

A GeoCartographic Approach to the Value of Tourism in Greece concerning the Luxury Tourism

**Konstantina MANGINA, Nicolas KARANIKOLAS and Stefanos GIANNOULAKIS,
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SUMMARY

Greece is one of the most popular tourist destinations in the world. Tourism is a major source of income in the country and contributes to its economic growth. Most of that income is generated by luxury tourism, which is preferred by the tourist population with the highest incomes. But in what way could someone evaluate the economic impact of tourism and how the various tourist facilities are allocated in Greece?

The main aim of this paper is to answer these questions. The research object of this paper is therefore the luxury tourism, and especially the luxurious 5 star hotels of Greece. The aim of this paper is the geographic analysis, the mapping and the economic analysis of these accommodations.

Using Geographical Information System, a geodatabase, which includes the luxurious hotels of Greece, their characteristics and the valuation of their market value, was created. The five star hotels were recorded, categorized, mapped and their market value was evaluated. More specifically, these are the four main steps of the paper. First of all, the hotels were recorded, information about the characteristics of each hotel, such as the number of rooms, the operation period and the daily cost of accommodation, was collected and the exact location of each hotel was mapped. The next step is about an attempt to estimate the market value of each hotel, considering three alternative economic scenarios. After that, a geo-economic analysis based on the characteristics listed above was made. The work studied the location of the hotels, their market value and their characteristics. As an example, it was studied if they are located in an island or near an airport and if the five star hotels are awarded an environmental certification. Finally conclusions were drawn and questions such as those raised in the beginning were answered. The result of this study is imprinting the image of Greece concerning the luxury tourism.

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1. INTRODUCTION

Tourism is a wide-ranging discipline that can be analyzed by a geographical and an economic approach. According to a report by the World Economic Forum, Greece is one of the most popular tourist destinations and in 2013, ranked 32nd worldwide. (Blanke, Chiesa, 2013) Tourism is one of the key pillars of the Greek economy. The five-star (5*) luxury hotels contribute significantly in this field since they attract the tourist population with the highest incomes. Therefore tourism and especially the luxury tourism is a subject worthy of investigation and analysis.

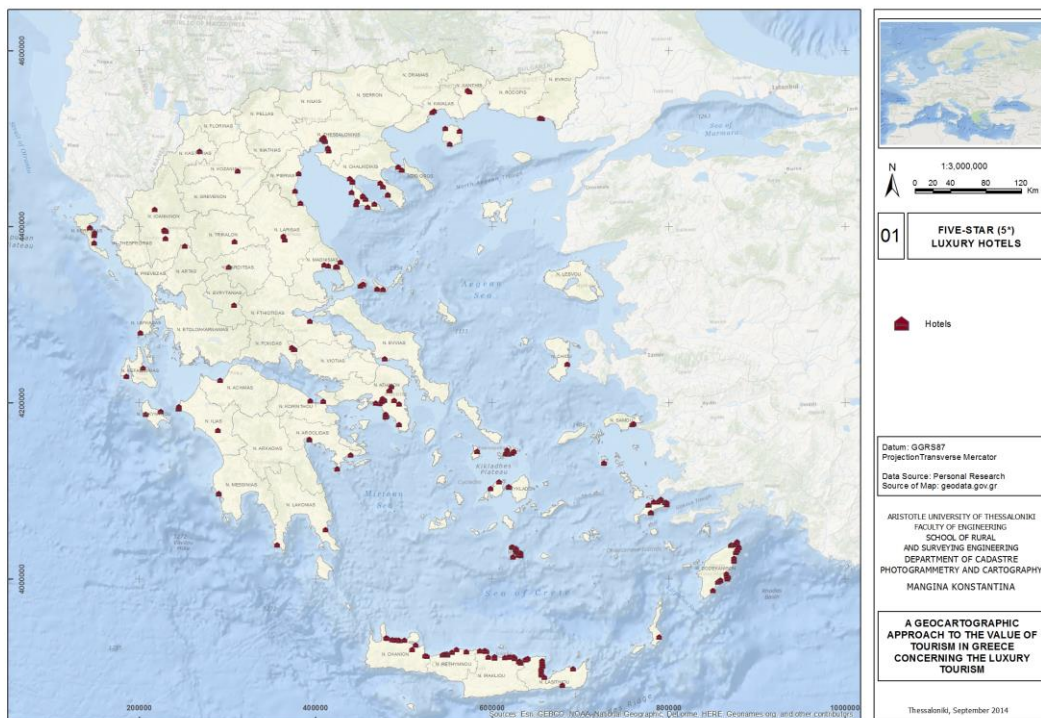
1.1 Methodology

In the context of this paper, the five-star luxury hotels of Greece were mapped and a detailed geodatabase of the hotels' features was created using Geographical Information System. These accommodations were found using website engines especially for tourists (booking.com, etc.). On a second step, the characteristic features of each hotel were recorded. More specifically, the prefecture and the city or the island in which the hotel is located was found. Moreover, the number of the rooms, the period of operation and the website were also recorded. The analysis of hotel characteristics enriched with other data like if the hotel is member of a hotel group and if it is certified with ISO, Green Key or the use of local traditional products or cooking, etc. Finally, the different prices as regards the cost of the accommodation in a double room were written down. These features were found via the official website of each hotel. As it is mentioned before, the cost of the accommodation concerns the accommodation in a double room. The period of operation is divided into five categories, from the peak season to the very low season, depending on the tourist demand. Therefore, the accommodation cost varies accordingly. The price for each season was found via the online reservation system on the hotel's website. Once the data were collected, they were edited. The editing consists of the editing of the hotels features, the editing of the data used in the geographical and economic approach and the mapping. Concerning the maps, their datum is the Greek Geodetic Reference System 1987 (GGRS87), the projection the Transverse Mercator and the scale is 1: 3000000.

