. Por favor, especifique:

b) Si no, ¿por qué?

18. ¿Su empresa tiene regulación propia ambiental? (una opción):   **a)** Sí ☐   **b)** No ☐
c) Si ha respondido que sí, por favor, escriba cual:

Si usted desea realizar algún comentario sobre el desarrollo del turismo sostenible, por favor, escriba aquí:

¡Muchas gracias por su colaboración y tiempo!

Annex B: Questionnaire with beachgoers

Questionnaire

This research is completing within the Erasmus Mundus Joint Doctorate Programme in Marine and Coastal Management of Cadiz University. The purpose of the project is to access the level of understanding and implementing the actions aimed to sustainable environmentally friendly development by tourists. Your participation is highly appreciated and highly essential. We guarantee the anonymity and confidentiality of your responses. Your answers on these questions will take between 10-15 min.

Tourist profile

1. Gender: **a)** Male   ☐   **b)** Female   ☐

2. Age: **a)** 16-24   ☐   **b)** 25-34   ☐   **c)** 35-44   ☐   **d)** 45-54   ☐   **e)** 55-64   ☐   **f)** 65+   ☐

3. Level of education (one option):   **a)** No studies   ☐   **b)** Primary school   ☐ **c)** High school   ☐
d) Professional education   ☐   **e)** University   ☐   **f)** Others, please, specify:

4. Occupation status (one option):   **a)** Self-employed   ☐   **b)** Employed   ☐ **c)** Unemployed   ☐ **d)** Pensioner   ☐
e) Student   ☐   **f)** Others, please, specify:

5. Please, write the name of your country and region or province:

6. Is it your first visit to Cadiz province? (one option):   **a)** Yes   ☐   **b)** No   ☐

7. Is it your first visit to this municipality? (one option):   **a)** Yes   ☐   **b)** No   ☐

8. How many days are you going to stay in this municipality? (one option):
a) Less than 3 days   ☐   **b)** 3-8 days   ☐   **c)** 9-15 days   ☐   **d)** More than 15 days   ☐

9. Please, choose the reason of your visit to this municipality (various options):
a) Professional   ☐   **b)** Nature   ☐   **c)** Beach tourism   ☐   **d)** Family or friends   ☐   **e)** Cultural   ☐
f) Sport   ☐   **g)** Shopping   ☐   **h)** Study   ☐   **i)** Gastronomic   ☐   **j)** Religious   ☐
k) Others, please, specify:

10. How much approximately do you pay for the touristic services per day per person? (accommodation, food etc.) (one option):
   a) <50 €   ☐   **b)** 50-100 €   ☐   **c)** 101-200 €   ☐   **d)** 201-300 €   ☐   **e)** >400 €   ☐

Questions of sustainability

11. Are you familiar with the concept "Sustainable Development"? (one option):
   a) Yes   ☐   **b)** No   ☐   **c)** I do not know   ☐

12. Do you agree that it is important to know how to behave environmentally-friendly during vacation time? (one option):
a) Strongly agree   ☐   **d)** Strongly disagree   ☐   **g)** I do not know
b) Fairly agree   ☐   **e)** Fairly disagree   ☐
c) I agree until certain point   ☐   **f)** I disagree until certain point   ☐

13. Do you agree that the natural resources like beaches, dunes etc. are well protected despite the well-developed tourism infrastructure in this area? (one option):
a) Strongly agree   ☐   **d)** Strongly disagree   ☐   **g)** I do not know   ☐
b) Fairly agree   ☐   **e)** Fairly disagree   ☐
c) I agree until certain point   ☐   **f)** I disagree until certain point   ☐

14. How do you evaluate your behaviour during vacation time? (Do you save water and energetic resources?) (one option):

    a) Sustainable   ☐   **b)** Partly sustainable   ☐   **c)** Unsustainable   ☐   **d)** I do not know   ☐

Questions about beach erosion and frequency of use

15. Are you familiar with erosion problems of this beach? (one option):

                      a) Yes   ☐   **b)** No   ☐

16. How often do you come to this beach? (one option):

a) First time   ☐   **c)** Once on weekdays   ☐   **e)** Most days   ☐   **g)** Others, please, specify:

b) Rarely   ☐   **d)** Weekends   ☐   **f)** Every day   ☐

17. What is the main criteria for you to choose a beach? (You can choose one evaluation for each feature). **Scale**: **1**-Not important at all; **2**- No important; **3**- Neutral; **4** –Important; **5** –Very important