2. GEOGRAPHICAL ANALYSIS

GIS can potentially play an important role in Real Estate research. Particularly in the areas of spatial interaction models (Haynes, Fotheringham, 1984) and spatial diffusion models (Morrill, Gaile, Thrall, 1988). Geographic Information Systems (GIS) provide powerful tools for storing and manipulating large amounts of information on spatial relationships. It is thus easily understood that the speed and automation potentials together with the constant developments in technology have a direct impact on Geographic Information Systems (Fryrear, Prill, Worzala, 2001). The most commonly used definition of a GIS is: a computerized database management system used for the capture, storage, retrieval, analysis and display of locationally defined data that is referenced by spatial or geographic coordinates (Beam, 1994, Rodriguez, Sirmans, Marks, 1995). Also Geographic Information Systems (GIS) provide powerful tools for storing and manipulating large amounts of information on spatial relationships (Clapp, Rodriguez, Thrall, 1997).

Greece has a total of 282 luxury hotels (map 1). The total amount of the rooms is 45251 while the average cost of staying in a hotel of this type was estimated at 193 euros per night. For the geographical analysis two spatial entities were used. These spatial entities are the prefectures and the islands of Greece.



Map 1: Five-Star Luxury Hotels of Greece

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2.1 Prefectures

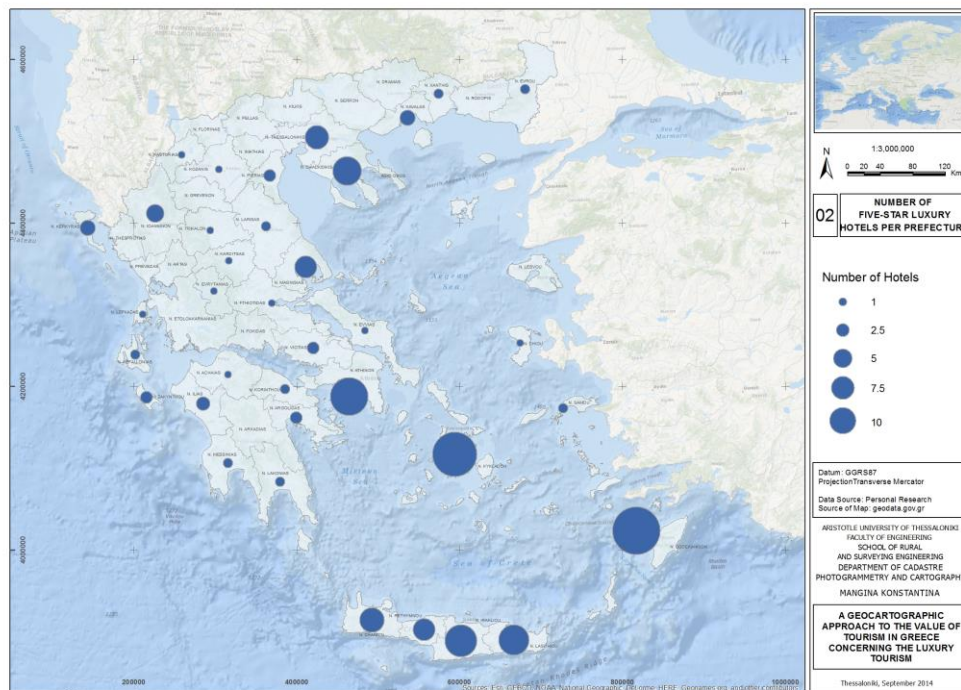
The five-star hotels were classified according to the prefecture they are located. This classification resulted in the total of the luxury hotels in every prefecture, the total number of rooms and the average accommodation cost in these hotels for every prefecture.

Several prefectures have a fairly large number of 5* hotels. On the other hand, there are some in which only one hotel of this category is located. There are luxury hotels in thirty six prefectures that means a percentage of 67%. The majority of these hotels appears in the Dodecanese Prefecture at around 17%, followed by those in Cyclades and in Attica Prefecture with rates of 15% and 11% accordingly. In the prefecture of Thessaloniki there are 12 luxury hotels (4,26%). There are six prefectures, which have only one hotel of this category and their rate is 0,35%.

The unequal distribution of the five-star hotels is noticeable and it is more obvious in the second map. The prefectures of the islands are those in which the most hotels are located. Although the Attica prefecture includes Athens, the capital and the largest city of Greece, is classified third. The Thessaloniki prefecture is further down in eighth place.

As regards the number of rooms of each luxury hotel, the prefectures that include the islands are classified in the first places. However, the ranking is not exactly the same since the hotels do not have the same number of rooms and in several cases the hotels that are located in the prefectures of the mainland have more rooms.

Generally, the accommodation cost in a double room range from 80 to 327 euros. The prefecture with the highest daily cost of accommodation is Cyclades prefecture, with cost to be approximately 327 euros. The Lefkada prefecture follows next with 275 euros and the one of Lasithi with about 274 euros. The Chios and Iliia prefectures with their accommodation costs to have been calculated at 250 and 221 euros accordingly complete the top five



Map 2: Number of Five-Star Luxury Hotels per Prefecture

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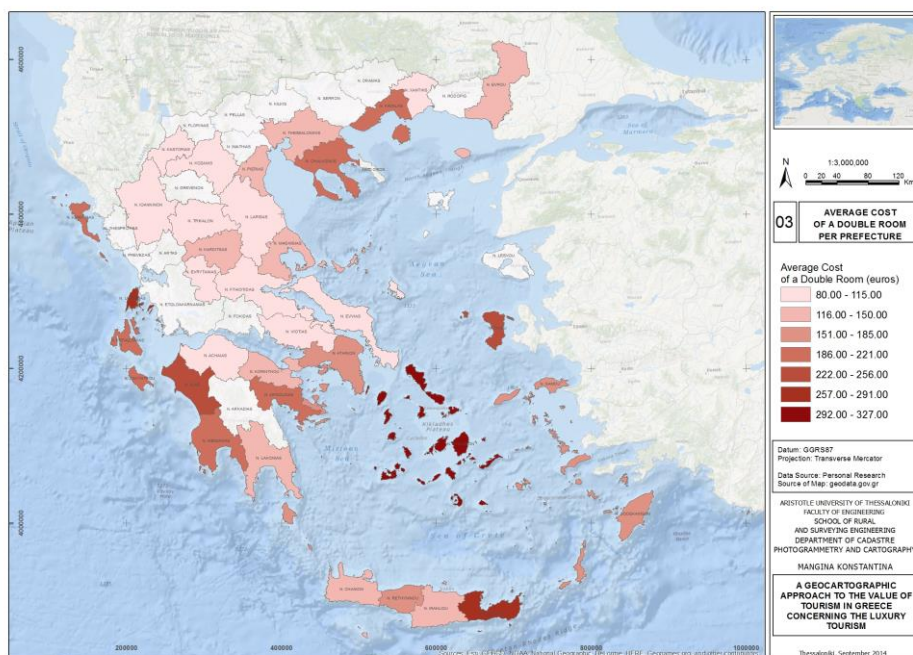
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The daily average cost for a double room in Attica is 153 euros while the one of Thessaloniki prefecture is 129 euros. The lowest cost of accommodation concerns the prefecture of Achaia and it is 80 euros. It is observed that although the prefectures of islands have fewer rooms, the accommodation cost increases in these areas compared to the mainland. The range of the accommodation costs in the prefectures of Greece is shown in the third map.

2.2 Islands

Examining the distribution of the 5* hotels on the islands, it is noticed that in the northern Aegean there are few hotels of this type in contrast to the rest of the Aegean and the Ionian islands. In line with the prefectures, luxury hotels are not observed in all the islands. However, the majority of the inhabited islands has even one five-star luxury hotel. The islands in which luxury hotels are located are 21.



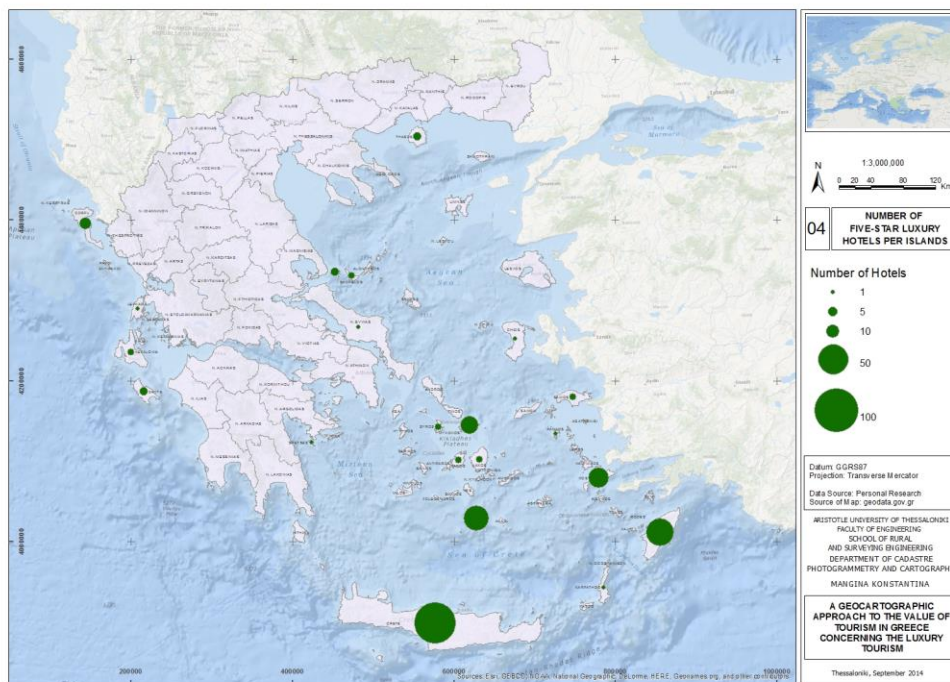
Map 3: Average Cost of a Double Room per Prefecture

The island with the most 5* hotels is Crete, with 64 hotels and approximately 36% of the hotels which can be found in the Greek islands. Rhodes follows Crete with 17% - 30 hotels - and Santorini with 13% - 24 hotels. The top five is completed by Kos with 16 hotels (9%) and Mykonos with 12 hotels of this category (6,7%). Evia, Karpathos, Lefkada, Spetses and Chios are the islands with only one luxury hotel. Their percentage is 0,56% of the total amount. The number of the hotels that are found in every island is not always related to the area of the island. Crete and Rhodes that are two of the largest islands of Greece have the largest number of five-star hotels. However, there are islands like Santorini, one of the smallest islands, which provide also a large number of luxury hotels. Even islands such as Evia and Chios, the second and the fifth largest island of Greece accordingly, have only one hotel of this category. The map 4 shows precisely the number of the hotels of every island.

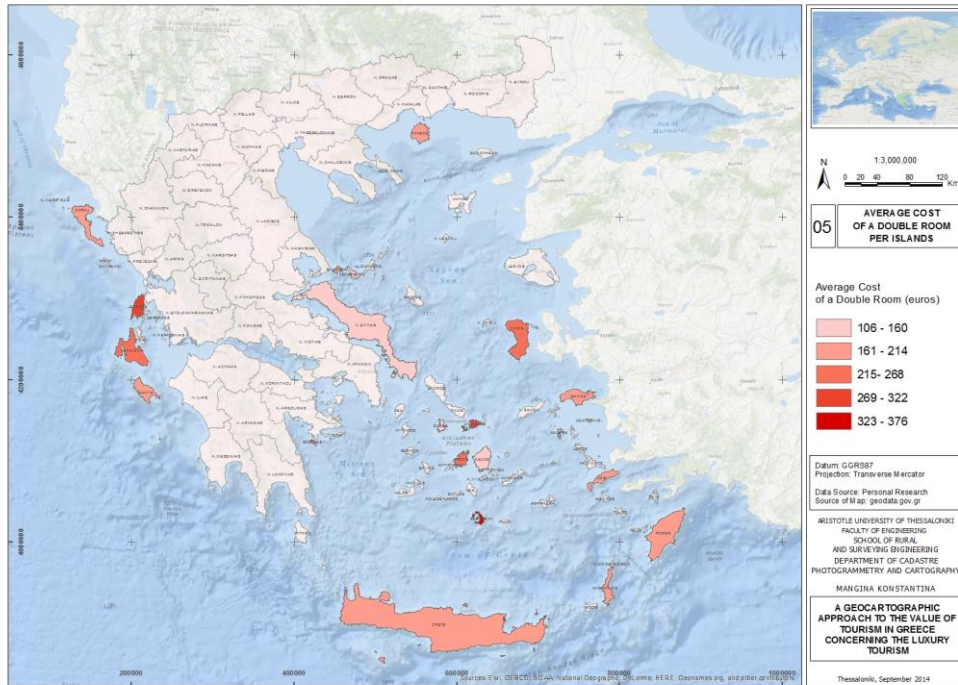
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Regarding the number of rooms, it is observed that the classification of the islands differs from the one that is associated with the number of hotels. The number of hotels is not necessarily related to the number of rooms. Crete and Rhodes maintain the first and the second place, which had in the previous ranking. Their percentages are 46% and 25% accordingly. Kos is in the third place with almost 12% and it is followed by Corfu (4%) and Mykonos (3%).