Features of the beach	1	2	3	4	5
a) Cleanness	1	2	3	4	5
b) Landscape diversity	1	2	3	4	5
c) Comfort and safety	1	2	3	4	5
d) Low number of beachgoers	1	2	3	4	5
e) Beach amenities (cafes, WC et.)	1	2	3	4	5
f) Easy access	1	2	3	4	5
g) Beach quality status (blue flag)	1	2	3	4	5
h) Unspoiled environment	1	2	3	4	5
i) Closeness to parking	1	2	3	4	5
j) Closeness to accommodation	1	2	3	4	5

Questions of the climate change impact

18. Which kind of transport do you use to come to this beach? (one option):

    a) On foot   ☐   **c)** Motorbike   ☐   **e)** Rent car   ☐   **g)** Bus   ☐   **i)** Others, please, specify:

    b) Bicycle   ☐   **d)** Taxi   ☐   **f)** Own car   ☐   **h)** Train   ☐

19. What kind of transport did you use to come to this municipality? (various options):

    a) Plane   ☐   **c)** Bus   ☐   **e)** Rent car   ☐   **g)** Motorcycle   ☐   **i)** Others, please, specify:

    b) Train   ☐   **d)** Taxi   ☐   **f)** Own car   ☐   **h)** Boat, ferry   ☐

20. What are the main criteria for you to choose the mode of transport during your vacations? (You can choose one evaluation for each feature**). Scale**: **1**-Not important at all; **2**-No important; **3**-Neutral; **4** –Important; **5** –Very important

Transport features	1	2	3	4	5
a) Low price	1	2	3	4	5
b) Comfort and safety	1	2	3	4	5
c) Quality of transport	1	2	3	4	5
d) Low emissions of CO_2	1	2	3	4	5
e) Short time in the way	1	2	3	4	5

21. Where do you accommodate? (one option):

a) Hotel   ☐   **c)** Second home apartment   ☐   **e)** Camping   ☐

b) Rent apartment   ☐   **d)** Hostel   ☐   **f)** Family or friends   ☐

g) Others, please, specify

22. What is the main criteria for you to choose the accommodation? (You can choose one evaluation for each feature)
Scale: **1**-Not important at all; **2**-No important; **3**-Neutral; **4** –Important; **5** –Very important

Accommodation features	1	2	3	4	5
a) Low price	1	2	3	4	5
b) Closeness to the beach	1	2	3	4	5
c) Ecological accommodation	1	2	3	4	5
d) Comfortability	1	2	3	4	5
e) Quality	1	2	3	4	5
f) Diverse services (parking, entertainment, spa etc.)	1	2	3	4	5

23. Would you be willing to pay higher price to spend your vacations in environmentally-friendly developed touristic destinations? (one option):
a) Yes, please answer to the question 25 ☐   **b)** No please, go to the question 24 ☐
 c) Yes, it depends on the money quantity, please go to the question 25 ☐

24. What would be the main reason not to pay for you? (one option):
a) I am not interested in the environmental problems ☐   **c)** Still there are a lot of clean and attractive coastal destinations ☐
b) I have already payed taxes and touristic services ☐
d) My budget does not allow me to pay more ☐
i) Others, please, specify

25. What do you consider as a reasonable increase of the daily expenditures? (one option):
 a) <5 € ☐   **b)** 5-15 € ☐   **c)**>15 € ☐
e) Others, please, specify:

Thank you much for your time and collaboration!

Cuestionario

Esta investigación se realiza dentro del Programa Europeo de Doctorado Conjunto Erasmus Mundus en Gestión Marina y Costera de la Universidad de Cádiz. El objetivo del proyecto es conocer el nivel de comprensión y de aplicación de las acciones encaminadas a un desarrollo sostenible por los turistas. Su participación es muy apreciada y esencial. Le garantizamos el anonimato y la confidencialidad de sus respuestas. Responder a estas preguntas le tomará entre 10 y 15 minutos.