The daily cost of accommodation ranges from 106 to 376 euros. The highest average price for a double room is found in Santorini and is 376 euros. The corresponding cost in Mykonos is 307 euros and in Lefkada is 275 euros. Chios and Spetses are in the next two places with a daily accommodation cost of 250 euros and 239 euros accordingly. The cost of accommodation in Crete is approximately 187 euros. The islands with the lowest prices of a double room are Skopelos, Syros and Evia. In Skopelos a double room in a luxury hotel costs 139,5 euros on average per day. In Syros the average cost of a double room corresponds to 136 euros while in Evia is around 107 euros. The variation of the average price of a double room on each island is shown on the map 5.



Map 4: Number of Five-Star Hotels per Islands



Map 5: Average Cost of a Double Room per Island

3. ECONOMIC ANALYSIS

The economic analysis includes the estimation of the market value of each hotel. The pre-valuation of luxury accommodations was based on the hotels' revenues. Three alternative economic scenarios were chosen, based on the percentage of occupancy. In the first economic scenario, the optimistic one, the occupancy of the hotel was considered to be closed to 100%, in the second, the basic scenario, to 80% and in the pessimistic scenario, the last one, it was considered that the occupancy reaches a percentage of 60%. By calculating the average of the double room prices for each season, the mean cost for a double room was exported. The hotel's revenues were calculated in accordance with the above three economic scenarios and by considering the average accommodation cost, the number of rooms and the operation period of each hotel. The annual income of each hotel was estimated after deducting from the hotel's revenues the expenses. According to the Income Method of Valuation if the annual income of a property is defined as I, then by using the yield Y of the property, its value is calculated by the following formula: $V=I/Y$ (Karanikolas, 2010). The yield rate is a rate of return on capital, usually expressed as a compound annual percentage rate (Appraisal Institute, 2001). The yield is also the rate of return that adequately compensates the investor for the risks taken (Danish Property Federation, 2013). In this case the yield was considered 7%. Its rate is based on the tourism development of Greece in the last few years. It is necessary the assumptions made to be noted. The first assumption concerns the type of room as all rooms on each hotel were considered as double rooms, which is actually not true. Also in each case the expenses were calculated as 30% of the revenues. Finally the annual income of each hotel concerns only the revenues from the rooms.

In the economic analysis, the pre-valuation of the market value of the five-star luxury hotels was connected with a spatial entity. The spatial entities are the same that were used in the geographical analysis, which means the prefectures and the islands of Greece. As regards Greece, the market value of the five-star hotels is 18,32 billion euros, 14,76 billion euros and 11,07 billion euros for the optimistic, the basic and the pessimistic scenario respectively.

3.1 Prefectures

The luxury hotels were classified according to the prefecture to which they belong and therefore the market value of all luxury hotels of a specific prefecture was estimated.

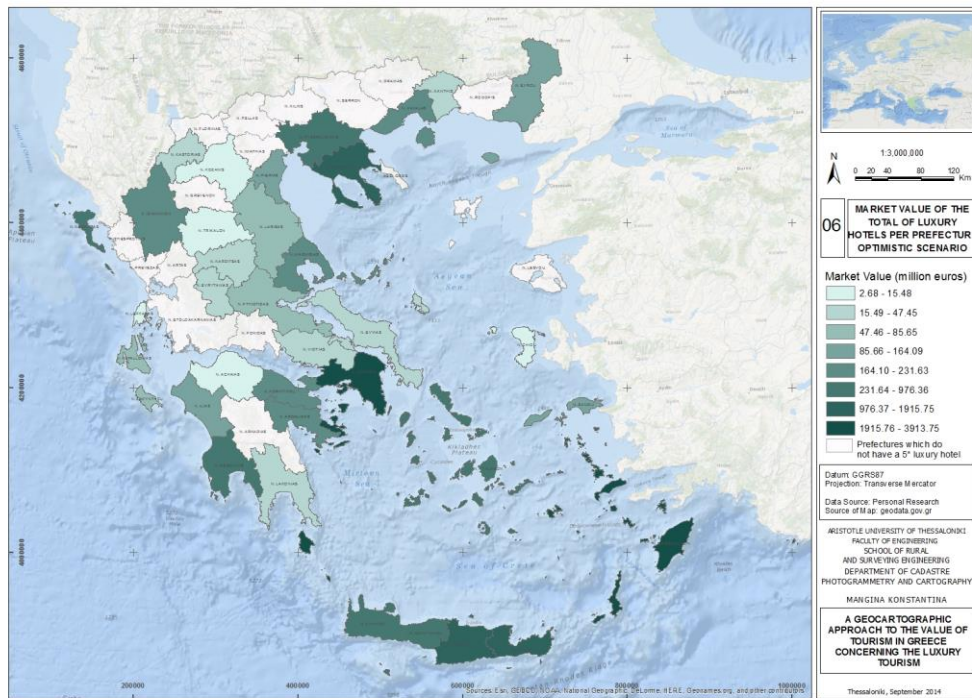
Value maps were used. Value maps are powerful decision-making tools that illustrate the geography of property values over space and time in a way that most property professionals find intuitive, namely map form (Wyatt, 1997, Yomralioglu, Nisanci, 2004).

From the economic analysis at the level of prefecture it is understood that there are some prefectures that their market value climbs up compared to others. The market value of the luxury hotels per prefecture ranges from 2,7 to 3913 million euros approximately for the optimistic scenario, from 2,1 to 3131 million euros approximately for the basic scenario and finally from 1,6 to 2348 million euros for the pessimistic scenario.

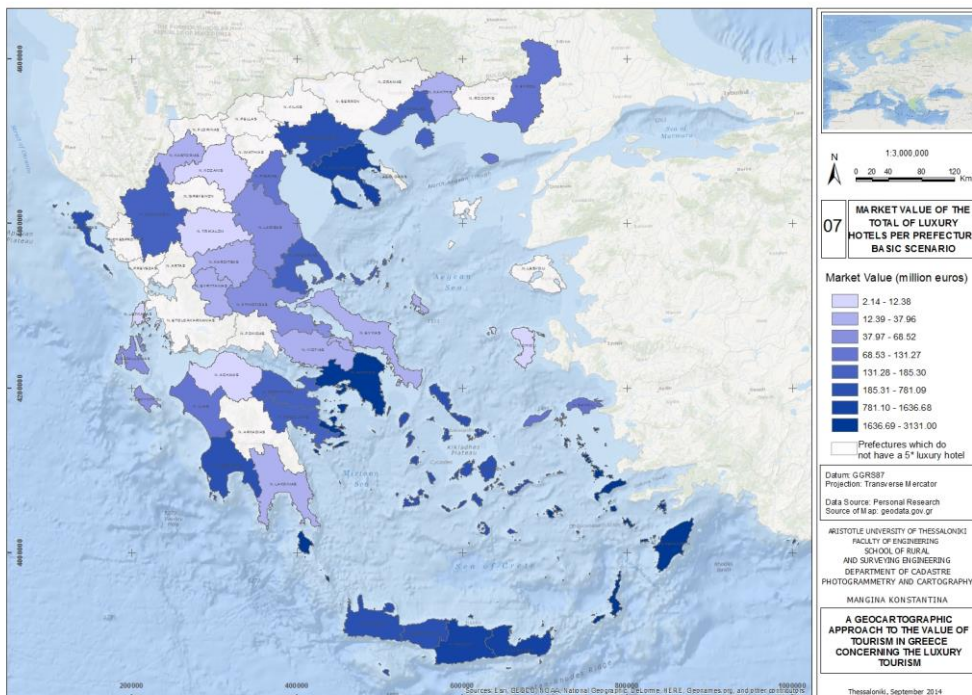
The three economic scenarios follow the same logic in all the prefectures. The prefecture with the highest market value is the Dodecanese prefecture. Its market value is 3,9 billion euros in the optimistic scenario, 3,1 billion euros in the basic one and 2,3 billion euros in the pessimistic scenario. The prefectures that follow are these of Attica and Heraklion. Their

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market values are 3,1 and 1,9 billion euros, 2,5 and 1,6 billion euros and finally 1,8 and 1,2 billion euros for the optimistic, the basic and the pessimistic scenario respectively. The prefectures of Lasithi and Halkidiki complement the top five prefectures. The prefectures of Trikala, Kozani and Chios have only one luxury hotel and they come last in this ranking.



Map 6: Market Value of the Total of Luxury Hotels per Prefecture, Optimistic Scenario