Perfil del turista

1. Género: **a)** Masculino   ☐   **b)**   ☐
Femenino

2. Edad: **a)** 16-24   ☐   **b)** 25-34   ☐   **c)** 35-44   ☐   **d)** 45-54   ☐   **e)** 55-64   ☐   **f)** 65+   ☐

3. Nivel de educación (una opción):   **a)** Sin estudios   ☐   **b)** Primaria   ☐   **c)** Secundaria   ☐
d) Formación profesional   ☐   **e)** Universidad   ☐   **f)** Otros. Por favor, especifique:

4. Estado laboral (una opción):   **a)** Autónomo(a)   ☐   **b)** Empleado(a)   ☐   **c)** Desempleado(a)   ☐
d) Pensionista   ☐   **e)** Estudiante   ☐   **f)** Otros. Por favor, especifique:

5. Por favor, escriba el nombre de su país y provincia o región:

6. ¿Es su primera visita a la provincia de Cádiz? (una opción):   **a)** Sí   ☐   **b)** No   ☐

7. ¿Es su primera visita a este municipio? (una opción)**:**   **a)** Sí   ☐   **b)** No   ☐

8. ¿Cuántos días va a permanecer en este municipio? (una opción):
    a) Menos de 3 días   ☐   **b)** 3-8   ☐   **c)** 9-15 días   ☐   **d)** Más de 15   ☐
días   días

9. Por favor, indique el motivo de su visita a este municipio (varias opciones):
a) Profesional   ☐   **b)** Naturaleza   ☐   **c)** Visitar a familia o amigos   ☐   **d)** Gastronómico   ☐   **e)** Cultural   ☐
f) Deporte   ☐   **g)** Compras   ☐   **h)** Turismo de la playa   ☐   **i)** Religioso   ☐   **h)** Estudio   ☐
k) Otros. Por favor, especifique:

10. ¿Cuánto gasta usted aproximadamente al día por persona (la comida, el alojamiento, etc.)? (una opción):
    a) <50 €   ☐   **b)** 50-100   ☐   **c)** 101-200   ☐   **d)** 201-300 €   ☐   **e)** >400 €   ☐
€   €

Preguntas de la sostenibilidad

11. ¿Está usted familiarizado con el concepto de "Desarrollo Sostenible"? (una opción):
    a) Sí   ☐   **b)**   ☐   **c)** No lo   ☐
No   sé

12. ¿Está usted de acuerdo con la afirmación de que es importante comportarse de manera ecológica durante sus vacaciones? (una opción):
a) Totalmente de acuerdo   ☐   **d)** Fuertemente en desacuerdo   ☐   **g)** No lo sé   ☐
b) Bastante de acuerdo   ☐   **e)** Bastante en desacuerdo   ☐
c) Estoy de acuerdo hasta cierto punto   ☐   **f)** No estoy de acuerdo hasta cierto punto   ☐

13. ¿Está usted de acuerdo con la afirmación de que los recursos naturales como playas, dunas, etc. están bien protegidos, a pesar del desarrollo de infraestructura turística existente en esta zona? (una opción):
a) Totalmente de acuerdo   ☐   **d)** Fuertemente en desacuerdo   ☐   **g)** No lo sé   ☐
b) Bastante de acuerdo   ☐   **e)** Bastante en desacuerdo   ☐
c) Estoy de acuerdo hasta cierto punto   ☐   **f)** No estoy de acuerdo hasta cierto punto   ☐

14. ¿Califica su comportamiento durante vacaciones como sostenible? (¿Ahorra agua y energía?) (una opción):
    a) Sostenible ☐   **b)** Parcialmente sostenible ☐   **c)** Insostenible ☐   **d)** No lo sé ☐

Preguntas sobre la erosión y la frecuencia de uso de la playa

15. ¿Está usted familiarizado con los problemas de la erosión de esta playa? (una opción):   **a)** Sí ☐   **b)** No ☐

16. ¿Con qué frecuencia visita esta playa? (una opción):
a) Es la primera vez ☐   **c)** Una vez por la semana ☐   **e)** La mayoría de los días ☐
b) Raramente ☐   **d)** Los fines de la semana ☐   **f)** Cada día ☐
g) Otros. Por favor, especifique:

17. ¿Cuál es su principal criterio para elegir una playa? (Usted puede elegir una opción para cada característica). **Escala: 1-** No es importante en absoluto; **2-** No es importante**; 3-**Neutral; **4–**Importante; **5–**Muy importante

Características de playa	1	2	3	4	5
a) Limpieza	1	2	3	4	5
b) Diversidad del paisaje	1	2	3	4	5
c) Comodidad y seguridad	1	2	3	4	5
d) Bajo número de bañistas	1	2	3	4	5
e) Servicios de playa (cafés, WC et.)	1	2	3	4	5
f) Acceso fácil	1	2	3	4	5
g) La existencia de bandera azul	1	2	3	4	5
h) La naturaleza bien conservada	1	2	3	4	5
i) La cercanía de aparcamiento	1	2	3	4	5
j) La cercanía a mi alojamiento	1	2	3	4	5

Preguntas sobre el impacto del cambio climático

18. ¿Qué medio de transporte utiliza para llegar a esta playa? (una opción):
   a) A pie ☐ **c)** Moto ☐ **e)** Coche alquilado ☐ **g)** Autobús ☐ **i)** Otros. Por favor, especifique:
   b) Bicicleta ☐ **d)** Taxi ☐ **f)** Coche propio ☐ **h)** Tren ☐

19. ¿Cuál es el principal medio de transporte que ha utilizado para llegar a este municipio? (varias opciones):
   a) Avión ☐ **c)** Autobús ☐ **e)** Coche alquilado ☐ **g)** Moto ☐ **i)** Otros. Por favor,
   b) Tren ☐ **d)** Taxi ☐ **f)** Coche propio ☐ **h)** Barco, ferry ☐ especifique:

20. ¿Cuáles son los principales criterios para elegir el medio de transporte durante sus vacaciones? (Usted puede elegir una opción para cada característica). **Escala: 1-** No es importante en absoluto; **2-** No es importante**; 3-**Neutral; **4–**Importante; **5–**Muy importante

Características de transporte	1	2	3	4	5
a) Economía	1	2	3	4	5
b) Comodidad y seguridad	1	2	3	4	5
c) Calidad de transporte	1	2	3	4	5
d) Bajas emisiones de CO_2	1	2	3	4	5
e) Rapidez	1	2	3	4	5

21. ¿Dónde se aloja usted? (una opción):
a) Hotel ☐   **c)** Segunda casa ☐   **e)** Camping ☐
b) Apartamento alquilado ☐   **d)** Albergue ☐   **f)** Familia o amigos ☐
g) Otros. Por favor, especifique:

22. ¿Cuál son sus criterios principales para elegir el alojamiento? (Usted puede elegir una opción para cada característica)
Escala: **1**- No es importante en absoluto; **2**- No es importante; **3**-Neutral; **4**–Importante; **5**–Muy importante

Características de alojamiento	1	2	3	4	5
a) Economía	1	2	3	4	5
b) La cercanía de la playa	1	2	3	4	5
c) Alojamiento ecológico	1	2	3	4	5
d) Comodidad	1	2	3	4	5
e) Calidad	1	2	3	4	5
f) Servicios diversos (aparcamiento, entretenimiento, spa, etc.)	1	2	3	4	5

23. ¿Estaría usted dispuesto a pagar un precio más alto para pasar sus vacaciones en los destinos turísticos desarrollados totalmente de forma sostenible? (una opción):
a) Sí, por favor, responda a pregunta 25 ☐   **b)** No, por favor, responda a pregunta 24 ☐
c) Sí, depende de la cantidad de dinero, por favor, responda a pregunta 25 ☐

24. ¿Cuál es la principal razón para no pagar más? (una opción):
a) No, no estoy interesado en los problemas ambientales ☐   **c)** Todavía hay un gran numero de destinos costeros limpios y atractivos ☐
b) Ya pago mis impuestos y servicios turísticos ☐
d) Mi economía no me la permite ☐
f) Otros. Por favor, especifique:

25. ¿Qué cantidad de dinero le parecía razonable pagar más por el día? (una opción):
 a) Menos de 5 ☐   **b)** Entre 5 y 15 € ☐   **c)** Mas de 15 € ☐
€
e) Otros. Por favor, especifique:

¡Muchas gracias por su colaboración y tiempo!