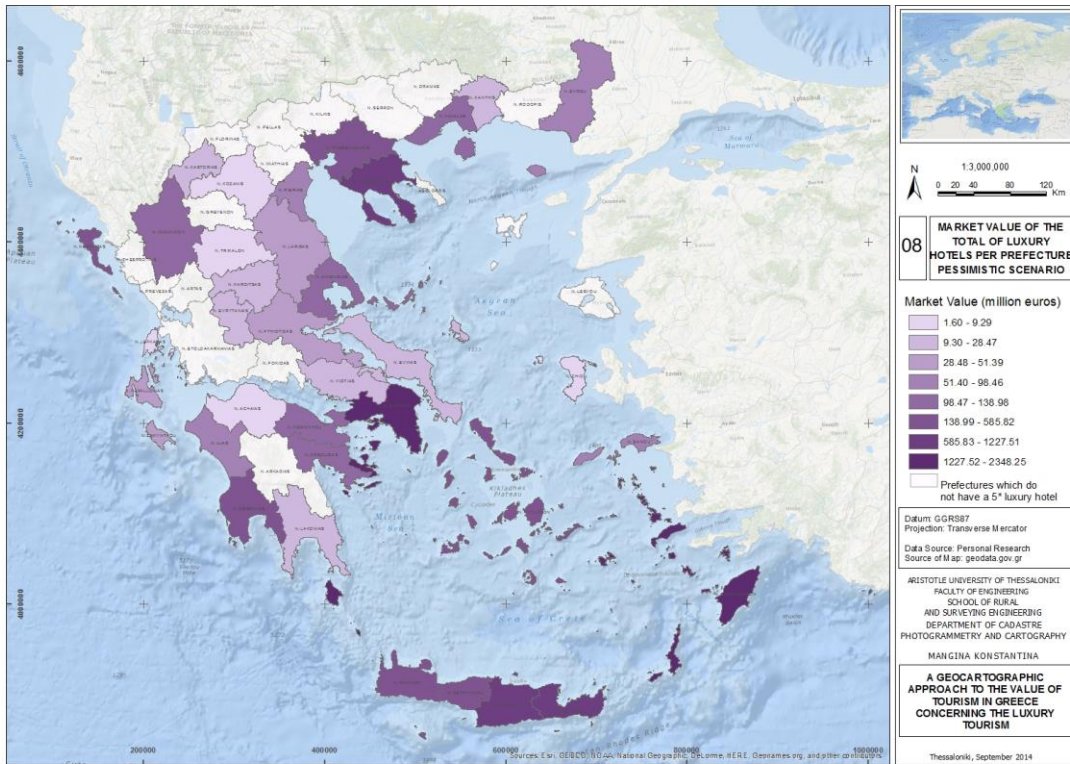


Map 7: Market Value of the Total of Luxury Hotels per Prefecture, Basic Scenario

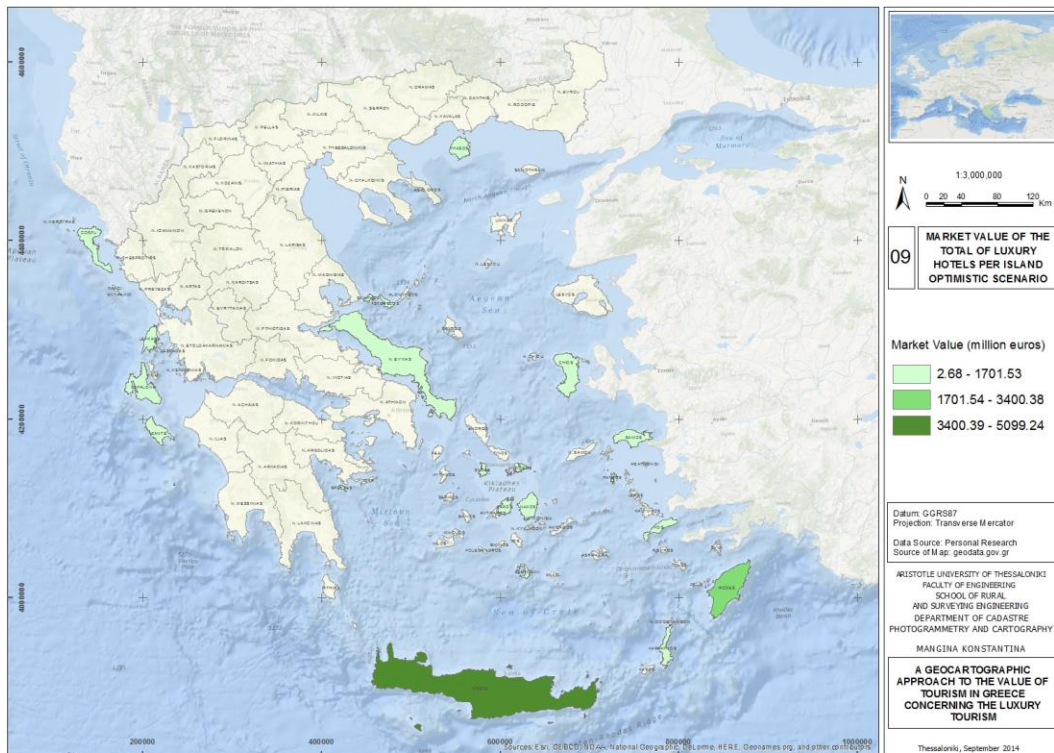
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Map 8: Market Value of the Total of Luxury Hotels per Prefecture, Pessimistic Scenario



Map 9: Market Value of the Total of Luxury Hotels per Island, Optimistic Scenario

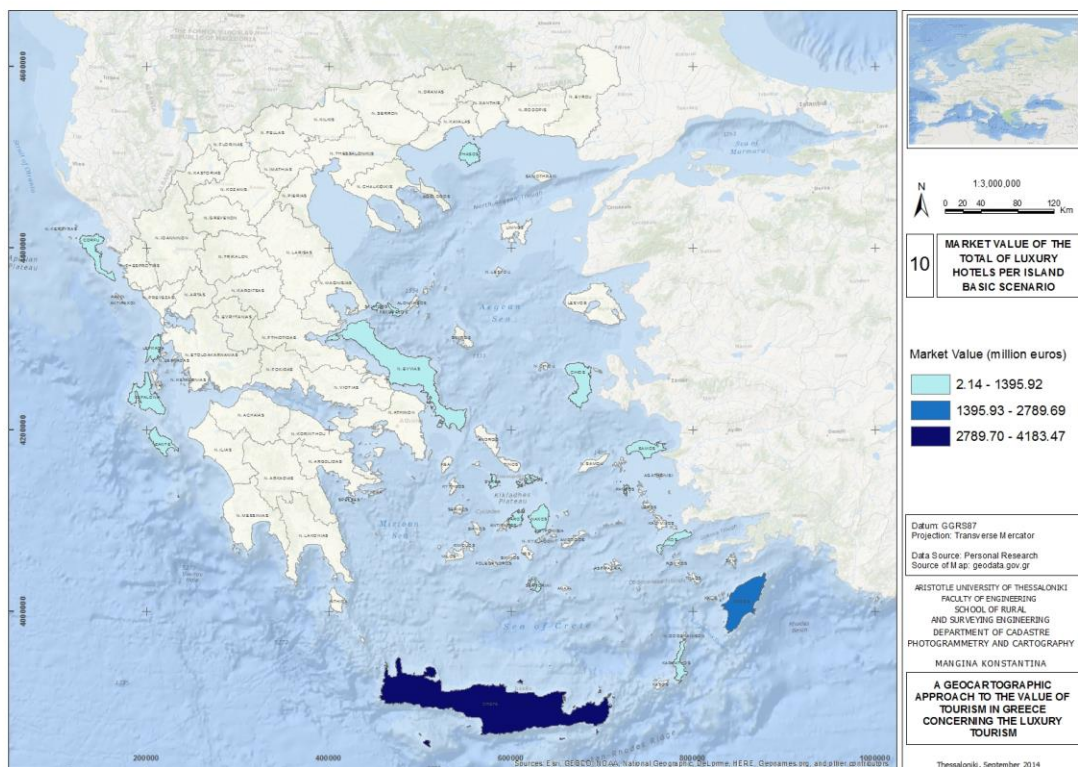
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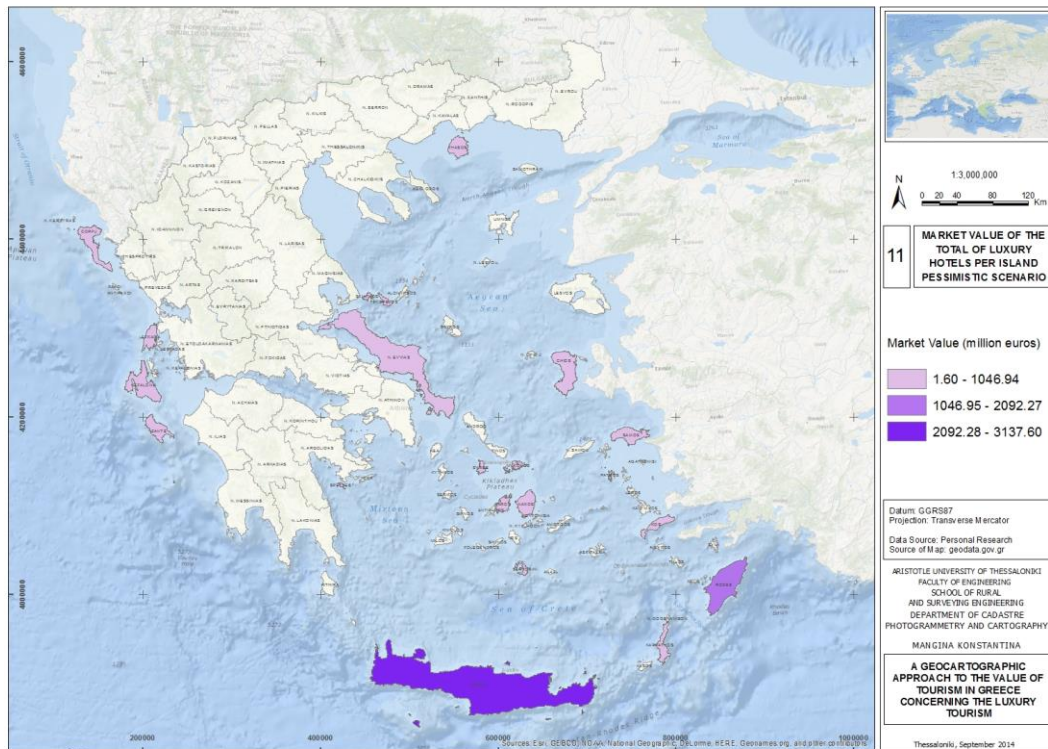
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3.2 Islands

Considering the market value of luxury accommodations of each island is even more obvious that the islands have hotels with higher market value. The fluctuation of the market value increases in this case and the range of values grows. Specifically, the market value ranges from 2,68 to 5099 million euros in the optimistic scenario. The island with the highest market value is the largest island of Greece, Crete. The market value of the luxury hotels of this specific island amounts to 5,1 billion euros for the optimistic scenario, to 4,2 billion euros for the basic and 3,1 billion euros for the pessimistic one. Rhodes and Kos follow next. Their market values were estimated at 2,5, 2,0 and 1,5 billion euros for the optimistic, the basic and the pessimistic scenario for Rhodes and 1,3, 1,0 and 0,8 billion euros for the optimistic, the basic and the pessimistic scenario for Kos. Corfu and Mykonos are in fourth and fifth place. Regarding Corfu, its market value in the optimistic scenario is 0,6 billion euros, 0,5 billion euros for the basic and 0,3 billion euros for the pessimistic. Mykonos has luxury hotels, the value of which reaches 0,5 billion euros in the optimistic scenario, 0,4 billion euros in the basic and 0,3 billion euros in the pessimistic scenario. Santorini has almost the same market values compared to Mykonos in all three economic scenarios. The islands with the lowest market values are Lefkada, Syros and Chios, which have only one 5* hotel.



Map 10: Market Value of the Total of Luxury Hotels per Island, Basic Scenario



Map 11: Market Value of the Total of Luxury Hotels per Island, Pessimistic Scenario

4. CONCLUSIONS

The geographical and economic analysis indicates that the majority of the luxury hotels is located in the islands of Greece by about 63% compared to 37% of those found on the mainland. It is expected considering that the islands are those that attract more tourists. By observing more carefully the location of the hotels, it is understood that the most are located in coastal areas in both the mainland and the islands of Greece. The proximity to the sea plays therefore a very important role in the establishment of these accommodations.

The number of hotels and the number of rooms are not combined. In some areas, while the number of hotels is very large, the hotels have few rooms. Therefore the total number of rooms is low. The opposite phenomenon happens also.

The accommodation cost in the islands rises sharply compared to the accommodation cost in mainland. The market value of the hotels follows the same logic. The price of a double room is not necessarily related to the number of hotels in the area and the number of rooms. It mainly depends on the geographical location of the accommodation. On the other hand, the market value of all hotel of an area is affected by the number of hotels in the area, the total number of rooms and the average cost of a double room. The factor that influences more seems to be the total number of rooms. This is clearly reflected in the islands, where although there are more hotels and the accommodation costs are higher, the prefectures of the islands do not have necessarily higher market values.

Regarding the features of the hotels, the majority of them does not belong to a hotel group and does not have any certification. The percentage of those who have ISO, Green Key or Greek

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Breakfast certification is minimal. Just about 11% of them are certified by Green Key, which refers to the environmental policy of each hotel. The Greek Breakfast certification, which have the hotels that use Greek products for the preparation of their meals, amounts to 3,9% while the hotels with an ISO certification are even less (2,8%).

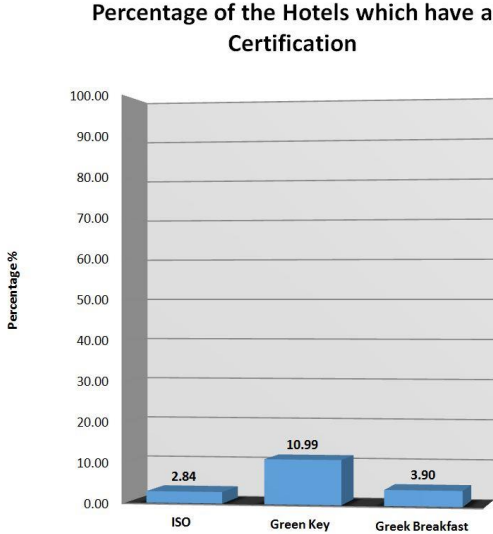


Chart 1: Percentage of the Hotels according to a Certification

A blot on the hotels is their operation period. Analyzing the data collected, it is apparent that the luxury hotels operate from four months to throughout the whole year, excluding the eleven months operation period because there is no hotel that belongs to this category. From the chart below, it is obvious that only approximately 31% of 5* hotels operate throughout the year. The majority of the accommodations of this type operates for either seven or six months of the year and their rate is about 56%. Usually, the seven months correspond to the months from April to October and the six months from May to October. Only one hotel operates for ten months, two are the hotels, which operate for nine months and three those which operate for four months.

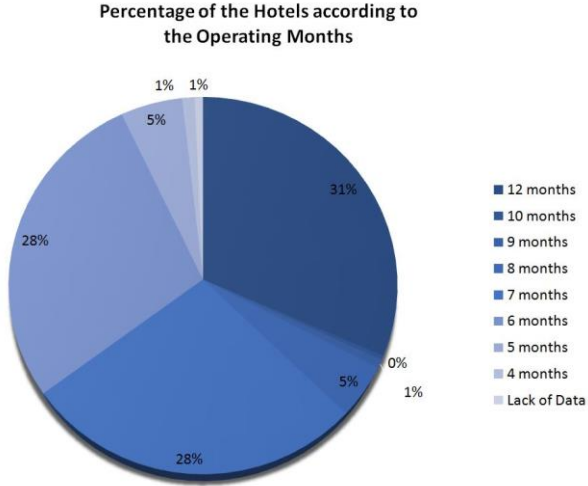


Chart 2: Percentage of the Hotels according to the Operating Months

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It is of great importance to be noticed that the market value estimated is based on the revenues from the accommodation. The revenues from the other facilities that the hotels offer, like restaurant, bar, gym, shop, etc., were not taken into account.

The market value of the country's entire luxury hotel was estimated at around 18 billion euros. Therefore the reason why tourism is one of the key pillars of the Greek economy becomes clear. During the first quarter of 2014, an extensive increase was recorded in the revenues derived from tourism, an increase of almost 27,8%. This increase is primarily due to the more international arrivals recorded - an increase of 21% - and secondarily to the higher spending per trip, which showed an increase of about 6% (Foundation for Economic and Industrial Research, 2014).

Although Greece is a small country, it has a great tourist system with many hotel facilities, which are distributed throughout its area. Taking into account the conclusions mentioned above, a further investigation is considered necessary in the number of tourists and the occupancy of the hotels of every category so as to determine the feasibility of investing in the expansion and the creation of new accommodations of this type in Greece. The ultimate goal is a balanced economic growth, which is considered to be achieved through a geographic allocation of investments and not through an over-concentration of luxury hotels in certain areas of the country. However, investing in modernization and improvement of hotels' facilities, in particular with the environmental policy, is needed.

As tourism moves further into the twenty-first century, the enterprise will have to make the environment a priority. Because tourism is now the world's largest industry, the environment is taking center stage in tourism development. Tourism is not only a powerful economic force but also a factor in the physical environment as well. Because more attention will be paid to the environment in the future, projects that are economically feasible but not environmentally desirable will remain un-built. The environment is the core of the tourism product.

Profitability in tourism depends on maintaining the attractiveness of the destination people want to see and experience. It is being recognized that tourism must preserve and protect the environment and natural attractions so that people will continue to travel, and must set use limits so that sites will be truly sustainable. (Goeldner, Ritchie, 2006)

The result obtained of this project is twofold. On one hand, the outline of the country's tourism profile and the evaluation of five-star luxury hotels both in terms of their characteristics but also in terms of their market value were provided. On the other hand, a geodatabase that contains all 5* luxury hotels with their features and their market value was created.

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BIOGRAPHICAL NOTES

Konstantina Mangina graduated from the School of Rural and Surveying Engineering of Aristotle University of Thessaloniki. She is interested in Real Estate, Cartography and Geographical Information Systems. She has participated in many conferences.

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Dr. Nicolas Karanikolas is an Assistant Professor in the School of Spatial Planning and Development Engineering, Faculty of Engineering, Aristotle University of Thessaloniki. His research interest focuses mainly on issues Cartography & Geography, GIS, and Real Estate Valuation. He has published 3 books, more than 80 papers in international and national journals and conferences, has participated in more than 15 research projects funded by EU and national sources, 2 as supervisor of the project and participated in more than 60 national and international conferences.

Stefanos Giannoulakis

Stefanos Giannoulakis is a PhD Candidate (awarded a PhD scholarship after written exams by the Greek State Scholarships Foundation (I.K.Y.)) on Real Estate analysis (appraisal, valuation, planning, development & management) in the School of Rural and Surveying Engineering (R&SE), Faculty of Engineering (FE) of the Aristotle University of Thessaloniki (AUTH), Greece. He graduated from School of Rural and Surveying Engineering, AUTH, (2008) and received an MSc on Cadaster & Spatial Analysis, AUTH (2009). Meanwhile, he is finishing his second MSc on Real Estate Investment and Finance of Herriot Watt University in Edinburgh, Scotland (UK). He has attended numerous conferences and has published multiple articles in proceedings and journals. He is a member of the Laboratory of Photogrammetry and Remote Sensing in the School of Rural and Surveying Engineering, AUTH, and he has participated in various research programs in Geoinformatics and Real estate management. Moreover he is a trainee member (chartered valuation surveyor via assessment of professional competence) of Royal Institution of Chartered Surveyors (RICS), and also a permanent member of the Hellenic Valuation Institute (ELIE), of the Association of Greek Valuers (AVAG), and of the Technical Chamber of Greece (TEE).

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Konstantina Mangina, Nicolas Karanikolas and Stefanos Giannoulakis (Greece)

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